Encyclopaedic Dictionary of Textile Terms is a reference dictionary with a short explanation of textile terms in spinning, weaving, processing and garmenting fields. The book is meant for all textile related personae, especially for textile students, textile processors and garmenting technicians. It will be an asset for merchandisers and buying offices for quick reference. Care has been taken to explain and include all technical terms, in short, giving all necessary points. It is a handy reference book for students as well as the faculty.

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It has been told the first thing that a business man should know, is—the little things of his business. This book is meant for textile personae, be it a textile student, textile chemist, a spinner, a weaver, garment maker or a merchandiser who may be an expert in his/her field but he/she may come across many terms in his/her day to day business which he/she is not familiar with but is related to his/her field which he/she should know, but nine times out of ten does not know. He/She may not have an expert in that field of that term near him/her to clear his doubt about that term. This book comes handy in such circumstances.

There is nothing scholarly in this book, but is a compilation of short easy understandable meanings of the textile terms enough to help the referrer to understand the term. I have come across dictionaries which gives the meaning of the textile terms in one sentence. But it may not be sufficient to give a full idea about it. But this book is a little different. The meaning of the terms is explained in a concise manner even with the help of diagrams or photos, wherever necessary, which is enough to clear his/her doubts. These terms and meanings have been collected right from my college days and throughout my career. I believe it is not complete, but, such as it is, the compilation is reliable. There are further terms which are being collected by the author which will be added in the next edition, probably. The author believes that he has produced a book which may be profitably consulted by all who are either interested or practically engaged in textile trade.

It has to be specially mentioned that students can use the present book as a reference guide for his/her immediate needs without going to many textbooks. For detailed study of any terms he/she can further refer to books specialized in that field. I may not suggest this book for a research student. The author has also tried to explain the construction of many fabrics new or old for general knowledge.

Hope this book will be greatly accepted by textile personnel. Any suggestions or corrections are welcome, which will be included in the next editions.

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Dedication

This book is dedicated to my Father (Thomas Abraham) and my Mother (Thankamma Abraham) who solely made me what I am today.
S Twist: See Direction of twist.

SA 8000: Social standards in textiles and clothing by Social Accountability International.

S-Finish: A term originally applied to the partial surface saponification. A term originally applied to the partial surface saponification of cellulose ester fibres (acetate and triacetate) by alkaline hydrolysis to reduce static charge and improve fabric handle. Alkali treatment of polyester. Nowadays the term has also been adopted for an analogous treatment of polyester fibres in which a controlled partial saponification with alkali (NaOH) is carried out to achieve a silk-like lustre and handle, reduce the buildup of static charges and improve anti-soil properties.

Sable: French for mottled effect.

Sable: A dark brown luxury fur which is very hard wearing.

Sabretache: A leather pocket hung from the left side of the sword hilt; a popinjay ornament.

Sabrina: Applique needlework, the leaves and petals of flowers made of coloured material edged with button hole stitches.

SABS: South African Bureau of Standards

Sacharilla Mull: A very delicate bleached cotton muslin, made of fine yarn with a low construction. It is given a very soft finish. Used for veils and turbans by the Moslems.

Sack: A business coat with pockets, made single and double breasted; a loose Chesterfield overcoat.

Sack Cloth: Very coarse cotton or jute fabric, woven plain, used for bags.

Sacking: See Bagging and Heavy goods. (1) Heavy, three or four end twill jute or hemp cloth of double warp and single filling, used for cement and ore bags; (2) Solid coloured flannels for kimonos.

SAD: SAD is a measure for soil pick up which is obtained by reflection measurement.

\[ SAD = \log \left( \frac{R_{\text{unsoiled}}}{R_{\text{soiled}}} \right) \]

Where \( R = \) Reflection according to wavelength.
**Saddening**: Same as after treating.

**Saddlecloth**: In Arizona and Mexico masses of aloe fibre spread out in regular thickness and tacked to keep them in place. It is not woven.

**Sadin**: In the Bible means linen cloth.

**Sadowa**: Woollen dress goods with the nap being raised in circles, dots, squares, etc.

**Safety Data Sheets**: The ETAD (Ecological and Toxicological Association of the Dyestuffs Manufacturing Industry) has been issuing safety data sheets to affiliated dyestuff manufacturers since 1974 in order to support these efforts to protect environment and to provide information on the regulations to be complied with, details of the physical, toxicological and ecological properties, together with handling, transport, storage and safety aspects. The ETAD (Ecological and Toxicological Association of the Dyestuffs Manufacturing Industry) has been issuing safety data sheets to affiliated dyestuff manufacturers since 1974 in order to support these efforts and to provide information on the regulations to be complied with, details of the physical, toxicological and ecological properties, together with handling, transport, storage and safety aspects. The ecological details are listed under point 8 in the SDS, i.e. whether substances are biodegradable, toxic to fish, harmful to waste water bacteria, and details of the water pollutant toxicity classification of the product. More information concerning the exact chemical composition of the products, proper disposal and the by-product level present will be desired in future. If the content of the safety data sheet should change within twelve months of delivery, the supplier must automatically forward the client an updated version of the safety data sheet.

**Safety stitch**: A stitch formed by an over edge stitch reinforced by a chain stitch (or sometimes a lockstitch) further in from the material edge.

**Safety valve**: A pressure relief valve actuated by inlet static pressure and characterized by rapid opening or ‘pop’ up action.

**Saffron**: A fugitive yellow dyestuff derived from the flowers of the crocus; used formerly to some extent.

**Sales invoices**: Invoices of the goods sold.

**Sail Cloth**: A firm fabric in plain colours in plain or basket weave. It is made from cotton, or polyester and cotton, and is stiff and hard wearing. Used for trousers, dresses, children’s clothes, men’s summer jackets etc.

**Sail test**: Combined wear and laboratory test for Static charge. A test subject wearing a waist slip made from the fabric to be tested passes a polyester sail
fixed in an air conditioning chamber. The slip rubs against the sail and is charged. A second person assesses and records the charging and discharging per unit of time.

**Sailcloth:** A canvas/duck that is used for the manufacture of sails. Dense and tight, impregnated heavy fabric (linen, cotton, hemp, synthetic fibres) in plain weave. Used for tarpaulins, awnings, sails, window blinds, etc. Laminated fabrics are also finding use in this market.

**Sail duck:** See **Duck**.

**Saint Andrew:** In embroidery a stitch forming a St. Andrew cross in a square.

**Saint Georges:** Unbleached French linen of medium quality.

**Saint Jago:** Cotton goods in Sierra Leone, Africa.

**Saint Jean:** Coarse, unbleached French linen made in various widths.

**Saint Lucie:** Very fine French silk yarn.

**Saint Maur:** French serge made of pure silk or mixed with wool.

**Saint Nicolas:** French woollen serge, used by the army.

**Saint Omer:** Narrow, 17th century English worsted fabric.

**Saint Rambert:** Unbleached French linen.

**Saint Remy:** A grade of French organzine or raw silk.

**Saint Vincent:** Variety of raw cotton from the West Indies.

**Sakalleridis:** Valuable Egyptian Maco cotton.

**Salamponge:** The tough fabric made in Nellore, India as work wear. Salampores were the preferred dress material for the slaves on the West Indian Plantations. But the West Indian Emancipation Act of 1833 sounded the death knell of salampores, as “freed negroes refused, very naturally, to wear the grab of their slavery.

**Salisbury:** White Sort of white English woollen flannel.

**Salt:** An ionic compound that is formed by a neutralization reaction (reaction of an acid with a base) The best known salt, common salt, or sodium chloride (NaCl) is extensively used as an electrolyte in dyeing. Sodium sulphate is also used for this purpose. Many of the chemicals used in dyeing are technically salts, including many dyes.

**Salt accumulation:** When recycling e.g. rinsing water which is sometimes still cleaned in in-house waste water treatment plants, the salts remain dissolved in the water and are not removed. When the recycled water is reused
as process or rinsing water, more salt is added to the salt concentration already present from the first use of the water. If part or all of the water is used several times, the salt water concentration continues to increase imperceptibly and may become a source of interference.

**Salt Dyes:** See **Direct dyes**.

**Saltillo:** Woollen blankets made by the natives of Northern Mexico, with a large and richly ornamented medallion, consisting of various coloured concentric bands. This medallion is in the center of a ground covered with small all-over geometrical designs in vertical or diagonal rows. The leading colours of these blankets are blue or red with smaller quantities of green, yellow and black. The weave is usually very fine; the selvages are finished smoothly and without overcasting and the ends are finished with fringes. These blankets are used as ponchos or serapes.

**Salting:** This refers to incorrect precipitation of dissolved dyestuffs or textile auxiliaries as a result of excessive addition of electrolytes which results in bronzing and insufficient fastness to crocking.

**Samardine:** Plain French serge, made with eight ends and four picks in a repeat.

**Samarkand:** Medium size rugs made in Central Asia of wool, silk or cotton web and loose cotton or silk pile, tied in Senna knot. The design shows Chinese influence with five or less medallions, fret-work patterns and odd, stiff flowers. The colours are yellows, blues, reds, browns and white.

**Samis or Samit:** A medieval fabric made with very heavy silk or hemp warp containing six threads and flat gold filling (tinsel). Originally was made in Italy. It is believed by some to have been similar to velvet.

**Sample:** (1) A portion of a lot of material which is taken for testing or for record purposes.

(2) A group of specimen used, or observations made, which provide information that can be used for making statistical inferences about the population(s) from which the specimens were drawn.

**Sample blankets/section blankets:** Woven trial pieces with differing sections across the warp. These sections may vary in colour, yarn type and/or weave.

**Sample, bulk:** See **Bulk sample and Lot sample**.

**Sample, discrete:** See **Discrete sample**.

**Sample, laboratory:** See **Laboratory sample**. A sample taken to represent the lot sample or the original material and used in the laboratory as a source of test specimen.
Sample, lot: See Lot sample.

Sample skein: Skein reeled from the package or beam of the laboratory sample, and used in the laboratory as a source of specimens.

Sampling unit: An identifiable discrete unit or subunit of material that could be taken as part of the sample.

Sampling Vessel: This is a small vessel attached to the dyeing machine, in which quantities of sample are switched to the secondary liquor cycle. These are connected to the dyeing machine so that the test specimens (samples) can be incorporated into the liquor circulation during dyeing. The interconnecting valves between the dyeing machine and the sampling container should be closed to remove the sample. The liquor should then be drained off from the sampling vessel and this must also be vented if necessary.

Samuhu: (1) Good bast fibre, yielded by a species of the Chorisia tree in Argentine; used for cordage; (2) Silky, flexible but short fibre, yielded by a species of the Bombaceae in Paraguay; used for ponchos, etc. The Indians use the net-like bast for various purposes.

Sancowad Process: Short liquor dyeing process (Sandoz) for fully fashioned articles, stockings, socks, etc. with liquor-to-goods ratios of 1 : 1 to 1 : 2, using special textile auxiliaries which produce microfoam.

Sand: Used as a filter medium in fibre manufacture, particularly used in spinning packs for nylon or polyester production.

Sand Crepe: A type of crepe. A typical sand crepe with apparel weight will have a texture of 90 x 70 and is woven in small broken crepe weave. Short yarn floats in no discernible pattern give an irregular surface texture. Used for dresses and blouses. See Crepe.

Sand filter: A layer of sand through which water or wastewater is passed and filtered.

Typically the sand is contained in open concrete tanks. Rapid gravitys and filters have a downward flow through the sand and are common in water
treatment. See also biflow filter, continuous backwash up flow sand filter, moving bed sand filter, pulsed bed sand filter, slow sand filter, upward flow sand filter. In stormwater management, a 0.5 m deep sand bed, down through which stormwater passes in order to remove much of the suspended matter before the stormwater enters the sewer. The typical sand size is 0.5 mm. The sand filter may be in an underground structure or it may be built just below ground level with a cover of topsoil and grass. Other storm waters and filters include linear stormwater sand filter or peat sand filter.

**Sandarc Gum**: Natural Resin from the bark of a North African cypress. Lemon yellow pieces, powdery, fresh surface fracture with glassy lustre. Melting point approx. 135°C. Soluble in alcohol, chloroform, distilled oils. Only used occasionally for silk ribbon finishes and lacquers.

**Sanding**: Sanding is distinguished from Emerizing in that only one roller is used as a tool per machine, whereas several rollers work on the fabric in emerizing. A guide roller advances the fabric as close as possible to the abrasive roller which operates at high speed. The distance determines the sanding effect and must therefore be accurately adjusted.

**Sandwash silk**: Firstly, the silk is treated with an enzyme (protease) in the drum washing machine in a weak alkali bath with a low liquor-to-goods ratio. This causes the fabric to peel slightly and at the same time, the mechanical strains on the fabric cause a slight napping of the silk fibres. Together with the appropriate final finish, this achieves the characteristic sandy soft handle. Ready-to-wear items are often finished in this way.

**Sandwich**: A method of preparing fibre mixtures by layering them horizontally in alternating layers with all elements in the proper proportion. Vertical sections are cut and fed to the next machine in the process, where blending is effected.

**Sandwich dyeing**: Method of impregnating used predominantly for synthetic fibrous material, mainly to dye light shades whereby the material, rather than being fed through the liquor and squeezed, passes in close contact between two endless absorbent cloths which constantly absorb liquor. Dyestuff from these liquors is thus transferred to the material to be dyed.

**Sandwich effects in dyeing (greyness)**: A dye migration phenomenon in continuous dyeing. The dye migrates from the surface to the interior of the textile material or the dye is washed off the textile surface. As a result, the textile material only appears to be dyed in the middle whilst the surface has a whitish appearance which is often referred to as “greyness”. The problem can be remedied or prevented by using appropriate dyeing systems.
Sanfor Knits: Brand name, which is no longer protected and which is a control standard, relating to cotton knitwear. The standard is achieved by Compressive shrinkage with additional light synthetic resin finish.

Sanfor-set: Brand name which is no longer protected which is a control standard. Limited to effects of textiles which have been finished using the Liquid ammonia process and are characterized by good shrink resistance under drying conditions in a tumbler drier. This process can also be used for lighter cotton qualities.

Sanforise: Mechanical compacting is one method of reducing residual shrinkage. The process forces yarns closer together and the fabric becomes thicker and heavier. As a result of this, the net yardage yield is reduced. A Sanforizer is a fabric compactor developed by Cluett Peabody. The term Sanforized, is their registered trademark and is used to market fabrics that meet certain shrinkage specifications. The term Sanforized is now generally accepted to mean a fabric that has low residual shrinkage and the term Sanforizing is used to describe shrinkproofing processes. While the patents on the machinery have expired, the trademark is actively promoted by Cluett Peabody. The effect of Sanforizing can be seen in figure 68 which shows that open fabric structure has been closed up somewhat. The process, figure 69, consists of a range where the fabric is first moistened with steam, to make it more pliable, run through a short tenter frame (pup tenter) to straighten and smooth out wrinkles, through the compressive shrinkage head and then through a Palmer drying unit to set the fabric. The fabric is wound into large rolls under minimum winding tensions. If the winding tension are excessive, the fabric will be pulled out and the degree of compaction lessened. Usually, a lubricant is added in preceding operations to assist in the realignment of the yarns as the fabric runs through the compactor. Selection of the proper lubricant is critical for some fabrics.

Sanforized: A material which has gone through the Sanforize treatment.

Sanforized Mark: A crimped, rippled, wavy, pebbled, or cockled place in the cloth showing distortion of the texture, produced due to the wrong operation in the Sanforising process.

Sanforset®: A trade mark of Cluett, Peabody & Co., Inc., denoting a controlled standard of shrinkage performance originally developed for denims. Fabrics bearing this trademark will not shrink under home-wash, tumble-dry conditions because they have been subjected to a liquid ammonia treatment and compressive shrinkage.

Sanfor-Set®: See Ammonia process.

Sanforising mark: See Sanforized mark.
Sangati: One of the finest grades of plain Dacca muslins.
Sangi: Cast Indian satin, made of tussah silk and cotton.
Sanglier: Closely woven French fabric made of hard twist worsted or mohair yarn.
Sanitary wear: In the broadest sense, sanitary wear refers to so-called anti-rheumatic clothing. The alleviating effect is provided in conjunction with electrostatic properties and high thermal retention (heat retention).
Sanitation: Process to control the germ count with the aim of avoiding the risk of undesired germs spreading, achieving an inhibiting effect and/or counteracting damage to material caused by microbes. Antimicrobial finishes; Sanitized finishing.
Sanitised Finishing: Antimicrobial finishes). Protects textiles against the growth of bacteria and mycotoxins, achieving a deodorizing effect at the same time (sanitized finish). Currently used for lining fabrics, sportsgoods, stockings, etc. Sanitized finishing is achieved using e.g. quaternary ammonium compounds, halogenated phenols, salicylanilide derivatives, neomycin sulphate, etc.
Sanseviera Fibre: A fibre obtained from the leaves of various species of plants of the genus sansevieria, (tropical Africa, Sri Lanka). The sansevieria fibre from Sri Lanka is finer than the African equivalent, similar to Mauritius hemp. Use: for string, matting and coarse cloths.
Santos: Brazilian cotton, with a silky, white staple.
Sanyan: Variety of wild silk from West Africa.
Sanz: New Zealand. Standards organization.
Saponide: Term used abroad, especially in France, to refer to anionic organic detergent base materials, with the exception of soaps.
Saponification: Specifically in relation to manufactured fibres, saponification is the process of removing part or all of the groups from acetate or triacetate fibre, leaving regenerated cellulose.
Saponification number: The saponification number indicates how many mg of potassium hydroxide are required to saponify 1 g fat.
Saponised Yarn: Cellulose acetate filaments are treated to produce very strong yarn.
Sappy: Wool containing a large percentage of natural grease and subject therefore to excessive shrinkage.
Saraband: Small and medium size Persian rugs made of cotton warp and weft and close and short wool pile, tied in Senna knot. The design consists
almost without exception of rows of pears and many narrow borders in dark red, blue, etc.

**Sarakhs Rugs**: Heavy, all-wool Persian rugs, the long and close pile is tied in Ghiordes knot. The design consists of medallion and floral figures chiefly in rich red and blue.

**Saran Fibre**: A manufactured fibre in which the fibre forming substance is any long chain synthetic polymer compound of at least 80% by weight of vinylidene chloride units (–CH₂–CCl₂–). This fibre, which has an excellent resistance to sunlight and weathering, and is used in lawn furniture, upholstery, and carpets.

**Sarcina**: Sarcina are earth- and air-borne bacterial microbes (in coccus or cuboidal form, sporadically forming spores). Also occur in perspiration (up to 45% on the upper arm). Sarcina can be harmless but also pathogenic.

**Sardasi**: Indian velvet, embroidered with gold or silver threads.

**Saree**: See Sari.

**Sargia**: Medieval Italian twilled fabric, made of wool and silk.

**Sargues**: French serge made of linen and carded wool.

**Sari**: A sari is a wrap-around robe used by Indian women which is often printed with many patterns. It is used as plain dyed also.

**Sarille**: Trade name for Courtalds fibre. Soft cellulosic fibre, developed from viscose and used to produce warm fabrics. Mainly used in dress fabrics, household textiles as blankets, and often mixed with other fibres, such as wool, to reduce the cost.

**Sarong**: A Sarong is a Malaysian item of clothing for women which often has large characteristic batik patterns.

**Sarplar**: In England a bag of wool measuring 2,2,40 pounds.

**Sarplier**: A coarse, strong, plain woven cotton fabric; used in England for baling wool.

**Sarpuz**: Trade term for Persian and Anatolian knotted wool carpets; used as floor covering.

**Sarraux**: French linen canvas, made with blue checks; used by sailors for trousers.

**Sarsenet**: Plain, woven stout piece dyed English cotton cloth finished with high gloss, often calendered to give the appearance of a twill; used for lining, etc.
**Sarsonet**: Originally a fine silk Arabian fabric, it is now a net or veiling fabric used in millinery. Made from silk, nylon or polyeaster.

**Sartex**: Sartex is a Swiss association for textile labelling.

**Sase**: Acronym for stress at specified elongation; the stress experienced by a yarn or cord at a given elongation.

**Sash**: A waist-scarf.

**Sash Ada Tari**: Arabic term for bleached tanjibs (see) with a dark blue or lavender striped heading; used for head covering by the natives in Egypt.

**Sashing**: refers to strips of fabric that are sometimes put between blocks of a quilt to form a pattern or make the quilt larger. They are often made of patchwork.

**Sateen**: Similar to Satin but made in cotton or spun synthetic. Various satin weaves may be used in making sateen, but the 5 harness warp flush satin weave is by far the most common. It is soft and has a sheen and is often of loose construction. It is usually made in plain colours only. In pure Sateen weave the surface of the fabric consists of mostly weft floats only. The most common use of sateen is in lining of coats. It is made in different constructions. One typical warp flush lining sateen texture is $110 \times 60$, with 24s carded yarn in the warp and filling. For weft flush lining sateen a construction of $70 \times 120$ with 30s warp and 40s weft may be an example. The fabric is usually starched and calendered or shreinerised to get the glossy finish. Another use is as curtain linings. It does not wear particularly well; seams tend to pull and crack mark appear where hems are pressed.

**Sateen Fabric**: A fabric made from yarns with low lustre, such as cotton or other staple length fibres. The fabric has a soft, smooth hand and a gentle, subtle lustre. Sateen fabrics are often used for draperies and upholstery.

**Sateen, fine**: Fine sateen is used for dress goods and sleeve linings are made from combed mercerized yarns. A thread count of $140 \times 90$ with 60s warp and 80s filling could be used for such a sateen. Fine heavy sateens, made from 8-harness satin weaves are called Venetian.
**Sateen, heavy:** Are used for outer wear such as windbreaker jackets and sky suits. In construction, finish, and uses these sateens are quite similar to shee gabardine, but normally they are slightly heavier.

**Sateen, tickings:** They are used for pillow covers and similar articles. They are heavier than lining sateens, a typical construction being $100 \times 50$ with $12s$ warp and $20s$ filling.

**Sateen:** (a) A fabric made in sateen weave.
(b) Weave A weft-faced weave in which the binding places are arranged with a view to producing a smooth fabric surface that is free from twill (q.v.).

*Note:* To prevent confusion with “satin”, it is preferable to refer to this as “weft sateen weave”.

**Sati-drap:** French dress goods, made of cotton or silk warp and woollen filling of the same colour, forming a weft satin. It is fulled in the finish; obsolete.

**Satin:** Examples of satin weave fabrics are cotton damask, sateen, ticking, linen damask, silk, rayon or other synthetic damask, satin.

**Satin, envess (silk):** Warp of organzine and weft of tram with a 45’ diagonal weave structure. Evensided twill with strongly marked slant ribbed effect.

**Satin:** A fabric that is very smooth on the right side (although sometimes both sides are satin weave). This smoothness is produced by weaving in an interlaced pattern. Satin weave fabrics are produced from all yarns including silk, acetate, nylon, viscose, polyester, cotton.

**Satin-back:** Any fabric of any fibre where the reverse side is of satin weave.

**Satin, duchesse (silk):** a thicker, richly lustrous satin.

**Satin:** (1) Name derived from atlas or satin weave. Generic term for various, mainly lustrous materials, predominantly manufactured using 5-weave satin. Worsted satins are either napless (e.g. satin de Chine) or finished with a fine nap; carded satins almost always have a napped finish. Fabrics with a particularly napped finish have an intense shine which is further emphasised by the weave. (2) Smooth fabric (silk, viscose, wool, flax, cotton, etc.) with high sheen, in atlas or satin weave, e.g. Duchesse satin, cloth; liberty, etc., see 1.

**Satin d’Amerique:** Satin made of mixture of silk and agave fibre.

**Satin Back:** Velvets or taffeta and other ribbons made with a reverse side of satin.

**Satin Berber:** Stout worsted fabric, made in satin weave and finished with a lustre.

**Satin Bonjean:** French worsted trousering, fulled in the finishing.
Satin de Bruges: Upholstery satin of silk and wool.


Satin de Chypre: Obsolete French silk satin.

Satin de Laine: (1) French twilled drapery, made of English worsted, in solid colours, printed or brocaded; (2) French dress goods and cloaking made in various coloured brocaded patterns in satin weave.

Satin de Lyon: Silk satin made with a twilled back, and finely striped face; used for lining.

Satin Cloth: A lightweight woollen dress goods, made in satin weave and lustred.

Satin Damask: (1) the best grade, lustrous linen damask, used for table linen; (2) rich silk satin with fancy Jacquard designs woven either in fancy weaves or in pile.

Satin Delhi: Fine worsted satin.

Satin Duchesse: Fine, stout and very lustrous silk satin, woven in eight-end satin weave.

Satin Ermine: 40-end French silk satin ribbon, made with two sets of warp, one set forming a taffeta back, the other the satin surface, similar to the fur or the plush.

Satin Fabric: A traditional fabric utilizing a satin weave construction to achieve a lustrous fabric surface. Satin is a traditional fabric for evening and wedding garments. Typical examples of satin weave fabrics include: slipper satin, crepe-back satin, faille satin, bridal satin, moleskin, and antique satin.

Satin Figaro: Eight-end silk satin dress goods or millinery trimming, the warp being of alternately different coloured threads.

Satin fabric, warp knitted: The technical face of a satin fabric is similar to the face of a locknit fabric. The technical back of the fabric is smoother and shinier due to longer underlap movement of the front guide bar. It contracts in a widthwise direction when leaving the knitting zone due to longer underlap movement of the front guide bar. It has a curling tendency and greater risk of snagging.

Satin finish: High gloss given to cotton, wool or silk fabrics by calendaring.

Satin Foulard: Smooth and highly finished silk foulard.

Satin Grec: Solid coloured silk satin lining or dress goods made with single warp and high finish. Satin Grec is a 12-harness satin, in which a taffeta point is added to each place of interlacing, thus giving the cloth a much firmer hand.
**Satin Jean**: A stout, heavy cotton jean, made with a highly finished, finely twilled face.

**Satin Lisse**: Twilled, highly finished cotton dress goods in France, printed with small designs.

**Satin Luxor**: Rich, stout silk satin dress fabric, made with a corded face.

**Satin Marabou**: Thin, silk satin made with single marabou yarn (see) for warp.

**Satin Merceilleux**: A very soft silk dress fabric, woven in a seven-end eatin weave and given a very high finish.

**Satin National**: Six or eight-end French silk satin dress goods.

**Satin Onde**: Five or eight-end silk satin, made with single warp; used as dress goods or millinery.

**Satin Quilt**: Bleached or coloured cotton quilt, made with fine warp and ‘filling, woven plain, a second, coarse filling forming raised patterns.

**Satin Regence**: Stout, rich silk satin dress fabric, made with ‘fine runs weftwise.

**Satin a la Reine**: Closely woven six-end silk satin.

**Satin Rhadames**: Fine silk satin dress fabric, made with fine diagonal lines running across the face.

**Satin Royal**: Double faced, silk satin with twilled stripes crossing the material.

**Satin Sheeting**: English cotton back thick satin, made of waste silk; used for dresses, etc.

**Satin soleil**: A version of satin weave, Satin Soleil shows a satin-like surface with a cross line appearance.

**Satin stitch, in embroidery**: Proceed with Straight Stitches worked closely together across the shape, as shown in the diagram. If desired, Running Stitch or Chain Stitch may be worked first to form a padding, underneath, this gives a raised effect Care must be taken to keep a good edge. Do not make the stitches too long, as they would then be liable to be pulled out of position. This stitch may be worked from right to left or left to right. The number of threads over which the stitches are worked may very depending upon the effect desired.

**Satin Stitch**: The satin stitch is an over and over stitch and is used on materials of all kinds for marking linen, etc. The padding is the first step and should be done in long even stitches placed closely and over one another in the center. The size and proportions of the figure or letters determine the size of the thread. Fine thread gives the best results. The outline should be run twice;
this keeps the edge firm. An even darning or basting stitches, chain stitches or outline stitch may be used if the space is not too small. The padding may be worked in an embroidery hoop to keep it smooth and even. Scallops may be padded in the same way or worked flat.

**Satin Stripe**: A fabric of almost any fibre, including cotton, that has a satin weave shiny stripe alternating with a contrasting stripe of a different weave of thickness of the yarn, even of different colour.

**Satin Sultan**: French dress goods and cloaking, also a lustrous East Indian silk fabric.

**Satin Surah**: Twilled, very soft surah, finished with great lustre.

**Satin Tick**: Very stout, cotton fabric, made in satin weave; used for upholstery.

**Satin Turc**: (1) four-end satin in France, made with single warp. It is given a high finish and is used for shoe tops; (2) French fabric made of wool and silk warp and wool filling in seven end satin weave; used for shoe tops, trousers, etc.; similar to lasting. Satin Vigoureux Dress fabric having a satin face or satin stripes, the warp yarns being printed according to the vigoureux process (see), giving a mottled colour effect.

**Satin Weave**: One of the basic weaves, plain, satin, and twill. The face of the fabric consists almost completely of warp or filling floats produced in the repeat of the weave. The points of intersection are distributed evenly and widely separated as possible. Satin-weave fabric has a characteristic smooth, lustrous surface and has a considerably greater number of yarns in the set of threads, either warp or filling, that forms the face than in the other set.

**Satin, all silk**: Is made with $300 \times 100$ construction with 18/20 denier warp and filling.

**Satin, crepe-back**: 50 to 100 denier acetate warp and 75 to 120 denier dull crepe twist acetate in the filling is used for this fabric. Textures range from $200 \times 50$ to $400 \times 100$. A normal construction is $300 \times 70$ with 75 denier bright yaen in the warp and 100 denier dull crepe twist yarn in the filling.
**Satin, plain:** (Panne): A typical construction is 110 × 40 to 300 × 80, with 75 to 150 denier lustrous yarn used in the warp and 75–300 denier yarn in the filling. The main feature of plain satin is its lustre and beauty.

**Satin Zephyr:** French dress goods, made of cotton warp and woollen filling, with a weft plush satin weave, fulled in the finish.

**Satine:** Twill lining that are given a glossy finish are called satine, sometimes.

**Satinet:** A cheap clothing material similar to cassimere, made with a cotton warp and a filling of short, inferior, shoddy wool which is mixed with enough long wool to enable it to be spun and woven in a way to bring that filling to the surface of the cloth; afterwards fulled, sheared, and the pattern printed on the face.

**Satinette:** Satinette is a combination of Satin and finette (cotton twill napped on one side in linen goods). The warp consists of lustrous viscose filament, the weft is cotton; the weave is in the form of 5-weave warp satin. The lustrous warp is generally found on the fabric face, whereas the cotton warp on the reverse side of the fabric is very napped. Used for night-shirts and pyjamas.

**Saturated vapour:** A vapor that is in equilibrium with its solid or liquid phase. A saturated vapor is at the maximum pressure (the saturated vapor pressure) at a given temperature. If the temperature of a saturated vapor is lowered, the vapor condenses. Under certain circumstances, the substance may stay temporarily in the vapor phase; i.e. the vapor contains more than the equilibrium concentration of the substance. The vapor is then said to be a supersaturated vapor.

**Saturation, in colour chemistry:** The attribute of colour perception that expresses the amount of departure from a gray of the same lightness. All grays have zero saturation (ASTM). See chroma/chromaticity.

**Saturation bonding:** A process of binding fibres into a nonwoven fabric by soaking the web with an adhesive.

**Saturation Bonding:** A method of making nonwoven fabrics in which a fibre web or batt is treated by overall application of an adhesive in the liquid form.

**Saturation Limit:** (1) The maximum intensity or purity of a colour. If the colour is as brilliant as possible, it is at saturation; if the colour is subdued or grayed, it is dull, weak, and low in intensity. (2) The upper limit concentration of a solute in a solvent, i.e., no more solute can be dissolved at a fixed temperature and pressure.

**Saturation Value:** The maximum amount of dye that can be absorbed by a textile fibre under defined conditions.
**Saturator**: A machine for thoroughly wetting fabrics with aqueous solutions or allowing interchange of liquor in wet-on wet processing like continuous bleaching, mercerization etc.

**Saturator, in ETP**: A pressure chamber in which air can be injected into water at (say) 4 atm pressure—e.g. as a part of dissolved air flotation. A saturator can be either unpacked (empty) or packed with stones or plastics medium. Packing helps to break up the bubbles and flow pattern. The retention time is normally from 30 to 60 s.

**Sauressig Printing Machine**: In this machine, the printing heads are arranged vertically one above the other, unlike conventional roller printing machines where they are positioned around a central cylinder. The colour boxes, doctor blades and furnisher rollers are all mounted on a hinged sub-frame which can be swung to one side of the Sauressig roller printing machine to facilitate the changing of printing rollers.

**Sauressig roller printing machine**: Roller printing machines in which the central cylinder is replaced by individual cylinders for each printing roller.

**Savage**: Bleached, stout woven and hard finished cotton shirting in Venezuela, used for collars and cuffs.

**Savonnerie**: French-make rug made in imitation of Oriental knotted rugs in rococo patterns.

**Saw-tooth effect**: Defect in screen printing in the form of graduated (stepped) repeated profiles of fine pattern details which run askew; particularly undesirable with fine floral designs or figured patterning, etc. Correction: e.g. by using even finer gauze screen, use of photosensitive screen coatings with a crossed mesh effect and by correctly developing illuminated screens.

**SAWTRI**: (South African Wool Textile Research Institute).

**Saxonienne**: French silk armure dress good of small patterns, having the warp in various colours; obsolete. Saxony (a) The finest class of wool, having a short, very fine but strong and elastic staple, with excellent felting properties owing to the large number of serrations; used for the best grades of fulled fabrics; (b) A worsted fabric, originated in England during the 19th century, made with a warp of half-bred, English and Botany wool and the filling of Saxony or South-Down wool; (c) Same as merino in Scotland; 4, means a white flannelette in Canada.

**Saxony**: Originally made in the province of Saxony, Germany, the name has to be used to describe any soft, plain weave woollen or worsted cloth with a slight nap. High grade yarns are used so the term always implies a good quality cloth. It may be plain or in small checks.

Say, Saye: An all-worsted, four-harness serge of black colour, made in England since the middle ages until the 19th century; it was used for linings and shirts by certain religious orders and for aprons by the Quakers. It was usually made of Holland, English or Spanish wool.

Say Cast: Coarse wool taken from the tail part of the fleece.

Sayette: General name in France for various twilled or plain woven goods mixed with little silk. Used for lining and furniture cover.


SBR: See Sequencing Batch Reactor.

Scaffolding effect: A mixed fabric sample (e.g. cotton and polyester) has different burning properties (e.g. in a vertical flammability test) than a corresponding sample made from one of the pure fibre components. Therefore the fibre portion made from polyester fibre for example promotes better burning of the associated cotton as it is worked and spun into the blended yarn almost as a stable scaffold. The scaffolding effect therefore benefits the relative low combustibility of the polyester fibres (at best melting), whereas the relative high flammability of the cotton is increased still further by the “loose” distribution in the scaffolding, which increases the oxygen available.

Scallop: Curves or indentations along the edge of a fabric.

Scalloped Selvedge: An abrupt, narrow indentation in the selvedge of the cloth.

Scarf, in apparel: An oblong or square piece of cloth worn for warmth or as decorative item.

Scanning in photo-engraving: This process refers to the breaking up of coloured areas into colour points of varying sizes, which when observed give the optical impression of different colour intensities due to blending of the colour lying between the points on the printbase.

Scarf Cutting Machine: After the fringes of scarf fabric have been twisted and set, the individual scarves must be cut longitudinally or transversely along the unwoven warp or weft thread which is done on this machine.

Scatter rug: A small rug which is designed to be flexible and is usually cleaned by laundering.
Scattering: Diffusion or redirection of radiant energy encountering particles of different refractive index. Scattering occurs at any such interface, at the surface, or inside a medium containing particles.

Schappe (slivers): These are wool like slivers formed by repeated combing and consist of parallel running filaments of 50–250 mm in length. An important factor in spinning this material is the regularity of slivers. These are processed on a spreader in a single fleece 3 m. long and then by repeated drawing into a uniform ribbon.

Schappe (Silk): (Chappe, Floret silk). This is taken from the beginnings and ends of the cocoon which can no longer be unwound after the vegetable glue has been decomposed in a putrefaction process. The schappe undergoes further processing in a similar spinning process to that used for worsted yarn. The comber waste which falls away provides Bourette. Schappe is used e.g. for machine sewing silk and for strong silk fabrics. See Silk.

Scherli: See Broche/Scherli.

Schiffli Embroidery: Shuttle embroidery, the machine being run by a motor instead of by hand. The movement of the carriages is caused by motor power and the pantograph is operated by hand. The cross stitches are visible on both sides of the goods and the work shows the bobbin threads on the back of the embroidery.

Schiffli Lace: The name of a machine (Embroidery) producing various effects on lightweight fabrics.

Schmidt’s machine: A machine used to dye loose cotton, consisting of two cylindrical vats one mounted on the other. The outer vat hold the liquor and the inner one with a false bottom holds the material to be dyed. After loading the material its kept in position by a copper wire sieve. A paddle wheel is also provided at the centre of the vats to help the liquor to move upwards. The liquor is heated by steam pipes and is raised from the outer vessel and poured over to the inner vessel which percolates to the bottom due to the vacuum produced in the bottom due to the movement of the liquor and the paddle.

Schooner Pants: Spring bottoms, after the sailor style.

Schreiner: A fabric finishing process which smoothens the right side, often impressing a pattern at the same time.

Schreiner Calendar: Often it is desirable to increase fabric lustre without overly thinning the cloth. Schreinering is a method of doing this. Schreinering is actually embossing by the use of a very special pattern. The pattern roll has anywhere from 250 to 350 lines per inch, etched at 26 degrees from the vertical. These lines are lightly embossed into the fabric and being regular,
reflect light so as to give the surface a high lustre. This operation gives a silk-like brilliance to cotton fabrics. Schreinering mercerized cotton fabrics gives the nearest resemblance to silk.

**Scoop, In Zipper:** See **Elements, interlockable.**

**Scorch Test:** American test method (AATCC) to determine the amount of damage to hardenable synthetic resin finishes due to Chlorine retention on cellulose textiles. Also records the specific buffer capacity for each synthetic resin and each catalyst. Working principle: chlorine treatment (2.5 g/l active chlorine, liquor ratio 1: 50, 25°C, pH 9.5, 15 min), rinse, dry, condition, scorch or press between two metal plates with constant pressure and temperature (185°C, 30 s), condition. Assess by comparing the percentage average decrease in breaking strength and any yellowing which may occur.

**Scorching:** The tendering of a fibre surface by heat so as to change the colour and texture of the surface.

**Scotch Carpets:** Pile carpets, similar to the Kidderminster, with design on both sides but in different colours.

**Scotch Checks:** White muslin with plaid checks in coloured cord. Used for dresses, etc.

**Scotch ell:** 37.2 inches.

**Scotch Fingering:** Soft twist woollen yarn for knitting.

**Scotch Gingham:** Trade name for the finest grades of gingham.

**Scotch Plaid:** Coarse, very durable twilled woollen fabric, made of native wool in 'Scotland in various tartan patterns.

**Scotch Rug:** A rag rug, made with a coarse two-ply cotton warp and long and narrow strips of wool rags.

**Scotch Tweed:** Woollen tweed made in twill weave using a white warp and highly coloured weft yarns. It has a rough, shaggy appearance, and is made in various weights for suits and overcoats.

**Scotchguard:** A registered showerproof finish applied to some fabrics.

**Scott:** A Highland tartan, composed as follows: Wide red field, split in the center by a narrow green stripe with a fine black line near each edge of the green; green stripe (measuring half the width of the distance between the edge of red field and the nearest black line); group (as wide as green stripe), composed of three red and two green stripes, the latter being wider and split in the center by a fine white line; green stripe, as above.

**Scour:** Essentially, thoroughly washing fibres or fabric to remove contaminants. Yarns and fabrics may be dirty, contain natural waxes or oils, or have been
treated with size or lubricants used in spinning, weaving or knitting. These can all interfere with dyeing, often leading to non-level results. Scouring is a large topic, and the process used depends on the fibre type and its condition. “True” scouring of greige cellulosic fabrics is typically done, after desizing, at the boil or at higher temperature in pressure vessels, with as much as 10 grams sodium hydroxide per litre of water, plus surfactants, and the process may last for several hours. Commercial scouring of wool may use solvents, similar to dry cleaning, as part of the process. White fabrics sold at retail have normally be scoured at the mill; “natural” fabrics usually have not (some “natural” fabrics have been scoured but not bleached).

Art dyeing literature often refers to what amounts to laundering as scouring. This is inadequate for greige fabrics, but often quite acceptable for “white goods”. A long machine wash with the hottest water possible, about a gram of soda ash per litre of water (about a teaspoon per gallon) and some (preferably optical brightener free) detergent, followed by two rinses is usually acceptable. Sodium hexametaphosphate may be helpful if the water is hard. Woven white cottons often contain starch that will not be removed by such a limited process.

Scoured wool: Wool from the bulk of impurities has been removed by an aqueous or solvent washing process.

Scouring: A process where mill and natural dirt, waxes and grease are removed.

Scratch felt: Cheap quality woollen fabric made to resemble camel cloth. Poor wearing qualities.

Scray: That part of a processing machine where the fabric can be stored. The storage can be for giving time for reaction or synchronize the speed of one part of a machine to another, to avoid tension etc.

Screen: (1) A hollow, cylindrical, coarse-mesh wire device used in pickers and certain openers to form the loose staple stock into a sheet, or lap. The screen is mounted horizontally on a shaft on which it revolves freely. (2) A stencil used in screen printing. It is made of fine cloth, usually of silk or nylon, finely perforated in areas to form a design and mounted on a frame. The paste containing the dye is forced through the perforations onto the fabric, leaving the design. A series of screens, one for each colour, is used for multicoloured designs. (Also see Printing.)

Screen, in ETP: (1) A sieve made of a flat sheet of wire mesh or punched steel plate for separating granular material into sizes (classification). It can also be made of parallel, wedge shaped wires or bars or round wire either flat or formed into a cylinder, as in the trommel. In a mechanical sorting plant,
screens are an inexpensive first step and may also be used intermediately. (2)
In the treatment of water or wastewater, a device that removes larger solids out of the flow. At reservoir intakes, screens are usually racks of massive bars. The bars may be vertical, horizontal or at a slope. They may be cleaned mechanically or by hand. At wastewater treatment works, and sometimes water treatment works, screens are part of preliminary treatment. **Coarse screens, medium screens or fine screens** may be used. They are usually designed for a velocity through the bars or mesh of 1.2 to 1.5 m/s at maximum flow. The most common are **bar screens**. Other types include **belt screen, cup screen, disc screen, drum screen, mesh screen, vibrating screen**. (3) An embankment or a wire mesh fence, up to 3 m high, built around a **landfill** especially on its lee side to catch wind blown refuse.

**Screen Coating:** The rotary printing screen system is based on seamless rotation screens. If the perforations in the rotary screen are sealed in places using a spec. lacquer (the rotary screen is then engraved) the coating unit can be used as a single-colour printing unit for a pattern. Light squeegee pressure makes it possible to apply a small amount of paste for vertical passage of the cloth. Hence coating will be the basis for the screen engraving to make the design. The coating will be as per the engraving methods adopted. For example if a manual photographic method is adopted the coating will have photographic chemical along with it. Coating is done using a coating machine and a squeeze to apply on the flat or rotary screens. After the coating the screen is cured for the coating to adhere to the screen so that it will withstand the wear and tear during printing operation in unengraved portions.

**Screen Engraving:** The method of engraving the design (one colour on one screen) on the coated screen. There are different methods available. Like manual photographic methods, Laser engraving, inkjet engraving etc.

**Screen Films In Photo Engraving:** These are used: (a) In film printing to copy texture or grid effects into the sample pattern. (b) In photo-engraving for printing rollers to copy the Hatching into the negatives of the colour separations by contact printing.

**Screen Frames:** (film screen frames). The screen gauze is supported by the screen frame. Wood, metal, plastics and combinations of the above, e.g. metal/plastic, are suitable for the production of screen frames.

**Screen Lacquer:** This is used for prelacquering (preparation) in Screen making, as a support for photosensitive layers and as a reinforcement coating.

**Screen Magazine For Printing:** Screen magazines were placed to the side of or in front of the printing table in the first screen printing machines (Hikisch, Teximpex). They are divided into sections which can be raised and lowered in
order to bring the desired screen to printing table height. Before printing, the movable screen frame is removed from the screen magazine and is slid back into the same compartment afterwards.

**Screen Making:** After the printing repeat has been designed and the colour separation has been produced, a flat screen is manufactured using the photochemical method, or alternatively a rotary screen is manufactured using the galvano-plastic method (or less often using the photosensitive lacquer process). The carrier layer is formed by coating with gelatine, which contains ammonia and potassium dichromate. During exposure, the unexposed layers may continue to swell and can be rinsed out at a later stage. Nickel foil cylinders can also be patterned using Laser screen engraving. See **Engraving; Positive process for screen making.**

**Screen Mesh:** (Screen mesh, screen gauze), (a) Silk: elastic, insensitive to pressure and impact, durable, sensitive to strong alkalis; (b) Phosphor bronze (alloy consisting of 93% copper, 6.75% tin, 0.25% phosphorous): extremely fine wires (0.09–0.03 mm), high resistance to alkalis and acids, low elasticity gives high accuracy of registration, sensitive to pressure and impact (bulges); (c) Polyamide, polyester: fine, even and durable fabric, resistant to chemicals, low moisture absorption, sensitive to highly concentrated caustic soda solutions.

**Screen Print:** This term is used instead of Screen printing predominantly in the graphics industry. Screen print denotes the printing process in which the dye paste is pressed through the substrate as through a sieve.

**Screen Printing:** A screen resist is made by covering a frame with bolting cloth of silk, metal or nylon filament yarns. The fabric is covered with a film and the design areas are cut out of the film. Some areas of the mesh are left open to allow the dyestuff to pass through and print the fabric. The frame is laid on the fabric, and the dye is placed at one end of the frame. A rubber knife moves the dye across the screen and forces the dye through the open mesh of the fabric. One screen is prepared for each colour. Screen printing is considered by many textile authorities to be newest method of decorating fabrics.

**Screen Printing Carriage:** In principle, this is a rigid frame with four runners which are positioned in such a way that the frame can be raised vertically to a height of approx. 100 mm by operating levers. During printing the screen printing carriage is moved along the table with the screen until the repeat device locks into place. After this has engaged, the carriage and screen are lowered so the screen lies against the goods to be printed. After printing, the screen is lifted off again by operating the lever and the carriage is moved to the next repeat or the next repeat but one.
Screen Printing Machine, Automatic: These are machines which carry out the entire printing process automatically when the screens are fixed in a stationary position while the fabric moves.

Screen Printing Squeegees: See Doctor blade; Squeegee systems in printing.

Screen Printing Tables: The table, in hand screen printing, on which the item to be printed is affixed, whilst with screen printing machines, the endless printing blanket runs over the screen printing table, on which the piece good, with a backing cloth if necessary) is affixed. Wool felt is often used under the printing blanket as a flexible layer.

Screen Sequence in Screen Printing: Particular care should be taken with the sequence of screens or print pastes as this can have a major influence on the printing result, especially if fine outlines, overlaps or resists are being printed.

Screen Washing: As soon as printing operation is over the screens are to be washed to avoid choke (blocking of the perforations of the engraved portions in the screen due to the drying up of the paste) up of the perforations. This choke up is very difficult to remove. Hence the screens are washed in special screen washing equipments. The outer screen wall is cleaned using a spray ring, and the inside is cleaned with a spray head with jets. Another possibility is the turbo spray washer which is attached to the central wash water feed on the inside of the screen: there are polyamide fibres on the rotating part which are hydro extracted on the screen wall due to the rotating centrifugal force in order to mechanically intensify the washing effect of rinsing with water.

Screw Feeds: Feed systems in which the action of the screw generates pressure that causes flow. The system usually consists of a container with a closely fitting screw unit.

Screw melter: (1) Screw extruder in which frictional forces between the screw and the heated barrel contribute to rapid melting of solid polymer. This configuration is capable of high throughput. (2) System in which a screw feed is used to feed polymer to a melt grid and to maintain a constant pressure at the grid.

Scrim: See Cheese cloth: (1) A generic term for a lightweight, open-weave, coarse fabric; the best qualities are made with two-ply yarns. A low-quality plain-weave fabric of the muslin type with traditional cover factors for both warp and weft of about (2) It is very similar to cheese cloth. Normally used for backing other fabric such as fur. Cotton scrim usually comes in white, cream, or ecru and is used for window curtains and as backing for carpets. The mass
per unit area of the fabric will vary with the 35–70 g/m² when the fabric is made from cotton. (3) Fabric with open construction used as base fabric in the production of coated or laminated fabrics.

**Scrimp roller**: Also called Scroll roller. Rollers or bars (rails) characterized by grooves or projections inclined at equal and opposite angles to the centerline on each half of the rollers and used for removing folds or creases during finishing operations.

**Scroll roller**: See Scrimp roller.

**Scroop**: The sound of rustle or crunch that is characteristic of silk. Scroop is a natural property of silk, but may be induced in other fabrics to a degree by various treatments.

**Scrooping agents**: (1) Common as a finishing agent on fibres to produce specific finishing effects. Different types of scrooping agents are available to take into account water, fibre, type of fabric and intended use. Softening of textiles. (2) These are used to produce a scroopy handle (craquant, See Silk scroop). The textile fabric is treated with Marseilles soap, followed by an aftertreatment with lactic or tartaric acid. More recent methods are based on the use of ethoxylated fatty acids or paraffin emulsions.

**Scrutching**: This is a mechanical operation which, by breaking and beating the retted flax straw, separates the textile fibres in the stem of the plant from the woody matter and the bark. The next step would be ‘hackling’.

**Sculptured**: A term describing a carpet with areas of contrasting depth produced by mixing cut pile and loops.

**Scutcher (Finishing)**: A machine for continuously opening fabric which has previously been in rope form. Automatic and manual machines are available for this.

**Scutching**: The process of running a fabric in the scutcher. See Scutcher.

**Scutching (flax)**: (breaking). This is the first stage in Flax processing after retting and drying, and involves breaking down the brittle woody tissue into shavings. It can be carried out either manually or mechanically using a pair of fluted rollers. It is followed by the scutching process.

**Scutching Tow**: Is the by-product of the scutching of flax straw, often being rescutched; it is classified in Ireland as coarse, fine and rescutched; used for ropes.

**Seye Depth, in body measurements**: The distance from the cervicale to a point level with the armpit.

**SDC**: Society of Dyers and Colourists (British) Their web site is at www.sdc.org.uk.
SE: Silk (mulberry silk).

S.E.B. (Single-End Break), in sewing: Refers to the singleend breaking strength of the thread or tensile strength when stress is applied across a singlestrand of thread until it ruptures. S.E.B. is usually measured in pounds, ounces, or grams.

Sea Island cotton: The best quality cotton fibre in the world. It is strong, sift nad smooth and made into top quality cotton yarn and fabrics in both plain and printed. Since the production is very limited the fabric made out of these fibres are very expensive.

Sea jute: A brown, brittle fibre composed principally of lignocellulose (Lignin) and similar to Peat fibres and being obtained from dead plant material on the Southern Australian coast, where it is obtained in great quantities. Used mainly for insulation and packing.

Sea Silk: Term applied to the strong lustrous fibres yielded by certain algae.

Sea Weed Fibres: yielded by species of algae; used for cordage, fishing lanes etc.

Seal: Black or grey in colour, the hair is shiny and flat with coarse texture; not hard wearing.

Seal Plush: Silk plush cloaking imitating real sealskin, the dyeing material is tipped on the ends of the pile, which has to be straight and slanting in only one direction.

Sealskin: Fur of the Alaskan seal, usually dyed black or brown. It is very hard wearing.

Sealskin Plush: (musquash). An imitation sealskin. Furlike plush consisting of a backing fabric with pile on one side, 3-5 mm thick, extremely lustrous, made from Tussah or Schappe silk, the cheaper grades also of cow hair; dyed in the piece in black to imitate real sealskin; used for coats.

Seam: A line where two or more pieces of fabrics are joined, usually near the edge. A seam is the line of sewing that joins two or more pieces of fabrics, usually near the edge; it may be plain or ornamental. The most important are the overhand, felled, French, slot, lapped, flannel, and beaded.

Seam, book/booking: The raw edge hem done on a blind stitch machine, usually sewn in the side ans back seam outlets, and on the bottom turn-up.

Seam, French: A closure between two pieces of material, made by stitching, turning, and re-stitching so as to conceal all raw edges.

Seam, open gorge: Both the collar and the facing are turned under, basted, and then the seam is felled (edges folded together) from the outside.
**Seam, raised**: A seam resulting after two pieces of fabric have been joined; one piece is folded back, and a second row of stitching is placed adjacent to the folded edge.

**Seam allowance, in sewn fabrics**: The width of the fabric used in making the seam assembly bounded by the edge of the fabric and the furthest stitchline. (The distance from the edge of a fabric to the parallel stitchline furthest from the edge.)

**Seam assembly**: The composite structure obtained when fabric(s) are joined by means of a seam.

**Seam busting**: Pressure open seams, often carried out as an intermediate operation during garment assembly.

**Seam damage, in sewn fabrics**: A reduction in seam efficiency caused by a change in the physical condition of one more of the components in a seam.

**Seam detector for jet dyeing machines**: This is used for fabric control (monitoring the dyeing process), to stop the passage of the cloth (for sampling), to count the piece cycle and to determine the cycle time. The seam detector consists of a sampling probe, electronic kit and a display unit. As the sampling probe passes the jet pipe (secondary cradle mounting also possible), through which the goods are being transported in rope form in the liquor, the pre-marked seam (marked using a ferromagnetic body Ø 50 mm, 0.1 mm thick) causes the impulse which controls the passage of the goods and stops the piece circulation.

**Seam efficiency, in sewn fabrics**: The ratio, expressed as a percentage, of the breaking force required to rupture a sewn seam to that required to rupture the fabric.

**Seam engineering, in sewn fabrics**: The procedures used to select a specific combination of sewing thread, stitch type, seam type, and stitch density to achieve the maximum sewn seam strength for a particular fabric type.

**Seam failure, in sewn fabric**: That point at which an external force (a) rupture the sewing thread, (b) rupture the fabric, (c) causes excessive yarn slippage adjacent to the stitches, or (d) causes any combination of these unacceptable conditions.

**Seam finish**: A treatment of the raw fabric edges of the of the seam allowance in a plain seam.

**Seam grin**: Gaping of seam under stress usually due to inadequate thread tension at sewing.
**Seam interaction, in sewn fabrics:** The net effect of the relationship between the combination of fabric, seam type, stitch type and stitch density on seam efficiency.

**Seam mark:** Also called stitch mark. A particular form of pressure mark (q.v.) in a fabric, and that is produced by the relief print-off of defects such as slubs or seams joining lengths of fabric, under excessive rolling tension or by contraction on the roll during wet processing.

**Seam mark, in finished fabric:** A pressure mark caused by the thickness of the seam being pressed against the cloth. A defect consisting of separated yarns occurring when sewn fabrics pull apart at the seams. Seam slippage is more prone to occur in smooth-yarn fabrics produced from manufactured filament yarns.

**Seam opening:** See **Seam busting**.

**Seam protection:** If a fabric with a seam is passed through the cutting device of a shearing machine, the shearing blade will destroy the fabric along the seam. The cutting device therefore raises up from the shearing table (or preferably vice-versa). As the seam passes through, a seam protection plate automatically slides between the fabric and the cutting device and covers the shearing point until the seam has passed.

**Seam pucker:** Generally unwanted material waviness along the line of stitching.

**Seam ripper:** A tool used to undo the seams and removing stitches.

**Seam, sewn:** See **Sewn seam**.

**Seam slippage, in sewn fabric:** The partial or complete loss of seam integrity manifested by yarn slippage parallel to, or adjacent to the stitch line.

**Seam slippage:** The movement of warp and weft threads away from a seamline under traverse stress.

**Seam smoothness, in fabrics:** The visual impression of planarity of a seamed specimen quantified by comparison with a set of reference standards.

**Seam type, in sewn fabrics:** An alphanumeric designation relating to the essential characteristics of fabric positioning and rows of stitching in a specified sewn fabric seam.

**Seam welding:** Any stitchless procedure for joining fabrics based on the use of thermoplastic resins or the direct welding of thermoplastic materials. Seam welding is an alternative to conventional needle-and-thread seaming operations that is extremely popular in the nonwoven field.
Seam, bound: A seam having its material edges bound with a strip of additional material.

Seam, butt: A seam which is sewn with the two material edges abutting.

Seam, flat lock: A butt seam formed using a flatlock stitch.

Seam, french: A seam in which two pieces of material are superimposed, stitched together and then folded over and stitched again to conceal the edges thus producing a flat folded seam with only one row of stitching visible.

Seam, inserted: A seam ion which a single or number of plies of material is inserted between two other which are turned in. The complete assembly is sewn in one operation.

Seam, Lap-Filled: A seam formed with the edges of both plies of material concealed by interlapping. Two or more rows of stitches secure the turned pieces of material.

Seam, Overlock: A seam in which two or more edges of material are joined together, oversewn and edge trimmed in one operation, with the overedge stitches having two or more threads.

Seam, Plain: A seam formed by a row or rows of stitches joining two pieces material together face-to-face.

Seam, Rolled: A seam where the two edges of the materials to be joined are rolled together and secured by a single row of stitching.

Seam, taped: A seam which includes straight tape. Normally used to prevent or control stretching and for strength.

Seam mark: A particular type of pressure mark in the finished fabric. It is produced during finishing operations by the thickness of the seam used to join pieces for processing. See Stitch mark.

Seaming: Joining the overlap of two pieces of fabric, usually near their edges.

Seamless: A term that describes a tubular knit fabric without seams, e.g., seamless hosiery.

Seamless Hose: Made on the circular knitting machine without any seam and in one width throughout the whole piece. It is shaped on drying boards.

Seamless Knitting: A unique process of circular knitting, done on either Santoni or Sangiacomo knitting machines. This circular knitting process essentially produces finished garments with no side seams, which require only minimal sewing to complete the garment. Seamless knitting can transform yarn into complete garments in a fraction of the time it takes for traditional garment manufacturing, by minimizing the traditional labor-intensive steps of sutting and sewing.
**Seamless Technology**: This term can refer to either “seamless knitting” (See Seamless Knitting), or “welding/bonding technology”, which uses a bonding agent to attach two pieces of fabric together, and eliminates the need for sewing threads. (See welding.)

**Seasonal ranges**: Ranges produced for the different seasons Spring/Summer and Autumn/Winter. Mid-season ranges may also be produced.

**Seat**: Part of trousers or similar garments covering the buttocks.

**Seat Angle**: The quantity of material (5-8 cm.) allowed at the seat on the underside for ease of movement.

**Sebastopol**: Fine twilled woollen dress goods with very fine, different coloured narrow runs visible only when the fabric is draped.

**Secant Modulus**: The ratio of change in stress to change in strain between two points on a stress-strain diagram, particularly the points of zero stress and breaking stress.

**Second Cuts**: Fribs, or short lengths of wool resulting from cutting wool fibres twice in careless shearing. An excessive number of second cuts decreases the average fibre length, and depreciates spinning quality.

**Secondary Backing, in pile yarn floor covering**: A material adhered to the backing fabric side of a pile yarn floor covering.

**Secondary Colours**: Green, orange, and violet, each of which is obtained by mixing two primary colours. Orange is made by mixing equal amounts of red and yellow; green is an equal mix of yellow and blue; and violet is made of blue and red.

**Secondary Creep**: The nonrecoverable component of creep. (Also see Delayed deformation.)

**Secondary sedimentation tank, s. settling tank, s. clarifier**: Sedimentation tanks used after biological treatment of a wastewater to settle out the biomass that has formed in the biological reactor from the treated effluent. These tanks are also known as biomass separators, activated sludge settling tanks or humus tanks (when used after trickling filters). Radial flow tanks are common but horizontal flow tanks are also used. Tanks are typically 2.5 to 4 m deep and the surface loading rate is from 20 to 45m3 per day per m2 of tank surface area. In small treatment works, pyramidal sedimentation tanks, or pebble bed clarifiers may be preferred. See secondary sludge, solids surface loading rate.

**Secondary sludge**: Sludge from secondary sedimentation tanks (return activated sludge or humus sludge). In temperate climates secondary sludge is often returned to the primary sedimentation tanks and is there thickened.
to give a mixed sludge. In hot climates this may be unsuitable because the secondary sludge becomes anaerobic very quickly and rising sludge is seen in the primary tanks. Flotation may be better than sedimentation for secondary sludges in warm climates. See sludge production.

**Secondary treatment:** In wastewater treatment, the treatment process that follows primary treatment. It is used to remove the remaining organic solids that have not been removed in primary treatment together with the 90% or more of the dissolved organics. Aerobic biological treatment is commonly used. Secondary treatment may also incorporate nitrification and biological phosphorus removal.

**Second-hand filling material:** An industry product which contains any filling material which has previously been used should not be offered for sale unless a clear and conspicuous disclosure of that fact is made on the label thereof and in all advertising and invoices relating to such product.

**Second-Order Transition Temperature:** The temperature at which the noncrystalline (amorphous) portions of polymer melt or become plastic. An inflection point or change is stress-strain properties occurs at this point; however, for most fibres, this change is small.

**Seconds:** (1) Imperfect fabrics (woven or knitted) containing flaws in the weave, finish, or dyeing, and sold as “seconds.” (2) See Yarn quality.

**Section Beam:** (1) A large, flanged roll upon which warp yarn is wound at the beam warper in preparation for slashing. (2) Small flanged or unflanged beams assembled side-by-side on the shaft of a warp beam for further processing.

**Section blankets:** See Sample Blankets.

**Section draws:** This division of drawing-in drafts is used extensively in all manufacturing; for instance, in all fabrics having a ground warp and a binder warp, also in double-face goods, or where two different weaves are combined in one effect. One or more threads are drawn on the first section, then one or more on a second and third, if the harness is divided in so many sets.

**Section Mark, in woven fabrics:** Warp bands of different colour, texture or lusture.

**Section Mark:** Warp stripes/bands of different colour or texture or both that occur at regular intervals across part or all of the fabric width as the result of tension variation in the sections during section warping (q.v.) or because of differential dyeability of the warp yarns.

**Section number:** Section number = Total no. of threads/Creel loading capacity. If the calculation does not give an exact number, the last section
will be produced with a number of threads lower than the other sections, or the number of threads composing each section will be reduced so as to get all sections with one and the same number of threads.

**Section warping:** See **Sectional warping**.

**Sectional warp beams:** are warp beams with protruding pegs that separate the beam into sections, usually 1–2” wide each. The warp is wound into each section separately.

**Sectional Warping:** The parallel winding of several warp threads to produce the warp beam. The yarn is stretched on large frames and guided through gridded-like devices in such a way that the threads are wound parallel to one another on the warp beam. For particularly high warp settings and fine material, cone sectional warping machines are used. In sectional warping, it is important to achieve an absolutely uniform tension when winding the individual warp threads. See **Warping Yorkshire Warping, Scotch Warping and Silk-System Warping**.

**Section width:** Section width = Reed width/number of sections. This way the total number of warp threads will occupy on the dresser a width equal to the width of the weaver’s beam on which they will be finally wound.

**Sediment oxygen demand:** The residual solids discharged with treated waste water will, in time, settle to the bottom of streams and rivers. Because the particles are largely organic, they can be decomposed anaerobically as well as aerobically, depending on conditions. Algae which settle to the bottom will also decomposed, but much more slowly. The oxygen consumed in the aerobic decomposition of material in the sediments represents another Dissolved Oxygen demand in the water body.

**Sedimentation:** The settling of a suspension, either under gravity or in a centrifuge. The speed of sedimentation can be used to estimate the average size of the particles. This technique is used with an ultracentrifuge to find the relative molecular masses of macromolecules.

**Sedimentation tank, settling t.:** An important treatment process in which the tank is used to settle out solid material from the water or wastewater. In water treatment, sedimentation tanks are used after **coagulation** and **floculation** and are normally known as **clarifiers**. **Primary sedimentation** is common in the treatment of domestic wastewater after **screening** and **grit removal**. Sedimentation tanks are used after biological treatment of a wastewater to settle out the **biomass** that has formed in the biological reactor from the treated effluent. These tanks have various names, including **activated sludge settling tanks, biomass separators, humus tanks or secondary sedimentation**
Sedimentation tanks may be **horizontal flow**, **radial flow** or **upward flow**. They are often designed on **surface loading rate**. The performance of the tanks may be upgraded by the use of **inclined plate and tube settlers**. In wastewater treatment, a clarifier is synonymous with **sedimentation tank**. In sludge treatment, **gravity thickening** tanks are a type of sedimentation tank.

**Sedjadeh**: Turkish name for medium sized Oriental carpets.

**Seed Coat Fragment, in cotton**: A portion of a cotton seed, usually black or dark brown in colour, broken from a mature or immature seed, and to which fibres and linters may or may not be attached.

**Seed Cotton**: Cotton, as harvested and before ginning, consisting of seeds with the fibres attached and usually including measurable amounts of foreign matter.

**Seed**: Fruit wall hairs.

**Seed hair fibres**: Vegetable hair fibres, which can be found on the seed husks of various plants. These include Cotton and Akund.

**Seeded**: Small dots strewn over the face of the fabric; same as powdering.

**Seedy Wool**: Wool containing numerous seeds or an appreciable amount of vegetable matter.

**Seerloop Gingham**: Gingham with slack-tension loops of yarn on the surface, often on the white lines only.

**Seersucker**: Cotton crimp crêpe with vertical stripes, also Craquelé. A fabric with puckered stripes alternating with the flat ones of various widths only. Stripes may be multicoloured or in a plain coloured fabric with a printed floral pattern on it. A favourite summer fabric is made on twin beam loom, which feeds the yarns at different speeds and the ockers are therefore woven in and

are more or less permanent. Normally made in cotton, polyester/cotton and even Nylon also. A good seersucker construction is 100 × 60 with 30s yarn in the warp and filling. In woven seersucker, finer yarn may be used in the coloured stripes than in the white stripes. Used for lightweight casual cloth
such as shirts, skirts, beachwear, aprons and for tablecloths and kitchen curtains. Creases do not show.

(2) From synthetic fibres, e.g. patterned interwoven, shrinkable synthetic spun yarns with different shrinkage properties. At increased temperatures, the high shrinkage material shrinks and creates the embossed design together with the more shrink-resistant adjacent material.

(3) Similar non-fast effects can also be obtained by local application of substances which cause the fibres to swell. When producing a garment made from Crêpe prepared by steeping in caustic soda, a resist print paste which contains a water repellent agent is overprinted in the direction of the warp (as the crêpe effect is only possible in the direction of the warp). The garment is then padded using caustic soda liquor. During this process, a distance of 1–1.5 m should be maintained between the trough and the padding roller so that the caustic soda solution can create a water repellent effect on the areas for resist printing.

Segovie: Very fine French serge, made of Spanish wool with a nap on the face.

SEK, SchEK: Swiss commission for fastness.

Self bonding fibres: Bicomponent fibres consisting of polymers with different melting points. If they are heated to the temperature corresponding to the fibre with the lowest melting point, this acts as an adhesive for the other components.

Self bound seam-finish: A durable seam finish which launders very well is a finish for the raw edges of the seam allowances of a plain seam, in which one seam allowances encloses both raw edges. Stitch a plain seam, right sides of the fabric together, press to lie flat. Trim one seam allowance to 3 mm. (1/8 in.) wide. Turn under the other seam allowance 3 mm. (1/8 in.) and press in a crisp fold. Turn the seam allowance over the trimmed edge. Press in a second fold so that the trimmed edge is encased. Edgestitch the seam allowances together as close to the seam line to the seamline of the garment as possible.

Self-Casing: A piece of fabric where the hem edge is folded over and neatened to create a tunnel. A drawstring or elastic is then threaded through the tunnel to draw up the fabric.

Self cross linker: In contrast to reactive resins, which tend to react more with cellulose and crosslink these, self-cross-linkers tend to react more with themselves and form resin deposits in the pores of the fibre which promote crease resistance. Self crosslinking resins.

Self crosslinking resins: Resin finishing agents which predominantly react with themselves under specific crosslinking conditions (self crosslinkers, self
crosslinking agents; ), which therefore only enter into low crosslinking reactions with cellulose (in contrast to Reactive resin) such as Urea and Melamine-formaldehyde compound. See Cross-linkers.

\[
\begin{align*}
\text{HN} & \quad \text{CH}_2\text{OH} \\
\text{C} & \quad \text{O} \\
\text{HN} & \quad \text{CH}_2\text{OH} \\
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\text{N} & \quad \text{CH}_2\text{OH} \\
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Resin forming self crosslinking mechanism in resin finishing.

**Self-extinguishing**: Term used in the Flammability test: after the ignition flame has been removed, the test fabric continues to burn for a short time, although the charred area does not increase significantly. The flame extinguishes itself, although there is still non-burned test fabric which could fuel the flame.

**Self-goods**: When the same material is used as a pocket lining, or in a waistband, collar and fly construction. Also called shell.

**Self shade**: (solid dyeing, plain dyeing). Monochromatism; occurs in fibre blends as Tone-in-tone dyeing.

**Self smoothing fabric**: Fabrics with an Anticrease finish.

**Self stitching**: See Double stitching.

**Self twist spinning**: A method of making a yarn from the roving fed to a drafting unit; the emerging strand of fibre is subjected to a cyclically reversing false twisting action which can be imparted in a number of ways. Two adjacent strands delivered from the false twist system are brought together by guides and the torque in the two strands causes them to wrap about each other. This wrapping action is defined as ‘self twist’ and produces a self twist pattern of –S-Zero-S-Zero- etc. in the yarn produced. The self twist yarn is then taken up as a cheese. Note: Further twisting may be necessary before this yarn can be used.

**Self twist twisted (STT) yarn**: A self twist yarn to which unidirectional twist has been added in a subsequent operation.

**Self-bonding fibres**: Bicomponent fibres consisting of polymers with different melting points. If they are heated to the temperature corresponding to the fibre with the lowest melting point, this acts as an adhesive for the other components.

**Self-bound seam finish**: A finish for the raw edges of the seam allowances of a plain seam, in which one seam allowance encloses both edges.
Self-cleaning: Rotating filter basket with a rinsing self-cleaning effect to discharge any lint present.

Self-extinguishing: Not defined; ASTM has a ban on this term in their standards. It has no meaning except in association with a specific test method or specific conditions of burning.

Self-fill yarn: This is a single yarn consisting of fibre slubbing (e.g. wool) and two fine synthetic filament threads which loop in alternating directions offset phase around the yarn compound which has been subsequently formed, and thus has the effect of strengthening the yarn.

Self-twist yarn: An inherently twist-stable, two-ply structure having a ply twist that is alternately S- and Z-directed along the yarn.

Selling price: The price the product is sold at.

Selvage: Same as Selvedge. See Selvedge.

Selvedge or Selvage: The narrow edge of woven fabric that runs parallel to the warp. It is made with stronger yarns in a tighter construction than the body of the fabric to prevent raveling. A fast selvage encloses all or part of the picks, and a selvage is not fast when the filling threads are cut at the fabric edge after every pick.

Selvedge cutting device: This is a device which is used to cut the selvedges and remove the edge waste.

Selvedge feeler: Non-contact scanning device which operates mechanically or photoelectrically to guide the cloth, particularly on stenters.

Selvedge gassing machine: This is used to remove loose threads on the selvedge by gas singeing.

Selvedge guider: An electronic or mechanical device for presenting fabric straight to stenter pins or clips.

Selvedge mark: A more or less regular mark in the finished cloth along the selvedge produced by folded or doubled selvedge during the finishing operation.

Selvage mark, in finished fabrics: A lengthwise crease mark along the selvage caused by an edge being folded or doubled.

Selvedge monitor: This is a safety device which switches the machine off if one or both of the selvedges is no longer held by clips or the needle bar.

Selvedge printing machines: (selvedge printers). These are generally combined with inspection machines on measuring machines, or less commonly with fabric batching machines. Company logos or advertising slogans are printed on the selvedges using heat transfer printing units.
**Selvage or Selvedge**: The thin compressed edge of a woven fabric which runs parallel to the warp yarns and prevents raveling. It is usually woven, utilizing tougher yarns and a tighter construction than the rest of the fabric.

**Selvage uncurler**: A device for straightening selvedges and fabric edges which have rolled during processing or other ways.

**Selvedge**: The longitudinal edges of a fabric that are formed during weaving with the weft not only turning at the edges but also passing continuously across the width of the fabric from edge.

*Note*: Selvedges are often up to 20mm wide and may differ from the body of the fabric in construction or weave or both, or they may be of exactly the same construction as the body of the fabric and be separated from it by yarns of a different colour. Although selvedges may contain fancy effects or may have brand names or fabric descriptions woven into or printed on them, their main purposes is to give strength to the edges of the fabric so that it will behave satisfactorily in weaving and subsequent processes. (a) Leno Edge A set of threads that interlace with a leno weave (q.v.) either at the edge or in the body of a fabric. In the latter case, it prevents fraying when the fabric is severed in the direction of the warp.

*Note*: When in the body of the fabric, a leno edge is often referred to as a “central selvedge”.

(b) Sealed Edge. The cut edge of a fabric that has been treated by heat or chemical means to prevent fraying of the edge.

(c) Shuttleless-Loom Edge.

(i) In some cases, either one or both edges are different from the normal woven selvedge in that the weft is held in position at the turn by threads other than the warp threads, e.g. by the use of an independent thread to lock the weft in position at the edge, or by interlocking of the weft threads. In narrow-fabric weaving this type of edge is often called a “needle loom selvedge”.

(ii) In other cases, the weft is severed just beyond the edge of the fabric and the cut end is tucked into the shed (q.v.) formed on the next pick.

**Selvedge, jacquard**: A selvedge that has a jacquard-woven pattern or lettering.

**Selvedge cutting device**: This is a device which is used to cut the selvedges and remove the edge waste.

**Selvedge feeler**: Non-contact scanning device which operates mechanically or potoelectrically to guide the cloth, particularly on stenters.

**Selvedge gassing machine**: This is used to remove loose threads on the selvedge by gas singeing.

**Selvedge guider**: See Expander.
**Selvedge mark, in finished cloth:** A lengthwise crease mark along the sledge caused by an edge being folded or doubled.

**Selvedge monitor:** This is a safety device which switches the machine off if one or both of the selvedges is no longer held by clips or the needle bar.

**Selvedge trimming Machine:** See Selvedge cutting device. This is used to remove from the selvedges loose, overhanging nonbound selvedge trailers which occur in weaving. The thread ends are cut off using a special shearing tool and extracted.

**Selvedge uncurler:** (scrollers). This is a device to uncurl, unfold and stretch fabric and knitwear selvedges which have been rolled or turned up.

**Selvedge unroller:** These are used to open, unroll and stretch surface sensitive woven and knitwear with folded edges or rolled selvedges.

**Selvedge, tight:** A continuous filament thread that has lost some of its filaments, usually as a result of abrasion or excessive tension during winding or weft insertion and that appears as a thin yarn.

**Selvedge printing machine:** (selvedge printers). These are generally combined with inspection machines on measuring machines, or less commonly with fabric batching machines. Company logos or advertising slogans are printed on the selvedges using heat transfer printing units.

**Selvyt:** An unfinished velvet, made of harsh cotton, used for polishing cloth.

**Semal:** Cotton Silky fibre yielded by the Indian bombax malabaricum. It is straight and flattened and used for stuffing.

**Seme:** French for powderings or small patterns over the ground of the cloth, lace, etc.

**Semi-automatic:** Certain machine work stages are initiated manually but run automatically. Only part of the processes are automatic.

**Semi-bright Wool:** Grease wool that lacks brightness due to the environment under which it is produced, though it is white after scouring.

**Semi-broad cloth:** See Broad cloth.

**Semi-collapsed balloon spinning:** A system of ring spinning in which the rotating yarn balloon is eliminated at the start of an empty bobbin and is allowed to expand later when the bobbin is becoming filled with yarn. The small-balloon condition is achieved by allowing contact between the rotating balloon and spinning top. As the bobbin fills contact is broken and the torn balloon is allowed to reform. Note (a): The system is often used for worsted and semi-worsted spinning. Note (b): Special spindle top extension are used to obtain the required effect.
Semi-continuous bleach: Open-width boiling and bleaching process for larger batches of cotton and cotton/synthetic blends which are uneconomical for continuous plants. Device: impregnating device, Benteler batching device and open-width scouring machine.

Semi-continuous systems: In these mixed systems several operations are carried out with both continuous and discontinuous machines. For example, a continuous pad-batch machine is used to wet the fabric and a discontinuous system is then used for other treatments. These mixed systems are suitable for processing small and medium lots; they require reasonable start-up costs and grant quite good reproducibility.

Semi-decating: Semi-decating is a batch process requiring three steps: (a) Winding the fabric onto a perforated cylinder between a cotton decating apron, (b) Steaming and followed by cooling the fabric and (c) Unwinding and batching the finished fabric. Proper pressure, heat, moisture, cooling and time are prerequisites for quality results. The procedure requires that the fabric be wound onto a perforated drum between the interleaving cotton decating apron to form a reasonably thick roll. Steam is forced through the roll (inside-out) for several minutes to provide moisture and heat. Compressed air is then blown through the roll in much the same manner as the steam to remove some of the moisture and cool down the fabric. To insure that the effect is uniform from the inside to the outside of the roll, the fabric and blanket are rewound onto another perforated drum so that the outside layers become the inside layers and the cycle is repeated. At the end of the cycle, the fabric and blanket are separated and wound into individual rolls.

Semi-decatizing: See Semi Decating.

Semi-felting raising machine: Wire raising machine which guides the napping cylinder in the opposite direction to that of the direction of the cloth by moment reversal.

Semi-permeable membrane: A membrane that, when separating a solution from a pure solvent, permits the solvent molecules to pass through it but does not allow the transfer of solute molecules. Synthetic semipermeable membranes are generally supported on a porous material, such as unglazed porcelain or fine wire screens, and are commonly formed of cellulose or related materials. They are used in osmotic studies, gas separations, reverse osmosis water systems for homes and beverage industries, and in medical applications.

Equilibrium is reached at a semipermeable membrane if the chemical potentials on both sides become identical; migration of solvent molecules towards the solution is an attempt by the system to reach equilibrium. The pressure required to halt this migration is the Osmotic pressure.
Semi-pigmentation process for vat dyes: Principle: the dyebath is prepared cold with finely dispersed dyestuff, alkali and sodium dithionite and then heated slowly to vatting temperature, if necessary later to temperatures above 100°C (HT process) after reducing agents have been added.

Semi-restraint: Of or relating to a method of mounting that allows an object a limited degree of movement (for example, contaction or expansion of a fabric).

Semi-suppressed balloon Spinning: See Semi collapsed Balloon spinning.

Semi-combed yarn: A cotton yarn made from slivers that do not have all the nails removed.

Semi-worsted spun: A term applied to yarn spun spun from sliver produced by carding and gilling in which the fibres are substantially parallel, the carded sliver not having been condensed or combed. Alternatively, the yarn may be produced from a roving. Note: the above definition is descriptive of processing technique and not fibre content.

Semipermeable: This refers to the characteristic of a membrane which is permeable to specific molecules or ions, and to be impermeable to others. See Osmotic pressure; Diffusion.

Semi-poplin: See Poplin.

Semi-suppressed balloon spinning: See Semi-collapsed balloon spinning.

Semi-worsted yarn: (a) This refers to soft, full-bodied yarn, loosely or tightly twisted, produced in the semi-worsted spinning process for weaving, knitting, warp-knitting. Intermediate stage between Worsted yarn and Carded yarn. Is fuller bodied, but less strong than worsted yarn, as the short fibres are not separated using combs. Semi worsted yarn is stronger, but less full-bodied than carded yarn, on the other hand; clear finish. II. Fabric with a) a worsted warp and a carded weft or (b) twisted carded and worsted yarn, in the warp and the weft or (c) alternate worsted and carded yarns in the warp and the weft.

Semi-volie: See Voile.

Semienyoung: Black coloured Chinese velvet with cotton filling.

Sequestration: The formation of a complex with an ion in solution, so that the ion does not have its normal activity. Sequestering agents are often chelating agents.

Senegal gum: African Vegetable gums with predominant acacia content. Properties similar to those of kordofan gum, described under Gum arabic, but with less adhesive strength. Main varieties: poorest qualities: pador gum,
Encyclopaedic dictionary of textile terms

(dark amber to brown, often contaminated with sand and vegetable matter). Galam gums are purer and more water-soluble. The best qualities are found in salabreda gums which can be ground (most similar to kordofan, the purest form, colourless or slightly coloured).

**Sengfangtchen**: Chinese silk taffeta, white or ecru, with a ‘finish; about 20 inches wide. The texture is very ‘fine and regular. Used for drapery, painting, etc.

**Senna Knot**: One of the two kinds of knots found in hand-made Oriental pile carpets. A complete loop is formed by the yarn, thus having a pile extending from every space between the warp threads, thus mak-ing more knots and a denser and evener pile than the Ghiordes knot.

**Senneh carpets**: (Senna carpets). The finest and most well-known Knotted carpets from Iran. Extraordinarily finely linked patterning in finely graduated, modest colours. 250,000–600,000 Turkish knots/m².

**Senna Rugs**: Very fine Persian rugs made in small sizes, usually with cotton web and very close and short wool pile tied in Senna knots. The design consists usually of small patterns covering the entire field or of a lozenge center medallion. White, red and blue are used the ofte-neist. Very fine khilims (see) are also made in the same design and colouring.

**Separate element Zipper**: A zipper consisting of two series of separately formed elements, each attached to one of the opposing edges of two tapes, which are engaged and disengaged by the movement of a slider.

**Seperable Pin In Zipper**: A tube like element attached over the bead at the bottom end of one striner.

**Seperable Zipper**: A zipper fitted with special components at the bottom of the chain, so as to complete disengagement and then reengagement of the two stringers.

**Separator**: A component of some open-end spinning machine located inside the rotor to direct the incoming fibres to the slide surface.

**Sequencing batch reactor, SBR**: A wastewater treatment that consists of a sequence of different cycles in a reactor, but flow neither enters nor leaves the reactor until the treatment is completed, i.e. it operates on a fill and draw. An example of biological treatment in a SBR for the removal of BOD and nitrification. Other cycles can be added, for example, after filling, the next sequences can be mixed anaerobic conditions, followed by anoxic conditions, followed by aerobic conditions in order to obtain biological phosphorus removal. The next sequence would be sedimentation allowing discharge of the effluent. The final sequence would be the inflow of more wastewater that
requires treatment. An anaerobic sequencing batch reactor (ASBR) is when stage 2 is mixed but not aerated and so it is kept anaerobic.

Sequestering Agent(or sequestrant): A chemical compound that tends to bind some ‘species’ such as metal ions and keep them from being available to participate in other chemical reactions; also called chelating agents. Chemicals such as sodium hexametaphosphate, citric acid or EDTA, the choice depending on considerations such as pH and dye type, are used to sequester hardness ions such as calcium and magnesium and metal ions such as iron and copper. Care must be taken with pre-metallized dyes, since some powerful sequestering agents can actually remove the metal from the dye complex.

Sequestration: The masking of dissolved metal ions which can form deposits with certain reagents, particularly surfactants. The effect is based on the formation of complexes which remain soluble in the medium in question. Sequestering agents are generally compounds which form chelates with the cation in question.

Sequestrant: See Sequestering agent.

Sequin Lace: Crochet lace made of coloured yarn and coloured braid for the design.

Serabend Carpets: (Mir carpets), Persian Knotted carpets from the Sarawan region. Typical flame-effect patterning about the size of an egg on a red, blue or cream background. 120,000–250,000 Turkish knots/m².

Serapi Rugs: Large, nearly square Persian rugs of cotton web and short, close pile tied in Ghiordes knot. The design consists usually of a cream center medallion, floral patterns and inscriptions.

Serge: (1) A lining of cotton or linen warp and a wool or mohair filling, woven three-leaf twill.

(2) A fine, diagonal, twilled, worsted—both all worsted and with a worsted warp and woollen filling; hard wearing, used for men’s and women’s suits. A typical good quality serge will have a 70 × 64 construction with 2/40s worsted warp and filling. The weight if the fabric will be around 10-20 oz. per yard in
56 in. width. Serge is also made with 2/32s warp and 16s filling. Most serge is made with 2/2 twill weave. Serge usually dyed in Navy and Olive (for army) shades but sometimes made from stock dyed yarns. This fabric is an old favourite for semiformal for farmers.

**Serge weave**: Same as **Twill weave**.

**Serge, double**: It is constructed of two warps and two fillings. The weight runs from 12–20 oz. per yard.

**Serge, French**: It is a very high type of dress goods with a fine, lofty, springy feel. French serge is superior the average run of serge; the warp may be single or two ply worsted, filling is usually single worsted. The weight run from 6 to 10 oz. per yard and the fabric is usually piece dyed. Usually used for suits for ladies.

**Serge, French-back**: It is a men’s wear of two warps and one filling. It runs from 16–18 oz. per yard in weight and was formerly used in winter suitings.

**Serge, storm**: This fabric is lower in texture than normal serge, but heavier. Usually made with 2/2 twill weave. Made from poorer grade stock, it has lustre and ids harsh and wiry to the feel. Used as a protective outer wear like storm jackets, hence the name.

**Serge d’Aumale**: (1) XVIII century French serge, the warp made of slack twist woollen yarn and the filling of harder twisted single wool yarn; (2) Narrow and light French serge, used for lining.

**Serge de Berry**: In the 19th century a worsted in England, similar to lasting but heavier and woven with seven harnesses.

**Serge de Blicourt**: 18th century French wool serge made of slack twist warp and harder twisted single filling.

**Serge de Boys**: 17th-century English Worsted.

**Serge Cloth**: English woollen serge of smooth face and napped back.

**Serge Denim**: An 18th century pure worsted fabric in England. Believed to be same as serge de Nismes.
**Serge de Rome**: Piece dyed mostly black fine French serge, made of two-ply warp and very slack twist filling with 8-ends and four picks in a repeat. Made with or without double face. Also made of silk.

**Serge De Nîmes**: A coarse cotton fabric produced during the last century in Provence. Denim fabric for jeanswear; sail cloth trouser fabric, warp printed in indigo, originally white or brown. Specially sewn and riveted garments which are artificially aged (stonewash; sandblasted, biowash process). First jeans manufacturers to use serge de Nîmes: Lewis, Lee, Wrangler.

**Serging**: (1) Overcasting the cut edge of a fabric to prevent raveling. (2) Finishing the edge of a carpet by over-sewing rather than binding. Generally, the sides of a carpet are serged and the ends bound.

**Sericin**: Silk gum. The gelatinous protein that cements the fibroin filaments in a silk fibre which accounts about 19-28% of the raw silk. It is removed in the process called degumming. Composition: 45% carbon, 32% oxygen, 17% nitrogen, 6.5% water. Sericin has a different amino acid structure to that of fibroin (Silk structure, see Tab.), i.e. basic and particularly acid groups in higher concentration (aspartic acid, glutamic acid, serine, threonine, tyrosine). Its isoelectric point is therefore pH 4.1, whereas that of fibroin is pH 4.9.

**Sericulture**: Rearing of silk worm and producing cocoon, including growing mulberry leaves for their food etc. all together is called sericulture.

**Serpentine Twill**: A twill weave made in wavy ridges.

**Serpilliere**: The coarsest grade of unbleached, loosely woven French canvas, made of hemp tow; used for bagging.

**Served Yarn**: In aerospace textiles, a reinforcing yarn such as graphite or glass around which two different yarns are wound, i.e., one in the Z direction and one in the S direction, etc., for protection or compaction of the yarn bundle.

**Set**: The number of threads found in the fabric within an inch width. In Bradford the number showing how often a beer (40 threads) is found within a width of 36 inches.

**Set Checks**: Large checks of the same colours are set at certain distance, forming the characteristic feature of the fabric, with other colours between.

**Set Mark**: A fabric defect consisting of narrow bars or bands across the full width of the fabric that may appear either as a tight, loose, or corduroy effect caused by loom stops improperly reset by the weaver. Set marks are sometimes caused by the weaver ripping out filling yarn and then not properly adjusting the pick wheel to obtain the proper relation between the fell of the cloth and the reed.
Set Point: An input in process control that defines the desired value or range of values of the variable that is being controlled.

Set Yarns: False-twist yarns stabilized to produce bulk.

Sett, in woven fabrics: The number of warp and weft yarns in fabrics (the number of stitches in knitwear) per unit of measurement, i.e. per 1 or 10 cm, often per cm². Magnifying glasses or yarn counters are used to determine the sett. The sett therefore corresponds to the distance from the centre of one yarn to another. Whether the yarns lie closely together or form open stitches is insignificant. Not to be confused with fabric density.

Sett: The warp sett is the number of warp ends per inch—usually abbreviated as epi. The weft sett is the number of weft picks per inch—usually abbreviated as ppi.

Setting: The process of conferring dimensional stability on fibres, yarns or fabrics, generally by means of moist or dry heat. The operation of setting is applied to textile materials of all kinds but assumes special significance in the treatment of synthetic-polymer materials such as nylon, polyester, etc.

Sew: To unite or fasten with stitches made with needle and thread.

Sew together: In order to pass large batches made up of a number of pieces efficiently through the production process of textile finishing, the individual pieces are sewn together. This is carried out on an industrial sewing machine.

Sewability: Ability to sew without skipped stitches or having the thread break. Several factors effect sew ability: improper needle size, wrong thread size, excessive tension, needle heat, worn or defective sewing machine parts, and improper machine settings. Thread likewise plays a key role in sew ability. Factors in thread sew ability include elongation, uniformity, ply security, lubrication, strength, and twist construction.

Sewing force: The force applied to a sewing thread at the needle eye during the penetration of the material by the needle.

Sewing hems: In sewing the hem, the needle should take up only the edge to be hemmed down and just enough to hold on the cloth or lining. In white work the stitches should be fine, showing as little as possible.

Sewing hole, Button: A hole in either the flange or shank used to attach the button to the substrate by means of a needle and thread.

Sewing machine, in sewing: A machine that uses needles and bobbin threads in stitch formation and is primarily for home sewing use rather that industrial use.

Sewing out: Sewing parts of a garment together with the raw edges turned in.
Sewing round: Sewing round the edges of a coat to join the outer material to the facing or the facing and lining.

Sewing Silk: Made of from three to 24 reeled cocoon filaments, twisted together slack in groups of left hand twist and twisted in the reverse direction under tension.

Sewing thread: A flexible small diameter yarn or strand, usually treated with a surface costing lubricant, or both intended to be used to stitch one or more pieces of material or an object to a material.

Sewing thread: See Thread, sewing.

Sewing thread lubricant: Due to the increased demand for sewing threads made from synthetic fibres and the use of higher sewing speeds in industrial applications, sewing thread lubricants based on simple organic substances such as waxes or stearates are no longer sufficient to control the development of heat in the sewing needle, i.e. to provide a heat shield. For high sewing speeds, silicone-based products have been found to be particularly suitable.

Sew-through flange button: A button that has two or more holes in its flange for passage of a needle and thread so that the button can be attached to a flexible substrate.


Sewn seam, in sewn fabrics: A juncture at which two or more separate plies of material or materials of planar structure such as textile fabrics are joined by sewing, usually near the edge.

Sewn seam strength, in sewn fabrics: The maximum resistance to rupture of the junction formed by stitching together two or more planar structures.

Sew-through flange Button: The button that has two or more holes in its flange for passage of a needle and thread so that the button can be attached to the flexible substrate.

Sew-through shank button: A button attached to one part of a flexible substrate by means of needle and thread passed through a hole or loop in the integral shank and through the substrate.

Seydel converter: Tow-to-top processing equipment. Seydel combines the prestretching and breaking process in one machine.


SFR: Swedish Association of Textile Engineers and Colourists.

SFS: Finnish Standards Organization.

Shade: A common term loosely used to describe broadly a particular colour or depth, e.g. pale shade, 2% shade, mode shade, fashion shade.
Shade (v): To bring about, in dyeing, relatively small modifications in the colour of a substrate by adding further small amounts of dye, especially with the object of obtaining a more accurate match with a required pattern or colour.

Shade Bar: See Bar; Mixed weft; Mixed filling.

Shade Buildup: (1) The increase of depth of shade during the dyeing. To achieve a uniform shade build-up in dyeing, combinations of dyes having similar rates of exhaustion should be used so that they will be taken up by the fibre as uniformly as possible in a specified period of time over a specified rise in temperature. (2) Dyeing of polyamide or acrylic fibres with dyes or dye combinations at increasing concentrations. The purpose here is to establish the depth of shade which corresponds to the maximum build up of the particular dye or combination.

Shade Change: Change of colour in any process or a wash fastness test. During a fastness checking there can be a depth difference in the shade and a tonal change. The shade change is graded with the help of a grey scale for shade change and the tonal change is indicated by a letter in brackets along with the grading number. For example a test result is graded as 3 and a tonal change to redder is shown as 3(R).

Shade of colour: (1) (position in colour space). (2) (dyeing) Colour.

Shade number: The number allocated to each of the 24 hues in the Chromatic circle.

Shade reproducibility: The possibility of achieving exact reproducibility of shade from the same dyeing recipe. In practice, two main problems influence shade reproducibility: on the one hand, poor reproducibility may be due to errors in weighing out the dyes specified in the recipe or inaccurate volume metering on the other. Moreover, variations in substrate pretreatment or the quality and/or source of the substrate itself can also influence shade reproducibility.

Shade variation: A coloristic term for a difference in colour (usually between a particular batch and a standard) which can also be expressed numerically by means of computer colour measurement, $\Delta E$.

Shaded Filling: A defect consisting of a bar running across the fabric caused by a difference in appearance of the filling yarn, and occurring at a quill change or knot.

Shading: In cut-pile fabrics, an apparent change in colour when the pile is bent, caused by differences in the way light is reflected off the bent fibres. This phenomenon is a characteristic of pile fabrics, not a defect.

Shading: A side-to-side change in colour across the width of a fabric.
Shading, in carpet: See Pile reversal.

Shading, In Carpet: A change in the appearance of a textile floor covering owing to a difference in light reflection because of localized alteration in the orientation of the fibres, tufts or loops. Shading can occur as temporary shading, permanent shading or tracking.

Shading, Permanent: (in carpet). An irreversible localized change in orientation of the pile of textile floor covering (sometimes known as water marking, pooling, or pile reversal). See also Shading in carpet.

Shading, temporary: (in carpet) A reversible localized change in orientation described as a normal characteristic of certain cut pile floor coverings. See also Shading in carpet.

Shadow Embroidery: Shadow embroidery is worked on the wrong side of thin material, using the cat stitch. The outline of the design only shows on the right side, the body of the design being seen dimly through the material.

Shadow Lace: The density of the stitch forms the pattern in this type of machine –made lace. There is no outlining thread to make the design stand out. It is light and flimsy and is used for blouses, evening dresses, etc.

Shaft: (1) A term often used with reference to satins indicating the number of harnesses employed to produce the weave. (2) See Harness.

Shaft Mark: A fabric defect characterized by a number of floating ends, usually caused by a broken harness strap on the loom.

Shafty Wool: Strong, dense and well grown wool with good length and spinning characteristics.

Shag Carpet: A loosely tufted carpet construction with cut pile 1 to 5 inches in length and with greater than normal spacing between tufts.

Sham: A fabric covering for a bed pillow, usually of decorative fabric that matches the bed covering.

Shampoo, in cleaning of textiles: A solution of detergent in water formulated for specialized cleaning tasks.

Shank Eye, in Button: The hole or loop in the shank of a sew-through shank button or the hole in the loop of staple of a staple button.

Shank, in Button: That part positioned perpendicular to and at the centre back of the flange, and having a hole or loop for use in attaching the button to one part of a flexible substrate by means of a needle or thread, a ring, or a toggle.

Shantung: Shantung derives its name from the Chinese province where it originated. A rough plain weave silk fabric made of uneven yarns which gives
the material an irregular textured appearance due to the use of thicker yarns or long slubs in the weft. Originally made from wild (tussah) silk on hand looms in the Shandong (Shantung) province of China. Nowadays it may be produced from (a) pure silk, in which case the yarns retain all knots, slubs and other imperfections, (b) synthetic fibres or (c) cotton. An imitation silk shantung has also been produced using lower quality bourette silk. A usual texture ranges from $90 \times 50$ to $160 \times 60$. It is usually made in 40 – 45 in. wide with 75 to 150 denier rayon or acetate in the filling. In usual practice if acetate is used in the warp, rayon is used in the weft, or vice versa. Average weight will be around 5 oz. per sq. yard. Plain is normally used. A light fabric with a nep structure in the weft; The effect is called ‘Shantunn’, the name applied to this typical woven fabric, which today is found on the market in practically all fibres like rayon, nylon, acetate etc.

**Shape memory:** The ability of a garment or other textile article to hold its manufactured shape as a result of durable-press finishing. These materials are able to recover their original set shape again after changes induced by e.g. laundering, since the resin finish is only cured after the fabric has been made up into the final shape of the garment.

**Shaped Facing:** A garment is finished with a piece of fabric, with seam allowance, that mirrors the garment shape. This example shows the inside of an armhole.

**Sharps needles:** Fine, medium length hand sewing needles most commonly used for hand sewing and are also used in fine hand embroidery. They range in size from 5 to 12.

**Sharkskin:** Made from worsted yarn, this is an expensive fabric in fancy or novelty weaves, sometimes mixing colours. It is of fine texture and very hard wearing. Acetate or Viscose Sharkskin is used for sportswear. It is crisp and washes well. Needs to be ironed carefully to avoid shine. Occasionally made in silk also. Worsted sharkskin is woven in a 2/2 colour effect twill, with a texture similar to serge. A texture around $70 \times 60$ with 2/36s worsted yarn in the warp and weft may be considered characteristic. The colour arrangement is usually 1 white, 1 black or coloured, 1 white and so on in both warp and filling. Usual width 56 in.

**Sharkskin, warp knitted:** It is more rigid and more stable in a lengthwise direction than satin fabric due to shorter underlap movement of the front guide bar. The technical back of the fabric is rough due to short underlap movement of the front guide bar.

**Shaatnez:** A fabric mentioned in the Bible, made of wool and linen.

**Shabnam:** Indian name of a plain, next to the finest grade of Dacca muslin.
**Shaded Twills:** Twill weaves made in diagonals with increasing or decreasing floats. They are called single or double shaded, according to the diagonals being shaded in one or two directions.

**Shadow Check:** Patterns produced on various, always solid coloured goods by using right hand twist and left hand twist yarns both for the warp and the filling; stripe patterns are produced by using these two yarns only in the warp or in the filling.

**Shadow Lace:** Very light machine-made laces, having a mesh ground and shadow like patterns in closer mesh.

**Shafts, in weaving:** are the frames that hold the heddles. When a shaft is raised or lowered, all of the warp ends threaded through the heddles on that shaft are raised or lowered. (Harness is sometimes used as a synonym for shaft, although originally it was the name for the mounting that holds all of the shafts.)

**Shaker Flannel:** Soft, well napped white flannel, woollen with cotton warp and woollen filling; used for underwear.

**Sham Plush:** Made by raising a long nap from a twilled fabric, to imitate pile, or by using chenille filling.

**Shamrock Lawn:** Lightweight union fabric composed of cotton and linen.

**Shanking:** Very coarse and short merino clothing wool taken from the legs.

**Shappe:** Spun silk in Europe, which is partly degummed by fermentation.

**Sharak:** Arabic term for gray, bleached or dyed doriahs (see) used for outer garments by the natives in Egypt; originally it was made on hand looms.

**Shark Skin:** (1) A glossy waterproof cloth, used for raincoats.

(2) Rayon (acetate), synthetics, particularly Arnel. Worsted. Made in plain or twill (2 up 2 down). Has a heavy, semi-crisp texture. It is very smooth and slippery. Has a flat look. It is mostly made in white but some also comes coloured. It wears well and launders well particularly in Arnel. Has a tendency to turn yellow with age, but the Arnel remains pure white. Uses: All kinds of summer wear. Dresses, suits, and coats. Used extensively for sportswear, for men, women and children

**Shash:** (1) In the Bible means cotton; (2) A fine cotton muslin in Arabia; (3) Native East African name for a very thin, bleached cotton muslin.

**Shawl:** Originated in Cashmere, where it was made of pashmina. Some of the best grades are still being made in India on hand looms, the patterns are being embroidered into the ground.
The best French shawls and the Paisley shawls, made in imitation of these Oriental fabrics, are woven on power looms but the pattern is only on one side of the shawl. Other shawls are crocheted or knitted by hand or by the machine.

**Shear rate:** See Rheology.

**Shear strength:** The resistance to forces that cause, or tend to cause, two contiguous parts of a body to slide relatively to each other in a direction parallel to their contact.

**Shear Strength, in carpet:** Ability of adhesive to resist splitting.

**Shear, to:** Trimming the pile loops of knitted plush fabrics by Shearing.

**Shearing:** A dry finishing operation in which projecting fibres are mechanically cut or trimmed from the face of the fabric. Woollen and worsted fabrics are almost always sheared. Shearing is also widely employed on other fabrics, especially on napped and pile fabrics where the amount varies according to the desired height of the nap or pile. For flat-finished fabrics such as gabardine, a very close shearing is given.

**Shearing blade:** A metal cylinder with 12–18 helical knife blades around its circumference is one of the key elements of a shearing machine (Shearing). The milled cut of the cutting blades produces an oblique shearing action so that any lateral yielding of pile fibres can no longer occur.

**Shearing brush:** A brush roller to prepare the fabric pile for shearing. A brush with a fabric adjusting device in front of each shearing cylinder to achieve optimum alignment of the fibres for shearing, i.e. a pile laying brush.

**Shearing Machine:** (cropping machine) Shearing is carried out with one or several shearing cylinders accommodated one behind the other in older shearing machines or cylinders mounted one above the other in the modern machines.

**Shearing range:** A production line consisting of several shearing machines arranged one after the other for continuous Shearing. This is a much more productive alternative than the batchwise shearing of fabrics which would otherwise require several passages on a single machine.

**Sheath in feathers:** A covering at the quill point end of nestling feathers or nestling down which holds the barbs together.

**Sheath Core fibres:** Bicomponent fibres of either two polymer types, or two variants of the same polymer. One polymer forms a core and the other surrounds it as a sheath.

**Sheath, in feathers:** A covering at the quill point end of nestling feathers or nestling down which holds the barbs together.
**Sheath-Core**: A descriptive term for a multicomponent textile fibre consisting of a continuous envelope which encases a continuous, central, internal region.

**Shed**: The opening formed when the warp threads are separated in the operation of weaving. See **Warp shed**.

**Shed**: The opening formed when the warp threads are separated in the operation of weaving. See **Warp shed**.

**Shedding**: The first of the three basic motions in weaving, in which a shed is formed, by separating the warp into two layers.

**Sheen gabardine**: Gaberdine where a particularly fine twill line is used in a variety of cloth are called sheen gabardine. This may be made of 24s worsted warp and filing, with a $100 \times 56$ construction and with a $3/2$ 63 in. twill weave. Average weight will be 12 oz. Sheen gabardines are quite similar to sateens.

**Sheep’s wool**: The fibrous covering of a sheep classified according to breed and origin (region of cultivation). According to some standards, only the Wool from sheep may be described as wool. Wool that is shorn from sheep bred exclusively for wool production represents a more or less coherent Fleece.

**Sheepskin**: This is the skin of the sheep or goat with the wool left on. It can be made with the wool on the outside or inside. A suede finish is usually applied to the shin side.

**Sheer**: (1) Made of any fibre mostly plain but could be various weaves. Any very light-weight fabric (e.g. chiffon, georgette, voile, sheer crepe). Usually has an open weave. They mostly feel cool. Triple Sheers Heavier and flatter than sheers. Almost opaque. Many are made from “Bemberg”, which wears, drapes, and washes well. Sheers are used extensively for after 5 wear, as well as afternoon dresses in heavier weights, and some coats, lingerie, curtains, trims, etc. A fabric that is transparently thin or diaphanous.

(2) A warm fabric that is transparently thin or diaphanous such as chiffon, batiste, net, Organdie and voile.

**Sheer velvet**: See **Velvet**.

**Sheers**: Transparent, lightweight fabrics of different constructions and yarns, especially those of silk and manufactured fibres. Examples are chiffons, some crepes, georgette, and voile.

**Sheet blanket**: A thin blanket of cotton or cotton and synthetic blend having a nap on both sides.

**Sheet Cast Button**: A button fabricated from a cast sheet of formulated styrene modified polyester resin.
Sheet-dye process: (slash-dyeing process) A conventional continuous dyeing process for the dyeing of cotton warp yarns in open-width form, chiefly with indigo.

Sheet, fitted: See Fitted sheet.

Sheet, flat: See Flat sheet.

Sheet, in textiles: A large rectangular usually plain woven fabricated product which is used over a mattress on a bed. The product may be carded or combed yarn in a wide range of constructions.

Sheeting: Since the introduction of fitted sheets and duvets, and particularly since coloured and printed sheets became popular, sheeting has been made available to us as piece goods. It can be plain or printed and in all colours. Most of it is 50% Polyester and 50% cotton for easycare. Used for sheets, pillow covers, duvet covers, valances, curtains etc.

Shelf Life: The period of time some product can be stored “on the shelf” before it degrades to some point of reduced effectiveness. Some chemicals, including dyes, have limited shelf life. They degrade over time, eventually becoming completely useless for their intended purpose. Useful shelf life may range from hours to hundreds of years. For example, an enzyme used for desizing might be specified as losing about 10% of its strength after storage at 20°C for six months – it is still very useful, just slightly weaker. Shelf life is generally maximized by storage at low temperature (sometimes even freezing, but this can damage some products). Chemicals should also usually be protected from long exposure to bright light, and dry chemicals should be protected from humidity by storage in tightly closed moisture-proof containers.

Shell: A fabric from which the garment is made.

Shenti: Loin cloth or hip skirt, highly pleated and decorated.

Sheperd’s plaid: See Sheperd’s checks. Twilled woollen fabric, made with black and white checks, formed by long and cross bars in black over white ground.

Shetland: (1) Originally, the term “Shetland” was a mark of origin for a yarn spun by hand exclusively from the wool of sheep bred and reared in the Shetland Islands. The wool from the Shetland sheep is particularly fine and imparts a soft handle to the textiles produced from it. (2) Currently, the term “Shetland” is applied loosely to all medium to coarse carded yarn fabrics produced from fairly coarse wool qualities (roughly equivalent to C quality), usually with a twill weave construction and a light to medium melton finish.

Shetland Lace: Bobbin lace made of black or white Shetland wool yarn.
**Shetland Point:** Needle-point lace made of Shetland wool in Italy.

**Shetland Shawl:** Fine knitted or crocheted light shawl made of Shetland wool.

**Shetland Veils or Falls:** Shawls, loosely knitted of wool, often containing camel, goat or alpaca hair, and made with scalloped edge.

**Shetland Wool:** (1) Very fine and lustrous wool, yielded by the Shetland sheep. The real Sh. wool is an undergrowth, found under the longer hairy wool and is not shorn but roo’d (or pulled by hand) in the spring. It comes in white, gray or brown, and is one of the costliest wools known. The wool is scoured and spun by hand, then treated with the fumes of sulphur and made up into hosiery, underwear, crochet work and very fine shawls; (2) English two-strand fine knitting yarn.

**Shibori:** A Japanese tie-dyeing technique. In shibori, fabric, usually silk, is folded or twisted or tied or wrapped around a bamboo pole (often substituted with PVC or ABS pipe), and dye is directly applied. This simple statement does not do justice to the craft and its beautiful results.

**Shier, in woven fabric:** Fine warpwise cracks randomly distributed across the fabric width.

**Shifu:** Thread made from paper is an old Japanese tradition and has been used historically in clothing.

**Shikhara:** A bandhani design. See Bandhani.

**Shikifugi:** Cotton bed sheeting in Japan.

**Shima Momen:** Striped cotton fabrics in Japan.

**Shiner:** A relatively short streak caused by a lustrous section of a filament yarn. The principal cause is excessive tension applied to a yarn during processing.

**Shipment:** Goods or commodities which are transported together as a unit. A quantity of product for which a bill of lading has been signed by the carrier.

**Shiraz:** Persian, all-wool rugs made in all sizes. The medium long pile is tied in Ghiordes knot. The end selvage is often checked. The design consists of palm patterns, stripes with blue and red as prominent colours. Also called Mecca ruge.

**Shiraz carpets:** Contrary to expectations, Shiraz carpets are not produced in Shiraz itself but in the whole Fars area of which Shiraz is the capital. The various carpets known by this name are, in fact, woven by different nomadic tribes who have lived for centuries on the Fars tableland. The bazaar in the
town of Shiraz is the trading centre for these carpets. Some tribes use the Persian knot whilst others use the Turkish. In both cases, the number of knots per unit area varies considerably, e.g. 100 000–250 000 knots/m².

**Shiraz Gum**: See **Asiatic gums**.

**Shirer**: See **Crack**.

**Shirley Yarn**: Flax yarn with a flaw caused by improper setting of the reach.

**Shirley Institute**: A well-known British textile research institute based in Didsbury, Manchester, formerly the headquarters of the British Cotton Industry Research Association (BCIRA). The Shirley Institute was amalgamated with the Wool Industry Research Association (WIRA) in 1988 to form the British Textile Technology Group (BTTG).

**Shirley stiffness test**: This test measures the bending stiffness of a fabric by allowing a narrow strip of the fabric to bend to a fixed angle under its own weight. The length of the fabric required to bend to this angle is measured and is known as the bending length.

**Shiro-momen**: General trade term in Japan for unbleached (similar to nankeen), and bleached plain woven cotton goods. The harrow, plain woven cotton fabrics, made on hand looms and half bleached or often dyed blue are also called by this name; used for socks and clothes for the people.

**Shirred Fabrics**: A range of fabrics with one edge elasticated to a depth of 6–10 cm. (2½ – 4 in.) and sold as ready to sew skirt and sundress fabrics. Often of cotton fabric, but may be of others such as polyester, usually pointed. Used for casual clothes and children’s tops and dresses.

**Shirring, in garment making**: Fabric is drawn up to create fullness using a fine elasticized thread down as shirring elastic. In can be used in a series of lines, depending on the effect required.

**Shirting**: Any fabric of any fibre that is closely woven and implies absorbent, hard wearing qualities. The most common are made from, cotton, silk, polyester and cotton.

**Shirvan Rugs**: All-wool rugs made in Caucasia. The warp and weft being of white, gray or dyed wool; the loose pile is tied in Ghiordes knot. The patterns are geometrical in blue, White, yellow and red colours. The ends are finished in long, knotted fringe.

**Shirvan carpets**: Provenance: the village of Shirvan is situated near the south-west shore of the Caspian Sea and the district of the same name in the southern part of Azerbaijan. Technical details: The warp and weft is in wool in antique specimens, in wool or cotton in those woven between 1850 and 1920,
and completely in cotton in modern examples. The pile is always in closely cropped wool. The Turkish knot is used to give a knot density of 150,000–250,000 knots/m². Modern examples usually have a higher knot density than the older or antique ones.

Shives: (1) All vegetable matter, except burrs, found entangled in the wool. (2) Short pieces of woody waste in flax which are almost entirely removed during the breaking and scutching operations involved in flax processing.

SHMP: Sodium hexametaphosphate.

Shock catalyst: A strongly acidic catalyst used in the application of resin finishes by the Shock-cure process, e.g. certain organic acids such as citric acid, mixtures of metal salts of strong acids with complex forming hydroxycarboxylic acids.

Shock cooling: Rapid cooling, e.g. of dyed goods, or a more or less exhausted dyebath, by partially running the dyeing machine and adding cold water. Purpose: to control the temperature, e.g. when making further additions of dye for shading. Shock cooling is also carried out after the heat-setting of synthetic fibres by impingement with cold air in order to stabilize the heat-setting effect.


Shock Dyeing: Rapid transfer of dye liquors into a dyeing machine.

Shock-Cure Process: A variant of the Dry crosslinking process; in this case, crosslinking is achieved by shock curing within a few seconds (20–60 s) either at high temperatures (170–190°C) with conventional resin finishing catalysts, e.g. magnesium chloride or, alternatively, at 140–160°C with so-called Shock catalyst. Both the drying and curing stages are usually combined in a single pass through a finishing stenter.

Shoddy: (1) The fibrous material made in the wollen trade by pulling down now or old knitted or loosely woven fabric in rag form.

(2) Droppings from woollen cards consisting of very short fibres that may be heavily changed with oil or dust.

Shoddy: Fibres made from ground-up rags and mixed with other fibres to reduce the cost.

Shoddy Shaken: A machine used for shaking shoddy reclaimed from under carding machines. It consists of a revolving cage, covered with perforated polished steel: having a revolving swift with long steel bars attached. The swift and cage revolve in opposite direction
Shoddy Wool: See Shoddy (2).

Shoe Cloth: Very strong and durable worsted, woven with corkscrew weave, weighing between 12 and 18 oz. per yard. The warp ends vary from 80 to 150 per inch with picks ranging from 80 to 140 to an inch. The warp is usually double thread and the filling single worsted, sometimes also cotton. The cloth is usually made as single fabric; used for shoe tops.

Shoe Fold: A fabric folded from both ends into twelve or sixteen folds to the piece, the length of the fold depending upon the length of the piece.

Shoe Fold: See Fold, shoe. A manner of folding fabric. The piece is folded from both ends into twelve or sixteen folds. The length of the fold depends upon the length of the piece.

Shog, shogging: See Warp knitted fabric.

Shogged Stitch: Rachel stitch. In knit fabrics; used to form the edges of the garments.

Shooda: Commercial name for a lightweight twilled woollen dress fabric.

Shoot: Another name for weft.

Shooting Coat: A sack coat of corduroy, duck, etc., with capacious pockets, used by sportsmen. An old term.

Shooting Jacket: See shooting coat.

Shore Hardness: A hardness scale which is in common use internationally for vulcanized materials such as rubber as well as plastic rollers. Measurements are made with a hand-held tester in which the resistance of the material under test to the pressure exerted by a needle is read directly off a scale. It is, however, not altogether accurate. Measurements range between 40–100 Shore which can, however, represent different degrees of roller hardness for various makes of rubber.

Shorn pile: Pile that is removed when a specimen is sheered.

Short Bast Fibres: Cottonized bast fibres; Cottonized flax.

Short-Cure-Process: A 2-stage permanent-press finish. Stage 1: mild curing of finished fabric for a short duration at low temperature. Stage 2: final curing under severe curing conditions after the fabric has been made up into garments.

Short Liquor: In the sense of liquor with a low amount of liquid, e.g. 1 : 5. Opposite: Long liquor.

Short Liquor Jet: Waste water quantities and energy use are substantially decreased in dyeing in an exhaustion process using a short liquor-to-goods-ratio (MLR).
Winch beck  MLR 1: 30
Short liquor jet  MLR 1: 6
Airflow  MLR 1: 3

**Short liquor ratio dyeing:** Dyeing in accordance with the exhaustion processes in the short liquor-togoods ratio, in general 1:10 and below, brings the benefit of less water and energy consumption.

**Short Loop Drier:** (festoon drier). Universal drying machine for delicate viscose fabric, for tubular jersey fabrics and for the gentle pre-drying of resin impregnated fabrics to avoid pre-curing and migration of the epoxy resin. Tension-free transport of the fabrics in the form of short loops passing in continuous travel over vigorously vibrating rollers, producing constantly changing points of contact.

**Short period dyeing technique:** Process for increasing productivity with the aim of reducing dyeing time to a minimum without jeopardising the leveling of the dyed goods.

**Short period heat setting:** (shock setting), takes place on special stenters, on which synthetic fibres are thermofixed in seconds at very high temperature.

**Short-Cure Method:** A 2-stage permanent-press finish. Stage 1: mild curing of finished fabric for a short duration at low temperature. Stage 2: final curing under severe curing conditions after the fabric has been made up into garments.

**Short-Cut Staple:** Staple fibre less than 0.75-inch long. Typically used in wet-laid nonwoven processes to make fabrics, or as reinforcement in plastics, concrete, asphalt, and other materials.

**Short-Liquor Dyeing:** Dyeing in low MLR.

**Shot:** (1) Name in England for pick; (2) Another name for changeable or mottled effect.

**Shot:** The term used to describe the effect created by using one colour of the warp and a totally different colour in the weft. Any fibre may be used, but the most effective are the shiny ones, such as acetate, triacetate, polyester and silk.

**Shot, in pile floor covering:** The number of filling yarns per row of tufts.

**Shot effect:** A changeable colour effect on a lustrous or shiny fabric in which the warp yarns and weft yarns are of contrasting colours. The fabric normally has a plain weave or a 2/2 twill weave when this effect is required.

**Shot, in pile floor covering:** The number of filling yarn per rows of tufts.

**Shot Effect:** The variable colour seen when certain fabrics are viewed at different angles. The effect is obtained by having warp threads of one colour and weft threads are if a contrasting colour.
**Shot Taffeta**: One of the most luxurious type of Taffetta, as it is made from two colours and can be seen to change the colour as the wearer moves.

**Shotting Yarn**: See *Yarn, shotting*.

**Shoulder Circumference, in body measurements**: With arms down at sides, the maximum distance around the shoulders at the top of the arm.

**Shoulder Joint, in anatomy**: The junction of collarbone and the shoulder blade.

**Shoulder Length, in body measurements**: The distance from the side neck base to the arms eye line at shoulder joint.

**Shoulder Padding**: Shaped inserts used as Interlinings in men’s and women’s jackets and coats to confer a desired shape. Shoulder padding usually consists of wool or cotton wadding (often lined with muslin) and/or an expanded foam material resistant to dry cleaning.

**Shoulder point, in sleeves**: The highest point on the sleeve cap; generally located at the center of the sleeve.

**Shoulder Slope, in body measurements**: The angle formed when the slant of the shoulder line deviates from the horizontal line that originates at the side neck base.

**Shoulder, in Zippers**: The bearing surface of an interlocking element by which the chain is contained inside the flanges of the slider.

**Shower curtain**: A hanging fabric used to prevent water spillage from the shower area.

**Shower Proof Cotton And Latex**: A base fabric of cotton, or polyester/cotton, resembling cheese cloth in appearance and sprayed on one side with Latex to make it shower proof. The layer of Latex is quite thin so the right side of the fabric is wrinkled like the Cheese cloth. It is soft fairly floppy cloth. Used for raincoats, jackets hats.

**Showerproof**: Treatment of a textile fabric so as to delay the absorption and penetration of water. In the case of a fabric, a degree of permeability to air is retained.

**Showerproofing**: A light proofing given to fabric by treating them with metallic salts, insoluble soaps or silicone based preparations. The thermal and ventilating properties and the general appearance are not much affected by these treatments. The term has no precise meaning and heavy rains should be expected to penetrate coats made from such material.

**Shredding**: The separation of compressed fibres in pulp sheets prior to acetylation in acetate manufacture.
**Shrinkage**: A decrease in one or more dimensions of an object or material.

**Shrinkage**: The reduction in a dimension of a fibre, yarn or fabric. Shrinkage may be induced by various treatments, e.g. wetting, steaming, alkali treatment, laundering, dry heat.

**Shrinkage**: A negative change in the dimensions of textile products which involves a reduction in area (length and/or width) of a fibre, yarn, fabric or other textile due to the influence of various agencies, e.g. wetting, laundering, dry cleaning, etc.

**Shrinkage in boiling water**: Change in the length or width of a specimen immersed in boiling water, distilled or demineralised for a specific time.

**Shrinkage of yarn in skein form**: The change in loop length of a skein expressed as a percentage of the length prior to exposure to the shrinkage medium e.g. boiling water.

**Shrinkage in DP finished fabrics**: Much of a fabric’s residual shrinkage is the result of tensions applied to the fabric during wet processing. Some woven fabrics will shrink both in width and length during preparation and dyeing. These must be pulled out to maintain width and yardage yields. These stresses add to residual shrinkage. Knit goods are inherently wrinkle resistant; however, some are pulled out to a width wider than the fabric’s knitted gauge and this too adds to residual shrinkage. Much of the stress induced shrinkage can be eliminated by mechanically compacting the fabric. Compacting will result in reduced yardage yields. Crosslinking also reduces fabric shrinkage. For this reason, chemical stabilization of cellulosic fabric has real economic value. Without resin finishes, the fabrics described here will have excessively high residual shrinkage. Fortunately, a good resin finish will stabilize the fabric and reduce the residual shrinkage to less than 2%. The degree of stabilization required by chemical finishes will depend on the fabric’s previous history. In some cases, much more finish is applied than one would reasonably consider simply to keep residual shrinkage within the required tolerances. In these cases, reduced shrinkage is the real reason for DP finish rather than wrinkle resistance or non-iron features.

**Shrinkage Force**: The force generated by thermoplastic materials when they are subjected to elevated temperatures.

**Shrinking Machines**: Machines for the shrink-resistant finishing of textiles by mechanical compression in a moist hot state (Compressive shrinkage) or a tension-free treatment in a steam atmosphere. The objective is to achieve residual shrinkage values up to 1% max. in subsequent use.

**Shrinkproof finishing**: Grammatically speaking, this is a term that should really be restricted only to finishes capable of producing a fabric with a
residual shrinkage of zero (an absolutely shrinkproof fabric is not possible in practical finishing) but which is commonly used (erroneously) for finishes which reduce the residual shrinkage of textile fabrics to a level consistent with their fitness for purpose. The correct term for these finishes is Non-shrink finish.

**Shrink-Resistant Finish:** Non-shrink finish.

**Shropshire:** A breed of sheep in England and Australia yielding a long, fine, strong and lustrous wool.

**Shroud:** The last garment we wear.

**Shusu:** Japanese silk satin.

**Shuttle:** A boat-shaped device, usually made of wood with a metal tip that carries filling yarns through the shed in the weaving process. It is the most common weft-insertion device. The shuttle holds a quill, or pirn, on which the filling yarn is wound. It is equipped with an eyelet at one end to control rate. The filling yarn is furnished during the weaving operation.

**Shuttle chafe mark:** A fabric defect that is usually seen as groups of short, fine lines across the fabric, often running for some distance in the piece and usually in the same area. Although these marks run in the direction of the filling, they are actually caused by the shuttle rubbing across and damaging the warp ends, producing a dull, chalky appearance.

**Shuttle looms:** (shuttle weaving machines). In a shuttle loom, the weft is inserted by means of a Shuttle which is propelled over a race plate through the shed of separated warp yarns. The shuttle is propelled from side to side by a wooden shaft called a “picking stick” so that the weft yarn is inserted alternately from left to right and vice versa thus producing a closed selvedge (in contrast to all of the more modern Weft insertion systems introduced in the meantime).

**Shuttle, boat:** Boat shuttles (which look a bit like boats) are equipped with a central hinged rod on which a bobbin (a slender spool) wound with the weft thread is placed. The bobbin rotates as the shuttle is thrown, and the weft is pulled snug at the selvedge by the drag of the unwinding thread against the rotating bobbin.

**Shuttle, End-feed:** An end-feed shuttle has a shaft secured at one end that supports a pirn (like a bobbin but with narrower end). The weft is pulled off the narrow end of the on rotating pirn and tensioned with an adjustable tensioning device at the nose of the shuttle.

**Shuttle, Stick:** They are flat pieces of wood that are usually notched at each end so that the weft can be wrapped from end to end around the shuttle. The
shuttle must be turned over a time or two as it is brought out of the shed to free weft yarn for the next pick. The turn of the thread at the selvedge must be adjusted manually.

**Shuttleless Loom**: A loom in which some device other than a shuttle is used for weft insertion.

**Shyer**: See Crack.

**SI**: Le Système International d’Unités” or International System of Units; a modern metric system in which meters, kilograms, seconds, amperes, candelas and moles are the base units internationally adopted metric system of units. It has seven BASE UNITS and two dimensionless units, formerly called supplementary units. DERIVED UNITS are formed by multiplication and/or division of base units. Standard prefixes are used for decimal multiples and submultiples of SI units, along with standard symbols for both units and prefixes.

**SI**: Israel Standard.

**SI**: Sisal.

**Si**: (1) Sisal, 1988; this abbreviation was changed. (2) Symbol for the non-metallic element silicon (atomic number 14).

**Siara**: Variety of raw cotton from South America.

**Sibirienne**: Plain woven or twilled, thick woollen fabric with a long nap, finished with a high gloss.

**SIBR**: Suspended immobilised biomass reactors, i.e. a *moving bed biological reactor*.

**Sibucara**: Silky seed hair, grown on a species of the Bombax tree in Venezuela; used for stuffing.

**SIC**: Israeli Standards Organization.

**Sicilan**: A plain-woven mohair fabric; see Brilliantine; Mohair.

**Sicilian**: A lustrous, lightweight fabric, made of fine, hard spun cotton warp and mohair filling of lower count in plain weave.

**Sicilienne**: This was first made in Sicily as a coarse-weave lining fabric of mohair and cotton. It is now a plain woven fabric with heavy weft ribs, made from silk, cotton and oil mixtures resembling poplin appearance. It is very occasionally used as a dress fabric.

**Sida**: White, strong and lustrous bast fibre yielded by the sida plants in India, South America and Australia; used for cordage.
Siddo Rags: Rags consisting of interlining from garments the best type of siddo rags are from fabrics made from yarns of hair or blends of hair with wool made on the worsted system.

Sidebands: Fabrics in America, usually printed with a band effect near to one of the selvages. They are used for trimming purposes.

Side-By-Side Fibres: (S/S types) Bicomponent fibres.

Side-to-side shading: Tailing.

Siebenburgen Rugs: Small oriental Knotted carpets, which arrived in Siebenbürgen during the Turkish occupation of South-Eastern Europe and were used to decorate the churches in the manner of the independent principality at that time.

Siemens: Derived SI unit of Electrical conductance, e.g. for electrometric measurements. 1 S is equal to the electrical conductance of a conductor of electrical resistance 1.

Sieuhwakin: Chinese shawls made of embroidered white crepe.

Siglaton: Rich silk dress goods of the Middle Ages, originated from the Orient.

Sign Cloth: Heavily starched, coarse bleached cotton muslin; used for signs.

Sight glass: Built into pipelines, condensate returns, etc. for checking the flow, purity, absence of bubbles.

Sighting dyes: Non-substantive dyes for the particular substrate, which can be added to colorless printing pastes to reveal repeat inaccuracies on blades and rollers and later washed off again (e.g. for white discharges, half-tone reserves, leuco vat ester dyes, stabilized azo dyes, phthalocyanine dyes). Frequently also colourless substances (e.g. fluorescent brightening agents) which fluoresce in UV light.

Silence Cloth: Heavy and thick bleached cotton flannel strongly raised on both sides and napped cotton fabric; used underlay for table cloth ironing boards and beds.

Silesia: A light, close-woven, fine twilled cotton fabric, dye in dark shades and calendared for a glossy finish, used for dress linings, and in tailoring for the bags of pockets etc. Made in a limited range of dark colours.

Silhouetttte: French, plain woven cloth of cotton warp and a different coloured linen filling, giving a scintillating effect.

Silicate boiler scale: (SiO₂), most dreaded modification of Boiler scale, caused by silicate in boiler feed water (even 5–10 mg/l SiO₂ is a risk to boilers
operating at high pressure). Has a particularly low thermal conductivity. 0.2 mm layer thickness causes local overheating, buckling of the tubes, etc.

**Silicates**: Salts of the meta, ortho and polysilicic acids. Not soluble, non-decomposed in any solvent. The aqueous solution has a limited service life (tendency to gradual flocculation or drying up). Even a small addition of acid causes gelatinous separation (Sodium silicate; Water glass).

**Silicone-based dyes**: These dyes serve to permanently dye glass fibres in dark shades, as well as to modify the properties of normal silicone oils and resins.

**Silicone-based textile auxiliaries**: Silicons represent important auxiliaries in the textile industry for processing and finishing. They have many advantages due to their universal application possibilities, problem-free handling, free choice of type of application, gentle cross-linking, great efficiency and slight environmental pollution.

**Silicon Carbide**: (carborundum), SiC, variously coloured (reddish, greenish blue, black) crystals, very chemical and heat resistant, diamond-like hardness, density 3.2. Is obtained from coal and quartz at over 2000°C. Use: as grinding and polishing material; for fire-resistant bricks and electrical resistance bodies.

**Silicone cross-linking**: For the silicone crosslinking of reactive-group olydimethylsiloxane at least trifunctional cross-linkers are required so that an elastic network structure is achieved, e.g. methyl hydrogen siloxanes, tri- or tetra- alcoxy silanes and triaminoalkylsilanes. Silicone cross-linking usually takes place in the presence of special catalysts and may drain off as condensation (OH terminal group), addition (vinyl terminal group) and as peroxide cross-linking (methyl terminal group).

**Silicone catalysts**: Hydrogen methyl polysiloxanes (Silicones) require special catalysts for cross-linking, the choice of which creates the possibility of influencing the overall effects of the fabric.

**Silicone elastomers**: High-molecular Polydimethylsiloxane with terminal hydroxyl groups, which cross-link with hydrogen methylpolysiloxanes in the presence of catalysts, e.g. tin acyl compounds or silicic acid esters. Used in solvents or aqueous emulsions (solvent technique enables better effects) as Silicones in finishing, e.g. for elastic finishing of knitwear made of synthetic fibres, antifelting finish and the like.

**Silicon Finishes for textiles**: Give the textiles, if desired, hydrophobic properties (silicone additive of 1–1.2% of the dry weight of the fabric), protection against wet dirt, a soft handle and improvement to the sewability and abrasion resistance.
**Silicone finishes, stripping:** May be required with defective silicone finishes. Is difficult, however, particularly if the fault is not detected until after hardening. By means of an acid treatment with 60 g/l hydrofluoric acid (alternatively oxyl acid and suitable polyphosphates and acid-resistant wash-active substance) in 60 min at 80–90°C, if necessary with a subsequent chemical cleaning.

**Silicone rubber:** Synonym for Silicone elastomers. Poor resistance to abrasion. Resistance to acids is excellent to moderate, to solvents poor (aliphatic/aromatic hydrocarbons), to oxidation, ozone, sunlight ageing, excellent, to flammability moderate to good.

**Silicone Softeners:** Silicones provide textile substrates with a combination of soft handle, smoothness, gloss, fullness, elasticity and sewability with excellent permanence at the same time. The softening effect of the silicone oils is based on their slide performance both on the fibre surface and in the fibre itself. Amino-functional groups linked to polydimethylsiloxanes enable an improved orientation and substantivity of the silicone on the substrate. This leads to an optimally soft handle and is often described by the term “supersoft”.

**Silicones:** Silicones are Polysiloxane Polymers and fall under the class of materials known as organometalllics. The element silicon is considered a metal and is found in abundance in nature as silica, SiO$_2$. Silicon resembles carbon in that it is tetravalent and forms covalent bond with other elements. Simple tetravalent compounds are called silanes. Silicon forms a stable covalent bond with carbon leading to a class of materials known as organosilanes. For example methyl chloride reacts with silicon to form a mixture of silanes as shown in the box below. The mixture includes silanes containing methyl, chloro and hydrogen groups in varying proportions. Chlorosilanes rapidly react with water to form silanols which further condense to form siloxane linkages. Dimethylchlorosilane will form linear polysiloxanes which are water clear oils with excellent lubricating properties. The viscosity of the oil will vary with the molecular weight. Utilizing appropriate monomers and reactive groups, polysiloxanes, better known as silicones, are also found as three dimensional resins and high molecular weight elastomers.

**Silk:** A fine, strong, continuous filament produced by the larva of certain insects, especially the silkworm, when constructing its cocoons. The silkworm secretes the silk as a viscous fluid from two large glands in the lateral part of the body. The fluid is extruded through a common spinneret to form a double filament cemented together. This double silk filament, which is composed of the protein fibroin, ranges in size from 1.75 to 4.0 denier, depending upon the species of worm and the country of origin. The filament of the cocoon is
softened and loosened by immersion in warm water and is then reeled off. Although raw silk contains 20 to 30% of sericin, or silk glue, and is harsh and stiff, silk is soft and white when all of the glue has been removed by steeping and boiling in soap baths. Ecru is harsher, as it has only about 5% of the sericin removed. Silk is noted for its strength, resiliency, and elasticity. The major sources of commercial silk are Japan and China.

**Silk Bolting Cloth:** See *Screen mesh, Screen gauze.*

**Silk damage:** Testing for damage to natural silk occurs by determining the viscosity of a solution of natural silk in concentrated aqueous lithium bromide solution.

**Silk burlap:** Silk fabric of linen weight, but feels light and drapes well. Various widths Used for suits and dresses.

**Silk Camlet:** Silk cloth of two-coloured warp, the filling being of a third colour.

**Silk Cotton:** A widely used term, applied to the fine and lustrous fibres yielded by the seed pods of a great number of trees and plants.

**Silk dusting:** Occurs due to the splitting up of silk under the effect of alkali or too great a mechanical stress in the working liquors and gives the fabric surface a whitish appearance, as if sprinkled with flour.

**Silk dyeing:** The most important dye classes are acid, metal complex (predominantly 1 : 2), direct and reactive dyes. Cationic, after chrome, vat (indigo) and vat leuco ester dyes are only used in special cases. In the high-fashion sector, classic brilliant shades in the red, blue and green range cannot as yet be replaced by more genuine products of equal value.

**Silk grass:** (Honduras silk grass) Longest type of bast fibres belonging to the Bromelia fibres (Central and South America). Cream-coloured, silky bright, fine and soft (surpassing the Cantala and Mauritius fibre).

**Silk Grassy:** General term applied to many lustrous fibres of the pineapple or other plants, especially the white, strong and silky fibre yielded by the Furcroea cubensis, in tropical America.

**Silk Nankeen:** English nankeen having silk satin stripes over a cotton foundation.

**Silk Wadding:** Waste silk resulting from spinning bourette silk.

**Silkeen:** A finely ribbed English cotton fabric, printed with coloured pattern over a coloured foundation and highly glazed.

**Silk jacquard:** Medium weight, luxurious silk patterned fabrics. Depending on the design, the Jacquard weave may give a moire’ effect. The fabric drapes
well and as silk dyes so well will often be found in jewel-rich colours. Used for evening and bridal wear, luxury suits, blouses and kimonos.

**Silk jersey**: A fine lightweight knitted fabric, often printed. It drapes beautifully, wears well and always looks superb. Used for special outfits, dresses, blouses and long dresses.

**Silk Mousseline**: It is firmer than chiffon, and is cool and comfortable, but it does not wear well as laundering spoils it and dry-cleaning is always not satisfactory. Used for evening dresses. See also **Mousseline**.

**Silk Noil**: An attractive silk fabric of dress or suit weight, its features is that it has small pieces of cocoon woven in it and these appear as dark cream flecks.

**Silk ribbon finish**: A finish done on yarn dyed pure silk fabric (Taffeta, Liberty structures) to get a full, solid hand feel without stiffness or hardness using resins and ether soluble gums in benzole. This type of finish explained is of historic importance only. Nowadays this finish done using suitable synthetic resins and additives.

**Silk Satin**: A very soft lustrous fabric for luxury lingerie. It is expensive and drapes beautifully but creases. Used for all items of lingerie, especially in conjunction with lace.

**Silk scroop**: A special finish applied on the fabric earlier days for a scroopy handle, craquant, crackly finish, crunchy feel, silk finish, silky handle by the treatment of textiles with soap or fat emulsion and organic acids (folic, lactic, acetic, tartaric, citric acid). The silk scroop is not usually stable in storage, leaves an unfavourable flabby handle and a slightly rancid odour due to the eliminated fatty acids due to humidity in the air. Nowadays the finish is imitated by other synthetic chemicals.

**Silk Shantung**: A medium weight silk fabric woven with irregular yarns. The fabric has a dull appearance and rough texture and is popular for blouses shirts and dresses. It is also referred to as Nankeen or Rajah nd also sometimes carries the name of the province where the yarn is originated.

**Silk Twill**: A soft twill weave silk fabric without much body, usually printed. Printed squares often made up as scarves. Used for blouses decorative features, possibly pyjamas.

**Silk weighting**: The weighting process is carried out to increase the silk weight, providing fuller hand, more lustre and bulk, and makig the fibre suitable for the manufacturing of fabrics to be used, for example, for ties. The weight increase is expressed as percentage weighting above or below the parity. Parity weighting means that the fibre regains the original weight it had before the degumming process:
Percentage weighting = (weight after weighting - raw weight) x 100 / raw weight.

There are many types of weighting; till some years ago, a few mills still carried out mineral weighting, but now this process has been abandoned definitively. Today, the most frequently applied type of weighting is synthetic weighting (or chemical linking).

**Silk, Boiled Off:** Silk with the gum (sericin) removed.

**Silk, Raw:** see Raw silk. Silk as it has been reeled from the cocoon.

**Silk, spun:** see Spun silk. Silk yarn consisting of short filaments obtained from silk wastes spun in a similar manner to worsted yarn.

**Silk, Thrown:** see Thrown silk. Raw silk that has been twisted or doubled and twisted.

**Silkaline:** A very light, printed, plain woven, glossy cotton fabric, made in the gray and calendered; used for lining, curtains, etc.

**Silkworm Gut:** Used for fishing lines; the silk worms are immersed in strong vinegar for a couple of hours and then pulled apart, each worm yielding two thick strings of great strength.

**Silk union:** A term used for fabrics that contain natural silk or filament yarns similar to silk in one thread system.

**Silk waste:** See Bourette; Schappe (silk).

**Siloxanes:** Compounds containing Si–O–Si groups with organic groups bound to the silicon atoms. The silicones are polymers of siloxanes. Oxygen compounds of Silicon. Polysiloxanes: See Silicones.

**Silver Cloth:** French fabric, composed of 4-5 of wool and one-fifth of asclepias cotton

**Silver number, silver index:** A number to denote the bleach damage on cellulose fibres. The number indicates how much silver is reduced and separated from 100 parts test material numerical expression of bleach damage on cellulose fibres.

**Silver test, in textile:** Test solution is made as follows: Solution A: 1 g silver nitrate and 10 ml water. Solution B: 4 g sodium thiosulphate and 100 ml water. Mix solutions A and B, and add sufficient thiosulphate until the precipitate is dissolved. Then add solution C (4 g ammoniac and 100 ml water). Bring everything to the boil, filter and preserve the light-sensitive solution in brown bottles. Application: to test for hydrocellulose, especially with subsequent treatment with dilute ammoniac. Yellow-brown colouring according to the degree of damage. Also to test for wool damaged by sunlight (black coloring).
**Silver prints:** Graphite prints. Carried out with appropriate Metal powders.

**SIM:** Malaysian standards organization.

**Simili Mercerising:** A calendering process for increasing the lustre. The effect is similar to that obtained by mercerizing but not permanent.

**Simple Machine Stitch Pattern, in sewing:** A repeating segment of machine stitches, with each repeat consisting one or more stitches long.

**Simplex Fabrics:** Velour-type surface processing of knitwear made of cotton or synthetic fibres such as polyester, polyamide, acetate and triacetate. Originally limited primarily to glove qualities, for clothing fabrics including sport and leisure articles.

**Simplex machine:** One of the earliest machine designed to dye loose cotton. It consists of a rectangular vat fixed on supports. Steam pipes are fixed in the bottom of the trough. Above the steam pipes there is a free perforated plate on which two or more hooks are attached. Ropes are attached to these hooks which is taken above the trough on an eccentric pulley. Cotton is loaded above the perforated plate and closed above it with another perforated plate. The liquor is heated and the package of loose cotton is worked up and down by means of the eccentric pulley when a more or less even dyeing takes place.

**Simulated grass matting:** Rot resistant, coarse artificial grass matting made from coloured synthetic fibres, usually polypropylene.

**Simulated Spun Yarns:** Filament yarns that have been modified to have aesthetics similar to those of spun yarns. Simulated spun yarn have looped or hairy surfaces.

**Simulation tests:** Degradation test procedure to assess the biological level of waste water treatment plants. The degradation process is simulated in laboratory models under practical operating conditions, as in the aeration tank of a waste water treatment plant.

**Sinamay:** ‘Light, plain woven fabric, made by the natives of the Philippines of abaca fibres. It usually comes in contrasting coloured stripes; used for garments by the natives.

**Sinclaii:** A Highland tartan, composed as follows: *Green stripe; group (as wide as green stripe) composed of a black stripe, a fine white line and a blue stripe, the latter being wider than the black; *red stripe, being somewhat wider than all the stripes mentioned above; repeat, in reversed order, stripes mentioned between two.*

**Singeing:** Scorching, gassing of fibre ends protruding from surfaces on yarns, fabrics, etc. if a fluffy fabric is not required. An industrial defibrillation process
where rapidly-moving fabric passes over a flame or a very hot plate in order to burn away fibres poking up from the surface. Also see gassing. Singeing is predominantly carried out on textile fabrics manufactured from yarns in the form of knit-goods or wovens. The aim is to achieve a smooth and fibre-free surface, which is essential both for subsequent processing in textile finishing and for desired serviceability properties.

**Singeing Machine:** Especially used for woven and knitgoods with low-tension controlled throughput involving several singeing positions: tangential, counter roll and counter-fabric. Especially used for the technical pretreatment of knit-goods in tubular form prior to mercerization.

**Single-bath chrome dyeing process:** Chromate dyeing process; Chroming of dyes.

**Single-bath chrome mordant:** Metal mordants, for mordant and chrome dyes.

**Single-bath exhaustion process:** Dyeing process in which several components are applied to the fibre in a dye bath, e.g. dispersion dyes and cotton, wool or cationic dyes.

**Single-bath process:** Treatment, especially for dyeing blended fibres, in a bath, i.e. with dyes for each component. Contrasting process Two-bath process, i.e. treatment in two consecutive baths. Variants: Single bath single-stage process corresponds to single-bath process. Single-bath two-stage process, whereby, at the end of the first treatment stage, the second stage is carried out in the same bath.

**Single Breasted:** A style of coat or other garment with minimum overlap and a centre front fastening.

**Single broadcloth:** See Broad cloth.

**Single Canvas:** A popular plain weave cotton, or cotton/polyester, embroidery canvas of fine construction, with easily distinguished holes between the warp and weft threads.

**Single Cloth:** Is woven with one set of warp and one set of filling, irrespective of the weave.

**Single Coarse Raw Silk:** Simple, coarse raw silk thread (8–10 cocoon threads) made from inferior cocoons, e.g. as inlay threads for spun metallic yarn.

**Single Damask:** Both the ground and the pattern, or only the ground is woven in five-leaf satin.

**Single end sizing** Process involving guiding threads through nozzles which separate several chambers from each other. Residual drying in heated pipes
(< 12 m long), subsequent batching on cross wound yarn packages. Owing to the fast speeds, not suitable for sizing warp ends in industrial standards. Applied to special yarns (e.g. asbestos threads, novelty yarns, sighting thread). Basic disadvantage: nozzle change for each size range.

**Single Face Fabric**: (plain jersey fabrics) Knitted fabrics with only right-side loops on one side of the fabric and only reverse-side loops on the other side of the fabric.

**Single filaments**: Monofilament chemical fibres.

**Single Jersey**: This is often wool, but sometimes may contain acrylic fibre. It is a knitted fabric that is thin and curls at the edges. The right side only has the stocking stitch appearance, the wrong side is the reverse and like hand knitting in effect. Single jersey may be plain or mixed colours, in random stripes. It is soft and drapey. Used for soft gathered dresses and suits.

**Single jersey jacquard, weft knitted**: A patterned single jersey weft knitted fabric usually made from two or more yarns of differing colour or texture to give a construction that consists essentially of knitted and float loops but may incorporate tuck loops. The surface pattern is derived from the chosen arrangement of the yarns knitted and float loops. The inclusion of tuck loops into the construction is to eliminate long lengths of floating thread from the back of the fabric.

**Single jersey tuck jacquard, weft knitted**: A patterned single jersey weft knitted fabric usually made from two or more yarns differing in colour or texture to give a construction that consists of knitted and tuck loops. The surface pattern is derived from the chosen arrangement of yarns knitted and tuck loops.

**Single lapped seam**: A lapped seam used to eliminate bulk when piecing interfacing and interlining edges together. The seam does not produce a finished appearance, and should not be used to seam the garment itself.

**Single Level Pile, in floor covering**: Having all pile tufts at the same level.

**Single Phase Printing Process**: The printing paste contains, besides dyestuffs, the chemicals required for the application, e.g. reducing agents with vat dyes or alkalis with reactive dyes.

**Single Plush**: A plain knitted fabric, made with one face yarn and having the backing yarn almost entirely on the back of the cloth. It is then napped; used for underwear.

**Single poplin**: See Poplin.

**Single satin stitch**: Embroidery stitch. See Straight stitch.
**Single squeegee:** Screen printing squeegee with one blade.

**Single Stitch Zigzag, in sewing:** A simple machine stitch pattern made by the needle moving up and down and alternately from one side to the other while the fabric moves through the feed mechanism in either the forward or reverse direction with all segments having equal length and width.

**Single Strand Strength:** The breaking strength of a single strand of yarn monofilament or cord, not knotted or looped but running straight between the clamp of the testing machine.

**Single Twist:** The amount of twist in each individual single yarn element in a tyre cord structure based on the length of the element after twist has been removed from the fabric.

**Single yarn:** See **Yarn, single.**

**Single Weft Carpet:** Single weft carpet is a Woven carpet, in which each row of knops is fixed in with only one weft.

**Single voile:** See **Voile.**

**Single Yarn:** The simplest strand of a textile material suitable for operations such as weaving, knitting etc.

**Single Yarn:** The simplest strand of textile material suitable for operations such as weaving and knitting. A singles yarn may be formed from fibres with more or less twist; from filaments with or without twist; from narrow strips of material such as paper, cellophane, or metal foil; or from monofilaments. When twist is present, it is all in the same direction. (Also see **Yarn.**)

**Single-Knit Fabric:** Made on knitting machines with one row of needles producing fabric that smooth and even on the right side, but uneven on the other side. The fabric is lightweight and tend s to curl at the edges. Used for top and trousers.

**Single-Phase weaving machines:** There is a sequence in the primary motions of weaving and each of them is repeated once in each weaving cycle. The weft insertion which is the principal operation in weaving, takes place only at discrete intervals.

**Single-Strand Breaking Force, in tensile testing:** The breaking force of one strand that follows a specific path, usually straight line, between the clamps of a tensile testing machine.

**Singling:** The condition caused by the breaking of one or more strands in a plying operation with resulting unevenness in the finished product.

**Singling:** A yarn defect caused by the breaking of one or more strands in a plying operation with resulting unevenness in the finished product.
Singonne: Very stout, black, closely woven fulled and coarse woollen with a long nap; it sheds the water and is used in various European countries for winter clothing by the poorer classes.

Sinkter: In weave design, a blank square indicating a filling thread over a warp thread at the point of intersection.

Sinkter, in knitting: (holding down-knocking over): in textile terminology the sinker commonly used on plain circular knitting machines is called a ‘holding down-knocking over’ sinker. Its main function is to hold the sinker loop when the needle is moved from the rest position into the clearing position. It is controlled from the sinker butt by a sinker cam. It also takes over the formation of a new loop across the knock over edge (the area of the machine that the sinker loop is formed) at the end of loop formation. They have different shapes and dimensions depending on the machine type and the fabric design.

Sinkter loop: this is the part of the stitch which is composed of loop feet belonging to neighbouring stitches.

Sinna Knot: See Senna knot.

Sinnerscher Circle: Approximate classification of the significance of four washing parameters (chemistry of the surfactants, washing time, temperature and washing mechanics) to define the cleaning efficiency of a drum washing machine.

Sipacheutoochwongyong: Black, curl pile silk velvet in China, made with serge foundation; used for hats, etc.

Sintering: Forming a bonded mass or fibre by heating the constituents of the mass or fibre without melting.

Siretz: Trade term for Russian uncleaned flax.

SIRO: “Scientific Industrial Research Organisation”, Australian textile research organization

Si-Ro-Set colour fastness: Method of dyeing with Si-Ro-Set treatment, i.e. possible effect on the shade and possible staining of white wool and cotton as a result of the treatment. The dye should be selected according to the application of the finished goods, i.e., only reduction-insensitive dyes may be used in dyeing.

Si-Ro-Set process: Australian process for surface fixing and manufacturing of permanent creases and pleats on woollen articles such as trousers, skirts, etc. by treating with a solution of thioglycollic acid derivatives and subsequent shape fixing by steaming.
**SiroSpun process**: Process developed by CSIRO and IWS, by which a 2-ply yarn is produced at one spinning position, making twining redundant. This process allows a special spun-twisted yarn to be manufactured directly on the ring spinning machine.

![Diagram of SiroSpun process](image)

**SIS**: Swedish standards organization.

**Sisal**: Hard fibres of subtropical agave types (Mexico, Brazil, Africa, Indonesia). Named after the oldest port of exportation of Sisal in Mexico. Snow white to yellowish. Fibre bundle 60–150 cm long. Strength 35–55 cN/dtex. Not very resistant to seawater. Chemical composition: 65.8% cellulose, 10% water, 1.2% lignin, 0.3% fat and wax, 1–4% ash. Dyeable similar to Manila fibre. Application: binding yarn, cord, string, ropes, sacks, sail cloth, carpet industry, decoration materials, also for finer fabric. Sisal tow for upholstered materials.

**SISIR**: Singapore standards organization.

**Sister’s Thread**: Same as Nun’s thread.

**Sistresay**: From East India and Turkey, made with two warps, one silk, the other cotton, and a spun silk filling in damask patterns with coloured stripes.

**Sivas carpets**: Are fine, medium-size Knotted carpets from the north Anatolian city of Sivas. Warp and weft in cotton, pile in low lustre wool; the Turkish knot is used with approx. 280 000 knots/m².

**Six Quarter**: Goods Measuring 54 inches in width.
Sixth Combing: Wool taken from the lower part of the thigh; also called breech.

Size: In textiles, a material applied to yarns or fabrics to make them stiffer or temporarily bind fibres together. Sizing is used extensively, especially for cellulose fibres, to make them easier to process or protect them from damage during high-speed weaving or the like. A wide variety of compounds, including starches and other plant derivatives, and synthetic organic compounds, such as polyvinyl alcohol, are used for sizing. Sizing materials can interfere with dyeing, so it is important that they are removed by desizing, usually prior to scouring but sometimes as part of the scouring process.

Size, in button: A unit of measure for button diameter; one ligne is equal to 0.635 mm. (0.025 in).

Size mark: A fabric defect that consists of a rough or frosted spin caused by uneven application or drying of the size.

Size recovery: Size like PVA can be recovered by simply by washing the fabric with hot water and concentrating by suitable methods, say ultrafiltration, evaporation.

Size, Yarn: See Yarn number.

Sizing: A gelatinous film-forming substance in solution or dispersion, usually applied to warps but sometimes to wefts, generally before weaving. A generic term for compounds which, when applied to yarn or fabric, from a more or less continuous solid film around the yarn and individual fibre. Varieties applied to yarn (a) sizing applied to warp yarn to bind the fibres together and stiffen the yarn. (i) dope: applied to crepe yarn to set the twist and assist creping. (ii) Dressing: applied to sewing thread to bind the strands together and leave a pliable yarn. Varieties applied to fabrics include: (b) Sizing applied to fabric to improve their physical properties such as weight stiffness etc. (i) Dope: Applied to airplane fabrics to make them taut and to balloon fabrics to make them less permeable to gases. (ii) Dressing: applied to fabrics to produce a glazed lustrous effect.

Note:
- The main types of substance used are carbohydrates and their derivatives, gelatin and animal glues, linseed oil, polyacrylic acid and polyvinyl alcohol.
- The objects of sizing prior to weaving are to protect the yarns from abrasion in the healds and the reed and against each other, to strengthen them and, by the additional of oils and fats, to lubricate them.
- A size may be applied to carpets (e.g. starch) and occasionally to wool fibres (e.g. animal glue).
**Sizing system, in garment construction**: A method of designating garment sizes.

**Sizing, Single End**: The application of size to: (a) A thread supplied from a single package; the thread receives a side-traverse as it is wound on to a large drum on which it forms an endless sheet of yarn; this sheet is then cut and wound on to a beam under tension to produce a sample (or short length) warp. (b) A low density sheet of yarn in which the adjacent ends do not touch one another; the yarn is usually supplied either from a cone creel or a single warpers beam; the resulting beam is usually combined with other similar beams in a dry taping process, to produce a weavers beam(s).

**Skein**: A continuous strand of yarn or cord in the form of a collapsed coil. It may be of any specific length and is usually obtained by winding a definite number of turns on a reel under prescribed conditions. The circumference of the reel on which yarn is wound is usually 45 to 60 inches. (Also see Hank.)

**Skein**: A continuous strand of yarn in the form of a flexible coil having a large circumference in proportion to its thickness.

**Skein Break Factor**: The comparative breaking strength of a skein of yarn adjusted for the linear density of the yarn expressed in an indirect system; the product of the breaking strength of the skein and the yarn number expressed in an indirect system.

**Skein Breaking Tenacity**: The skein breaking strength divided by the product of the yarn number in a direct numbering system and the number of strand placed under tension.

**Skein shrinkage**: A measure of true or intrinsic yarn shrinkage not including crimp contraction.

**Skein strength**: The force required to rupture a skein of yarn, expressed in units of force, as breaking strength.

**Skeleton**: Term applied to a coat made without lining.

**Skene**: A Highland tartan, composed as follows: Red stripe, split in the center by a green line; dark blue stripe, as wide as the red; red stripe, width and split as above; green stripe, as wide as one red and the blue stripes together; red stripe, width and split as above; green stripe, as above.

**Skew straightener**: A device for straightening skew distortion in textile fabrics, e.g. with the aid of rollers.

**Skewness**: A fabric condition resulting when filling yarns or knitted courses are angularly displaced from a line perpendicular to the selvedge or side of the fabric.
**Skewness**: A fabric condition resulting when weft yarn or knitted courses are angularly displaced from a line perpendicular to the edge or side of the fabric in which the warp and weft yarns, although straight, are not at right angles to each other.

**Skewness**: The distance measured parallel to and along a selvedge between the point at which a weft yarn meets this selvedge and perpendicular to the selvedge from the point at which the same weft yarn meets the other selvedge.

**Skin back**: See Broken filaments.

**Skin rug**: A hand-woven Flat carpet in the form of a weft-figured carpet produced from a single weft consisting of narrow cut strips of skin at a predetermined width (also includes those rugs where the strips of skin are used in the warp with a yarn weft). The edges and ends of the rug are bonded.

**Skin wool**: See Pulled wool. Taken from the skins of slaughtered sheep, either removed by sweating, or by sodium sulphide or by lime (slipe wool). Production: as enzyme wool, as sweated wool (Mazamet wool, lime wool, slipe wool) by (a) shearing, or (b) by extraction with the hair roots, but after a prior treatment with milk of lime to dissolve the hair roots to give so-called lime wool which must consequently always be regarded as chemically damaged wool. See Recovered wool.

**Skip**: See Float. Flaw in cloth where a warp thread skips over more filing threads than intended.

**Skip draws**: The draws coming under this heading are used very extensively in silk weaving, especially for fabrics requiring a heavy warp and a large number of shafts. Enter first the odd and then the even shafts. An 8 harness draw of this kind, runs as follows: 1, 3, 5, 7, 2, 4, 6, 8.

**Skipped stitch**: A stitch which appears twice as long as the other stitches in a line of stitches. It is caused by failure in the stitch formation allowing the needle thread to return to the surface without being held by the bobbin (lower) thread.

**Skirt**: That part of a coat, dress or other garment which hangs below the waist.

**Skirting**: (1) In wool sorting the removal of the stained parts of the fleece, as the legs and the whole edge of the fleece; (2) Rag sorting term, meaning rags of women’s dress goods and men’s coat linings, containing cotton and wool.

**Skyteen**: A cotton shirting made in England with a five shaft, warp faced satin weave. It has stripes on a light indigo ground.
**Skittery dyeings:** An irregular speckled appearance in dyed goods produced by colour differences between adjacent fibres or parts of the same fibre due to a variety of causes (Skittery dyeing wool).

**Slack end:** (1) A warp yarn woven under insufficient tension. A warp yarn that appears puckered as the result of having been woven under less tension than the adjacent warp yarns.

(2) A warp yarn that appears puckered as the result of having been woven under less tension than the adjacent warp yarns.

**Slack filling:** See Slack pick.

**Slack mercerization:** A process for producing stretch in cellulosic fabrics. Mercerizing of cotton textiles on chainless mercerizing machines without tension. Fundamental requirements: suitable construction of the textile material (floating weaves), no tension during the mercerization process, the stretch effect is set by subsequent resin finishing. The process is mainly employed to produce weft stretch cotton fabrics and is sometimes referred to as “chemical stretch” or it is applied as part of the process for crease-resistant linen.

**Slack pick:** A single weft yarn woven under insufficient tension. See also Loose pick. A weft thread or part of a weft thread that has been woven into the cloth at a lower tension than the adjacent normal picks. Slack filling.

**Slack Selvedge:** Slack ends in the fabric edge. See also Baggy selvedge (Selvage), Loose edge, Stringy selvedge (selvage) Wavy selvedge (selvage).

**Slack Selavage:** A self-descriptive fabric defect caused by incorrect balance of cloth structure between the ground and selvage or by the selvage ends being woven with insufficient tension.

**Slack Thread:** See Slack end. A thread or pieces of thread which are slacker than the other pieces/threads.

**Slack Twist:** Refers to a yarn imperfection where insufficient twist is applied to the thread so it has very poor ply security.

**Slack Warp:** See Slack end.

**Slaked lime:** See Calcium hydroxide.

**Slaking:** See Calcium hydroxide.

**Slam-Off, in woven fabric:** A distortion due to the entrapment of the weft carrier in the shed. Compare Smash.
Slanting: Cross Stitch In embroidery a variety of cross stitch and but little used. The first part is same as the cross stitch, the return made like the gobelin stitch (see), can be used only on fine foundation.

Slasher: A machine on which slashing or sizing is done.

Slasher Sizing: A process by which warp yarns are sized during transfer from warpers beams onto loom beams. Two or more size boxes may be used in parallel and/or in tandem if the warp sheet is too close or effective sizing in one box or if it contains yarn with different fugitive tints.

Slashing: It is the process where size is applied to warp yarns for weaving. The purpose of size is to protect the yarn from the abrasive action of the loom.

Slat, in tufting machine: A patterning attachment consisting of two sets of inter meshing metal angular strips, (also called slats) mounted on a continuously moving roller chain. One set has a constant height whilst the other set has a profile machined according to the required pattern.

Slatted expander: Expander combinations consisting of wood laths to maintain a fabric web in the fully open-width state. Depending on requirements, the wood laths are available with or without a rubber covering.

Sleazy: Thin, lacking firmness, open-meshed; usually describes poor-grade fabrics.

Sleazy satin: A cheap, soft satin with high lustre, usually made from acetate or acetate/viscose. It is a thin fabric suitable for lining.

Sleeve: Sleeve is that part of the garment, which covers the arm portion of a body. The appearance of the sleeve can be determined by the position of the armhole, under arm seams, fullness added to any part of the sleeve and to the sleeve hem or cuff. As the arms are mobile, the sleeve should allow enough room for the movement. There are two categories of sleeves: -

(a) Set In Sleeves: Cut separately from the bodice of the garment and fitted into the armhole shape. The standard set-in sleeve should smoothly cover the upper arm and shoulder socket. The armhole seam should fall on the shoulder where the socket joins the arm.

(b) Cut In One Piece Sleeves: Cut in one piece with the bodice of the garment in called cut-in one sleeve, for example, Japanese Kimono sleeve, Raglan sleeve, Batwing, Dolman and Magyar sleeve.

Sleeve Cap: The curved top of the sleeve from front and back.

Sleeve center: Center of the sleeve.

Sleeve Length: The sleeves measured from the center of the neckline in the back to the end of the sleeve or cuff.
**Sleeve Tacking:** Stitches which attach the sleeve to the lining along the sleeve inseams and elbow seams.

**Sleeve Vent:** A finished slit or opening in the sleeve. Vents are usually secured by snaps or buttons at the base of the cuff.

**Sleeve, Set In:** A sleeve which is set into the scye.

**Sleeve Lengths:**
- **Long:** A sleeve covering the arm beyond wrist level including some portion of the hand also.
- **Bracelet:** A sleeve covering the arm upto wrist level.
- **Sleeve, 7/8th level:** A sleeve covering the arm upto mid of the lower arm portion. Generally found in ladies tops.
- **Sleeve, 3/4th level:** A sleeve covering the arm upto widest portion of the forearm. Generally found in ladies tops.
- **Sleeve, Elbow:** A sleeve covering arm till elbow level. Generally found in ladies blouses.
- **Short:** A short length sleeve covering half portion of upper arm. Generally found in summer wear.
- **Cap:** A very short sleeve covering one-third portion of the upper arm. Generally found in ladies blouses and nightwears.
- **Sleeveless:** It is a garment, which is without sleeve and has a finished armhole. Generally found in kids and ladies summers wear.

**Sleeve, Magyar:** A sleeve which is cut integrally with the body of the garment, the two sections being joined from neck to wrist. Wedge shaped pieces are inserted under the arm to allow freedom of movement.

**Sleeve, Raglan:** A sleeve with the armhole line extending from the front and back scye to the neckpoint so that the shoulder section is joined to the sleeve crown, eliminating the conventional shoulder and sleeve head seams.

**Sleeve, Set in:** The sleeve is shaped around the arm and has a seam on the underarm. The top of the sleeve, the sleeve head, is curved to accommodate the roundness of the shoulder. The sleeve is constructed and then ‘set into’ the bodice.

**Sleeve, Bracelet/Three Quarter:** This sleeve reaches half way between the elbow and the wrist.

**Sleeve, Padded Shoulder:** The shoulder is extended and the sleeve is heightened to accommodate a pad, to achieve a squared or rounded effect in the silhouette.

**Sleeve, Raglan with Yoke:** See raglan with dart. Here the raglan Is extended to accommodate the top part of the bodice, achieving a ‘yoke’ effect. There is a seam along the top edge of the sleeve and at the underarm.
Sleeve, Dropped Shoulder: The shoulder is extended and shaped around the shoulder, rather like the capped sleeve. However there is more shaping and the extension is usually longer; also a sleeve is actually set into the armhole. The sleeve construction is modified by removing that part of the head that is now covered by the extension to the shoulder. The sleeve head then looks less curved.

Sleeve, Two Piece Tailored: A shaped sleeve that has a seam down the front and the back to allow for shaping.

Sleeve, Two Piece Tailored: A shaped sleeve that has a seam down the front and the back to allow for shaping. There is no underarm seam; consequently the sleeve is constructed in two pieces.

Sleeve, Capped: The sleeve is an insertion that just covers the shoulder point.

Sleeve, Cape: A full, flared sleeve that is set into the armhole. The sleeve could be cut as a circle to give more flare at the hem.

Sleeve, Capped (Extended Shoulder): This is an extension of the shoulder just covering the shoulder point.

Sleeve, Saddle Raglan: See raglan with dart. Here the seam for applying the sleeve to the bodice is shaped, it narrows along the shoulder line. This sleeve has a seam at the underarm and along the top edge of the arm to the wrist, including the shoulder.

Sleeve, Raglan with dart: The raglan sleeve is derived from the set in sleeve but with the shoulder added to the sleeve head. It was named after Lord Raglan who led the Charge of the Light Brigade in the Crimean War and wore raglan-sleeved jackets. This sleeve is cut in one piece but has a dart at the shoulder to accommodate the roundness of the shoulder.

Sleeve, Raglan with Seam: A normal raglan shaped sleeve with a seam along the top edge of the arm, and at the underarm. See raglan with dart.

Sleeve, Man’s Shirt: A set in sleeve with two pleats at the buttoned cuff and a placket. Normally seen on men’s shirts.

Sleeve, Long Bell: The upper part of the sleeve fits the arm, the lower part flares out into a full, bell shape.

Sleeve, Frill: The upper part of the sleeve fits the arm, the lower part has a deep, gathered frill attached at about elbow length.

Sleeve, Bell: Like the long bell sleeve, but much shorter, finishing around elbow length.
**Sleeve, Pagoda:** An eighteenth century sleeve that is fitted on the upper arm, with tiered frills on the lower part of the arm to the wrist. It can be longer at the back of the wrist. There are usually three tiers giving the appearance of a Chinese pagoda.

**Sleeve, Leg of Mutton:** A full, gathered sleeve head is set into the bodice and the long sleeve tapers to fit towards the wrist. Popular in the late nineteenth and early twentieth century, fashion frequently re-introduces the leg of mutton.

**Sleeve, Juliet:** A two-part sleeve similar in effect to the leg of mutton. The top part of the sleeve is full and gathered while the lower part of the sleeve is fitted to the arm and is seamed to the top part above the elbow.

**Sleeve, Bishop:** The reverse of the leg of mutton - the top part of the sleeve is fitted and then flares out towards the wrist where the sleeve is gathered onto a cuff. A popular 1960’s style.

**Sleeve, Peasant:** A full, short sleeve that is attached to a full bodice with a raglan effect seam. The garment is drawn in with elastic or a drawstring at the neck and at the sleeve hem. There are many variations to this theme.

**Sleeve, Lantern:** A long set in sleeve constructed in two parts. The top part flares slightly from the sleeve head towards the wrist. The bottom part flares from a fitting wrist to meet the flare of the top. Both are seamed together a few inches above the wrist.

**Sleeve, Short Lantern:** The same principle as the lantern, but a much shorter version ending just past the elbow.

**Sleeve, Drawstring Puffed:** A full sleeve, short or long, with a drawstring to draw the sleeve to the desired size. The drawing up forms a small frill at the hem of the sleeve. Here the head is not gathered. (See also puffed.)

**Sleeve, Draped:** A set in sleeve that is slashed open at the top part of the sleeve where fullness is added; the underarm seam remains the original length. The extra fullness created is drawn up with a drawstring or elastic to fix it into place, creating a ‘draped’ effect.

**Sleeve, Square Armhole:** The armhole is shaped like a square with a right angle at the corner. The construction is as a set in sleeve.

**Sleeve, Dolman/Magyar:** This style is named from the Magyars in Hungary and was worn by peasants there. The shoulder seam extends through the top of the sleeve and the underarm Seam follows from the side of the bodice through to the wrist. There are no other seams and any shaping is made from these two.

**Sleeve, Petal/Lapped:** This sleeve is cut without an underarm seam and is shaped and folded on the upper arm. It was very popular in the 1940s.
Sleeve, Mamaluke/Virago: A long, full sleeve that is partitioned into five, full sections. The five sleeve parts are drawn and seamed together to fit around the arm.

Sleeve, Strapped/Banded: The construction is that of a set in sleeve. From the neck point to the wrist is a narrow band of fabric giving a strapped effect.

Sleeve, Epaulet and Elbow Patch: A strap or tab on the shoulder, normally seen on uniforms, to carry caps. Here there is also a patch on the elbow to protect the garment and prolong its life in heavy-duty use.

Sleeve, Dolman with Gusset: See dolman/magyar. This dolman sleeve has a gusset set under the arm to allow for more ‘lift’.

Sleeve, Kimono: A long sleeve that is a complete extension of the bodice to the wrist. The seam lines are along the top of the sleeve and at the underarm. A traditionally Japanese sleeve used on the garment with the same name.

Sleeve, Slashed Virago: See mamaluke/virago. This sleeve has the upper part incorporating slashing, a popular sixteenth century decorative effect. The slashing reveals the shirt or tunic underneath, giving a contrast. Here there is extra contrast with the lower part of the sleeve being constructed in a different colour or fabric.

Sleeve, Tippet on Elbow: Popular in the middle Ages. This was a pendant effect hanging from the elbow of a gown or tunic. It was similar in derivation to the liripipe.

Sleeve, Melon/Balloon: A very full, short set in sleeve, padded out to give the effect of a melon or balloon.

Sleeve, Batwing: The same principle as the kimono. This sleeve narrows towards the wrist and has a curved underarm seam. This particular example would be made from a knitted fabric.

Sleeve, Cartwheel/Circle: A short set in sleeve, designed to give an accordion effect.

Sleeve, Wing Ruffle: Like the capped sleeve but here the fabric extension has fullness added, the fabric being gathered and set onto the bodice creating a ruffle effect.

Sleeve, Bag: A long and very full sleeve that is gathered onto the cuff at the wrist. It has the effect of bagging on the lower part of the arm. This sleeve was popular in the fifteenth and sixteenth centuries.

Sleeve, Dalmatian/Angel: A sleeve that flares towards the wrist extending into a long point.
Sleeve, Buttoned Oversleeve: A medieval sleeve that has a contrasting sleeve layered over the base sleeve. The top sleeve can be unbuttoned to reveal the contrast beneath.

Sleeve, Puffed: A set in sleeve that has fullness at the sleeve head and base. It is set into the bodice and controlled at the base by a cuff or elastication to give a ‘puffed’ effect.

Sleeve, Double: A puffed sleeve with two layers - the base is opaque and the top sleeve is transparent to reveal the sleeve underneath.

Sleeve, Mahoitres: A 14th- and 15th-century sleeve popular in France. The sleeve is padded and bag shaped.

Sleeve, Hanging Sleeve: This is a very long sleeve that is open down the front seam and hangs vertically. It is part of a medieval gown or doublet.

Sleeve, Trailing Sleeve: This is similar to the hanging sleeve. The sleeve is constructed like a kimono and the opening for the hand is in the same position while the bottom part of the sleeve is stitched up.

Sleeving: Braided, knitted, or woven fabric of cylindrical form having a width less than 100 mm. (4 in.) [circumference less than 200 mm. (8 in.)].

Sley: The number of warp ends per inch of the fabric width exclusive of selvedges.

Sleying the reed: is the placing of the warp threads through the dents of the reed. The number of dents in the reed and the number of warp threads in each dent determine the density—or sett—of the warp.

Slide surface, in rotor of an open end machine: That part of the internal surface of the rotor on which the fibres are deposited and are caused to slide to the collecting surface.

Slide Waste: A yarn defect that is similar in appearance to a slub. It consists of a mass of fibre encircling the yarn end and can be slid freely along the end.

Slider, automatic lock: See Automatic lock slider.

Slider, cam lock: See Cam lock slider.

Slider, flange lock: See Flange lock slider.

Slider, in zippers: The part that opens the zipper when it is moved in one direction and closes the zipper when it is moved in the opposite direction.

Slider, releasing, in Zipper: See Releasing slider, in Zipper.
Slider, automatic lock, in Zipper: See Automatic lock slider. A slider that provides automatic positive locking action on the chain when the pull is released.

Slider, cam lock, In Zipper: See Cam lock slider, in Zipper.

Slider, flange lock: See Flange lock slider, in Zipper.

Slider, flange lock, In Zipper: A slider with notches in the flanges of the slider that block the shoulders of the scoops when the stringers are pulled apart.

Slider, pin lock, in Zipper: See Pin lock slider, in Zipper.

Slider, ratchet locker, in Zipper: See Ratchet locker slider, in Zipper.

Slider, releasing, in Zippers: A slider with a mechanical means for loosening the slider on the chain.

Slip: Measure for wool, linen and jute yarns in England, equal to 1,800 yards.

Slip cover: A removable, fitted protective textile cover, often decorative and specifically made upholstered furniture.

Slip: (1) An important serviceability property of carpets, rugs, mats, etc. is that they do not slip on floors. (2) The resistance to slippage of warp over weft threads, or vice versa, in a woven fabric.

Slip stitching: Slip-stitching or invisible hemming is done on silk, wool, and thick material. The hem is pressed with an iron, a stitch as fine as possible is taken on the surface of the cloth and the needle slipped under and through the first fold, drawing the thread lightly. The needle and thread used in this stitch must be very fine.

Slip wool: See Pulled wool. Recovered wool obtained by treating pelts with lime and sodium sulphide or some other depilatory. This treatment loosens the wool which can then be pulled away without damaging the hide.

Slippage: Sliding or slipping of the filling threads over the warp ends (or vice versa), which leaves open spaces in the fabric. Slippage results from a loose weave or unevenly matched warp and filling.

Slipper Carpet: Warp-pile fabric made with coloured Jacquard figures, used for bags, slippers, etc.

Slipper satin: A closely woven satin made from good quality yarns, which make it hard wearing. It is less glossy than other satins due to the closeness of the weave, and a more elegant fabric because of this. It is used chiefly for footwear. Textures are high and the material comes coloured, black or white, or richly brocaded effects. Shiniest satin.
Slit tape: A fabric, 12 inches or less in width, made by cutting wider fabric to the desired width. Slit tapes are made primarily of cotton, linen, jute, glass, or asbestos and are used principally for functional purposes.

Slit-film yarn: Yarn of a flat, tape-like character produced by slitting an extruded film.

Sliver: A continuous strand of loosely assembled fibres that is approximately uniform in cross sectional area and without twist.

Sliver knitted fabric: A single jersey fabric in which untwisted staple fibres are knitted in at each loop to form a pile surface on the technical back of the jersey structure.

Sliver knitting: Circular knitting coupled with the drawing-in of a sliver by the needles to produce a pile-like fabric, usually for high-pile coats or heavy linings.

Slop Padding: A printing process used on chintzes and some calicoes. The fabric is first printed with resist after which the colour is applied to the entire face of the cloth by means of an unengraved roller.

Slope threshold: In this method the slope of the initial linear region is determined, and the point where the slope of the curve decreases to a specified fraction of the initial slope shown.

Slops: Baggy, overhanging knee or calf length breeches, often having lengthways slashes with protruding lining.

Slot seam: A complex seam formed on the inside of the object, having a decorative seam underlay slightly visible from the face side held in place by two visible rows of stitching. A slot seam allows you to place a matching or contrasting fabric underlay behind the edges of the seam.

Slot seam: A complex seam formed on the inside of the object, having a decorative seam underlay slightly visible from the face side held in place by two visible rows of stitching. The slot seam, used in cloth dresses and jackets, requires exact basting with silk or very fine thread with small, even stitches. If a coarse thread is used, the material will be badly marked. After basting, press the seam open as if it had been stitched, and baste the strap or under strip of the dress material (which has been cut perfectly straight and even) over the wrong side of the seam, having the center of the seam on the center of the strap. Stitch any width desired beyond the center through the three thicknesses. This will hold the seam in position. Now remove the bastings from the seam and the slot effect is complete. If desired, there may be a double
row of stitching, an extra row on the edge of the fold or plait. These seams may be finished at the bottom with arrow heads or stitched designs. The lines of machine stitching should not end without some ornament to appear to hold the plait.

**Slough off**: See Slug.

**Sloughed filling**: See Looped filling.

**Slough-off, in woven fabrics**: A defect caused by several coils of yarn slipping of the weft bobbin simultaneously and being woven into the fabric in a group.

**Slow sand filter**: One of the earliest filters for water treatment, developed in 1829 by James Simpson. It has a sand layer up to 1.0 m deep over a layer of gravel about up to 0.3 m deep. Perforated concrete or clay underdrains laid in the gravel remove the filtered water. The D10 effective size of the sand is 0.2 to 0.4 mm, with a uniformity coefficient of 1.6 to 2.5. The sand is drowned under about 1 m of water. The filter is cleaned every few weeks or months by draining the water and scraping off the top 15 to 25 cm of sand. This is repeated until filtration is no longer efficient, and the sand bed is then renewed. Slow sand filters are capable of removing tastes, odours, some bacteria and some protozoa from the water. The surface loading rate is 2.5 to 7 m$^3$/d per m$^2$ of filter surface area. In wastewater treatment, slow sand filters can be used for tertiary treatment with a surface loading less than 10 m$^3$m$^{-2}$d$^{-1}$.

**Slub**: A abruptly thickened place (in a spun yarn) that has tapering ends and a diameter several times that of the adjacent normal yarn which is irregular and at several places along the length of the yarn, causing the fabric to have a surface interest and broken texture. A yarn defect consisting of a lump or thick place on the yarn caused by lint or small lengths of yarn adhering to it. Generally, in filament yarn, a slub is the result of broken filaments that have stripped back from the end to which they are attached. See Slug. Many yarns slub is an imperfection, but slub yarns are deliberately manufactured in other fibres as cotton, polyester, acetate, viscose and their blends. The resulting fabric may be of medium or heavy weight.

**Slub Catcher**: A mechanical or electronic device designed to aid in the detection and removal of slubs or neps in yarns, usually during coning.

**Slub Fabrics**: Fabrics made using slub yarn, mainly in knitted fabric form.

**Slub silk**: Silk yarn with nubs or balls of fibre at intervals. It is woven into fabric with an interesting surface structure. The fabric is usually dress weight and often crisp.
**Slub Yarn:** Any type of yarn that is irregular in diameter; the irregularity may be purposeful or the result of error. (Also see Novelty yarn, Nub yarn, and Slub.)

**Slubber:** A machine used in textile processes prior to spinning that reduces the sliver and inserts the first twist.

**Slubbing:** The name given individually or collectively to relatively thick fibrous strands and also to the strips of web from a condenser card that have been consolidated into a circular cross section by rubbing.

**Sludge:** Solids settled out from water or wastewater, but still containing high percentage of water. Sludge from wastewater treatment is known as biosolids.

**Sludge blanket:** The mass of sludge in a sedimentation tank or clarifier. The bottom of the blanket may rest on the bottom of the tank or it may be a suspension, as in the sludge blanket clarifier. The settling regime of the sludge blanket is either zone settling or compressive settling.

**Sludge blanket clarifier, floc b. c., upward flow c., upward flow floc b. c.:** A type of solids contact clarifier in which the inlet flow passes up through the suspended sludge blanket. The particles from the coagulated water are ‘filtered’ out by and amalgamate with the blanket. When the sludge level rises too high, some sludge is wasted from the tank. The top of the sludge blanket must be well beneath the top water level. The clarified water flows over weirs at the surface of the clarifier. The surface loading rate may be 40 to 120 m$^3$/d per m$^2$ of tank surface area, depending on the quality of the inlet water.

**Sludge cake:** Sludge that has been thickened to 80% can be picked up with a shovel and is called cake. Filter plate presses can reduce water works and wastewater sludges to less than 70% water. Belt filter presses and centrifuges can reduce wastewater sludges to about 75% water.

**Sludge digestion:** Usually anaerobic sludge digestion, a treatment that stabilises raw sludge. Fully digested sludge has little readily biodegradable organic matter. It is not smelly and about 50% of the solids are inorganic. Sludge can also be digested aerobically. See aerobic digester.

**Sludge hopper:** The lowest part of a sedimentation tank, where the settled sludge collects, either by flowing or being scraped in. This deep part is at the centre of an upward flow tank or radial flow tank and usually at the inlet end of a horizontal flow tank. Its capacity, in primary sedimentation, should be 1.4 litres per person, which should provide enough space for 24 h sludge production. With sides sloping at 60° to the horizontal, it should be deep enough to ensure some consolidation of the sludge by compression settling.
**Sludge production:** (1) The mass of *primary sludge* accumulated per day in wastewater treatment is estimated by multiplying the wastewater flow by its concentration of suspended solids and by the percentage removal of solids in the *primary sedimentation* tank (typically 60%). (2) *Secondary sludge* production is often stated as the number of kg of sludge produced per kg BOD5 removed or applied to the *secondary treatment*, a figure sometimes known as the sludge growth index. For standard rate *trickling filters* it is about 0.7. For *activated sludge* it is about 0.75 at a *F:M ratio* of 0.4 per day and may drop to 0.4 at a F:M of 0.1 per day.

**Sludge thickening:** The difference between two sludges that are, respectively, 98 and 94% water is that the first, at 2% solids, occupies three times the volume of the second for the same weight of dry solids. Therefore, thickening gives good reductions in volume for small increases in solids content. Sludge may be thickened by a variety of techniques. *Gravity thickening* is common. See *belt thickening, centrifuge thickening, deep cone thickening, dissolved air flotation, rotary drum thickening*.

**Slug, in glass filament:** Unattenuated particles of glass of substantially larger diameter than the average filament diameter.

**Slug, in raw silk:** A thickened place several times the diameter of the yarn, 3 mm (1/8 in.) or over in length.

**Slug general:** An abruptly thickened place in the yarn or a bunch of lint entangled in the yarn, cord, or fabric.

**Slurry:** A watery or solvent suspension; e.g., titanium dioxide mixed with water for addition to polymers.

**Small Chain:** The binder warp in certain carpets, as Wilton or Brussels.

**Smart packaging:** A smart packaging is one that is able to sense and respond to a stimulus for a specific functional purpose. The term ‘functional purpose’ is key here, and responses that are purely aimed to be a visual effect – such as the use of thermochromic inks for visual impact only – are not considered to be within the remit of this section. They are however notable for providing design differentiation.

**Smart Textiles/Smart clothing:** Smart clothing is a “smart system” capable of sensing and communicating with environmental and the wearer’s conditions and stimuli. Stimuli and responses can be in electrical, thermal, mechanical, chemical, magnetic, or other forms Textiles that can sense and react to changes in the environment, such as changes from mechanical, thermal, chemical, magnetic and other sources.
**Smash, in woven fabric**: A relatively larger hole in the cloth characterized by broken warp ends and floating picks. Compare **Slam-off**.

**Smash**: A relatively large hole in a fabric and characterised by many broken warp ends and floating picks, or a prominent mark that remains after the repair of such a hole.

**Smeared prints**: Are formed by inadequately ground doctor blades in roller printing so that the print paste is insufficiently removed locally next to the engraved areas of the roller. The problem can be remedied by regrinding the doctor blade and/or by adjusting the position of the doctor blade against the printing roller.

**Smoke Chamber Test, for carpet**: Test method to measure smoke generation of carpet.

**Smoking Jacket**: A fancy coat for house (smoking) wear.

**Smoldering**: The combustion of a solid material without accompaniment of flame but generally with the production of smoke.

**Smooth backing**: (smooth coat). A smooth, less structured, back-coating with a lower degree of foaming applied to textile floorcoverings for the purpose of achieving good resistance to slippage and cutting.

**Smooth foam backing**: (flat foam). A smooth, non-structured, foam carpet back coating.

**Smoothen, to**: A term used in laundering for Mangling and Pressing. In wool finishing, the term is used for steeping (wet setting, crabbing).

**Smoothing agent**: is a special type of textile softener in which the smoothing effect is based on reducing friction between individual fibres or particles of finishing agents. Cationic products are more effective as smoothing agents than anionic or non-ionic products.

**Smoothing and calibrating calendar**: A special calendar for the thickness calibration and surface smoothing of needle felt nonwoven filters for liquid media.

**Smoothness appearance**: A subjective assessment criterion for the appearance of textile surfaces, especially for durable-press (DP) articles after household washing. The smoothness appearance is assessed by comparison with 3-dimensional standards (Wash and Wear Standard, DP-Rating and the Monsanto Crease Formation Standards as photographs).

**Smoothness effect**: Smoothness appearance.

**Smoothness number**: This may be defined as the relative fibre-to-fibre resistance to friction where a low smoothness number corresponds to a
smoother effect achieved by the application of Smoothing agent. The untreated fabric, smoothness number = 100.

**Smouldering:** A slow, flameless, smoking burning of a fabric.

**Smyrna:** Greek cotton, having a medium very strong, harsh and fairly clean staple of dull white colour.

**Smyrna Carpets:** (1) A general trade name for Turkish carpets exported to Europe via the Turkish port of Smyrna (today’s Izmir). These were usually copies of other well-known types of Turkish carpets produced in designs to satisfy European and American preferences and were often woven with inferior materials with a relatively low knot density. They were made principally in Ushak, Isparta, Sivas and Smyrna itself. (2) Coarse, soft, not very durable, deep-pile Medallion carpets of Greek origin.

**Smyrna Rugs:** (1) trade name for Turkish rugs made in Asia Minor and marketed through Smyrna; (2) in America, factory-made reversible rugs and carpets, made with chenille filling.

**Snag, in fabrics:** A yarn or a part of a yarn pulled or plucked from the surface.

**Snag:** (1) Yarns, fibres or filaments in the form of long loops that have been drawn out from the structure of a fabric by a protruding sharp object. (2) A textile defect caused by (or due to) the pulling or plucking of yarn(s) or filaments from the fabric surface. (3) A loop which has been pulled out of fine-knit hosiery due to the smoothness of the fibres (ladder). Drop stitches in smooth weft-knit fabrics are wales which, as a result of a broken thread or needle damage, are present as unformed threads. (4) (pulled thread), a slab-like structure consisting of individual capillary fibres, 2–8 mm in length, which has been pulled out of the whole thread. It occurs mainly with polyamide yarns and knitted fabrics (hosiery).

**Snagging resistance, in textile fabrics:** The resistance to the formation of snags.

**Snap:** See **Snap fasteners**.

**Snap action, in:** The force required to disengage a snap fastener resulting from a pull in the plane parallel to the material which the snap fastener is attached.

**Snap fastener:** A device for attaching one material to another consisting of matching male and female parts, each of which is attached to a separate material so that the parts can be joined by a low compressive force and separated by
a low perpendicular tensile force. Small snaps (size 4/0 through 1/0) are for light weight fabrics and large sizes (1 through 4) are for heavy ones.

**Snarl**, See **Kink**.

**Snarl**: A short length of warp or weft yarn that has twisted on itself owing to lively twist (see twist liveliness) or insufficient tension. The snarling may occur during or prior to the weaving process.

![Snarled Yarn and Twist Free Yarn](image)

**Snicks**: Flaws in the yarn, consisting of very thin places.

**Snow Ball**: See **Fuzz ball, Balling up**.

**Snow cloth**: The term used to describe any heavy outdoor cloth, particularly those with nap or pile.

**Snubber Pin**: A stationary pin or guide which induces a localized change in yarn tension. A draw pin is a type of snubber pin.

**Soaking**: Treatment of rayon yarns in a lubricating and sizing solution preparatory to hard twisting.

**Soap**: A substance consisting of sodium or potassium compounds of fatty acids used to improve the cleansing properties of water. Soap is a surfactant and was the earliest known detergent. Alkali salts of fatty acids with a minimum of 12, and a maximum of 18, carbon atoms. The first signs of surfactant properties are already apparent from 8 carbon atoms upwards. The hydrophilic part of an anionic surfactant is due to the presence of COO− groups, and the hydrophobic part is due to the presence of an alkyl residue, e.g. sodium stearate $\text{C}_{17}\text{H}_{35}\text{COONa}$, sodium oleate, used as a cleaning agent. The basic method of making soap involved treating animal fat (mainly beef tallow), which is a triglyceride of octadecanoic acid (stearic acid), with caustic soda (sodium hydroxide, NaOH) to produce sodium octadecanoate (sodium stearate). More refined soaps are made from vegetable oils, such as palm oil, which contains hexadecanoic acid (palmitic acid). Liquid soaps (*soft soap*) are made using potassium hydroxide rather than sodium hydroxide.
Soap Flakes: They are actual small pieces of hard soap. Soap Flakes are produced from dried, cut, hard soap.

Soap Handle: The preferred handle for worsted yarn wool fabrics which, in former times, was achieved by using soap in scouring and milling.

Soap powder: Dried, pulverized Soap (produced from soap paste and sodium carbonate) with a total fatty acid and resin acid content of 5–40%.

Soap residues: (fatty residues). Coarse agglomerated residues of soap, fat, lime salts, and dark pigment soils, often appearing as numerous spots which are deposited on garments during washing. They are caused by using a soap with an excessively high fat content or (usually) by carrying out the first rinse with cold water. They can be eliminated by using Syndets or a slightly acidic rinse water.


Soaping: (or soaping off) - with respect to dyeing, the process of washing dyed fabric with very hot (often boiling) water with surfactants, rarely actually soap, to remove dye that is not fixed to the fibre. Soaping off is important particularly with some reactive dyes, since a good deal of hydrolyzed dye is loosely bonded to the fabric, and must be removed to avoid staining of other garments or fabric in laundering. Soaping is also important in vat dyeing, where there are actual changes, including in hue, in the dye in the fibre. Though surfactants are often used, they may actually contribute almost nothing to the effectiveness of the process.

Soaping Machine: This type of machine consists of a vat with squeeze rolls for wetting out wool piece goods that only require a short milling treatment. When the addition of milling agent is made by pouring it into the machine, this does not result in satisfactory distribution of the product.

Soapstone: A soft type of talc which has a greasy feel and which is easy to carve to make ornaments. It was formerly known as steatite. See Stearite.

Soda: See Sodium Carbonate.

Soda Ash: Sodium carbonate; an antiquated but much-used term.

Soda-ash boil: The type of alkali used for scouring of cotton depends on the quality of goods.

For example, if coloured yarns present in the fabric, sodium carbonate is ideally suited because of its low pH. Cotton yarns to be dyed in dark shade should be scoured with 1–2% sodium carbonate solution for 30 min in presence of wetting agent.

Soda cellulose: (alkali cellulose). Represents the first stage in viscose rayon manufacture. Cellulose pulp is steeped in warm caustic soda liquor (17–18%)
for 1–2 h, and then pressed to remove excess solution. The treated cellulose is broken up in a shredder to form powdery crumbs. The crumbs are then aged for several hours during which time the caustic soda reacts with the cellulose to form soda cellulose.

**Soda lime:** A gray solid produced by adding sodium hydroxide solution to calcium oxide, to give a mixture of Ca(OH)₂ and NaOH on evaporation. It is used in the laboratory as a drying agent and as an absorbent for carbon dioxide.

**Sodalite, cage zeolite:** A blue, grey, yellow or colorless mineral consisting essentially of sodium and aluminium silicates with sodium chloride in a cubic crystalline form of the type Na[Cl(AlSiO)], which occurs in certain basic igneous rocks. The hollow structure of sodalite is important as a lattice unit in Zeolites.

**Sodium Acetate:** CH₃COONa; a buffer 3 In dyeing, sodium acetate is almost always used together with acetic acid in moderately acid processes (that is, sodium acetate is rarely used without acetic acid, but acetic acid may often be used without sodium acetate). molecular weight 136. Colorless odourless crystals or anhydrous salt. Solutions in water are weakly alkaline. Uses: neutralization of mineral salt esters on cellulosic textiles; reduction of acetic acid acidity (buffering); neutralization of naphthol diazo solutions; aftertreatment of sulphur black (prevents tendering); additive for diazo solutions in dyeing and printing with naphthols, etc.

**Sodium alginate:** Sodium salt of Alginic acid, C₁₀H₁₈O₁₀(COONa)₂; soluble in cold resp. warm water under rapid stirring (it is advisable to allow freshly prepared solutions to stand overnight). Boiling in water reduces the viscosity. Solutions are non-foaming. Stable to alkalis but sensitive to acids (especially below pH 3). The addition of a complexing agent (5–25% of the weight of alginate) is recommended in hard water. Solutions are sensitive to bacterial decomposition (the addition of 0.2% salicylic acid, formaldehyde, etc. can be used as a preservative). Uses: sizing agents, finishing agents, water-repellent impregnations. The main use of sodium alginate is as a thickener for textile printing (discharge pastes, roller and screen printing, easy to wash off, uniform viscosity, excellent penetration in printing, non-foaming, flows readily, good colour yields, sharp outlines). Suitability as a thickener for textile printing: especially important for reactive dyes, azoic diazo dyes, vat leuco ester and vat dyes; not suitable for cationic dyes, chrome dyes and naphthols.

**Sodium aluminate:** (aluminate of soda). Na₃AlO₃ or Al(ONa)₃, molecular weight 144.25. Colorless small lumps or fine powder with 35% Al₂O₃ (stable to air) or 50% Al₂O₃ (somewhat hygroscopic, store in airtight containers);
both forms are readily soluble in water. Uses: waste water treatment, water softening, oil removal from feed water and desilification; mordant for dyeing alizarin red (on cotton), etc.

**Sodium Bicarbonate:** $\text{NaHCO}_3$; more properly called sodium hydrogen carbonate; also called sodium acid carbonate, and most commonly, baking soda. Sodium bicarbonate is used as a weak base (alkali) in some dyeing processes, often with reactive dye that is padded onto fabric, then batched for many hours. It has limited stability in solution, decomposing to sodium carbonate, carbon dioxide and water, especially at high temperature, so solutions generally should be made shortly before use. Sometimes this decomposition is used deliberately, usually with highly reactive dyes such as MX. A print paste made with sodium bicarbonate will have a pH around 8, and at this pH the dye will not hydrolyze rapidly and hence become useless. When the printed fabric is steamed, the sodium bicarbonate will decompose and the pH will rise to around 11, facilitating reaction of the dye with the fibre.

**Sodium Bisulphate:** $\text{NaHSO}_4$; also called sodium hydrogen sulphate or sodium acid sulphate. Sodium bisulphate hydrolyzes in water solution, and acts much like sulfuric acid. It can sometimes be used as substitute for sulfuric acid, and because it is a dry chemical, it can be safer to handle, though care is still necessary. Sodium bisulfate is often the basis for etchant pastes for devoré of cotton. “pH Down” for spas and swimming pools is usually sodium bisulfate. Do not confuse this with sodium bisulfite.

**Sodium Bisulphite:** $\text{NaHSO}_3$; a mild reducing agent, most used in dyeing as an antichlor; often actually sodium metabisulfite ($\text{Na}_2\text{S}_2\text{O}_3$), which behaves the same way. As an antichlor, sodium (meta)bisulfite reacts with sodium hypochlorite and hypochlorous acid, to almost immediately stop bleaching action. The product of the reaction is two acids which need to be thoroughly rinsed from the fabric. Typical use is about a gram (approximately 1/4 tsp) per litre of room-temperature water. Solutions should be prepared shortly before use (preferably within an hour) and with gentle stirring, since oxygen dissolved in the solution will destroy its effectiveness. Discard used solutions. Do not confuse this chemical with sodium bisulphate.

**Sodium borate:** (borax, sodium tetraborate, sodium pyroborate). $\text{Na}_2\text{B}_4\text{O}_7\cdot10\text{H}_2\text{O}$; molecular weight 382; density 1.7. White crystals or anhydrous powder. Soluble in water; the solution is fairly strongly alkaline. Uses: mild alkali, textile printing, application of alkali blue (wool dyeing); manufacture of hat proofs; addition to finishing liquors (as a preservative); solvent for alizarin dyes and casein; flame-retardant impregnations; component in soaps and gloss starches; flux.
**Sodium Carbonate:** soda ash; \( \text{Na}_2\text{CO}_3 \); a weak base. Sodium carbonate is an extensively-used alkali in textile preparation and dyeing. It is typically used to adjust the pH of solutions to about 11. It is also used in scouring cellulose fibres. The most common industrial form is the anhydrous type. Sodium carbonate monohydrate (\( \text{Na}_2\text{CO}_3 \cdot \text{H}_2\text{O} \)) is the most common form sold for photographic use. Washing soda, if “pure”, is usually sodium carbonate decahydrate (\( \text{Na}_2\text{CO}_3 \cdot 10\text{H}_2\text{O} \)). Soda ash is hygroscopic, so it should be stored in a tightly-closed moisture-proof container. If so protected, it will keep indefinitely.

**Sodium Chlorate:** \( \text{NaClO}_3 \) (chlorate of soda) An oxidizing agent, sometime used as a resist salt to protect dyes from reduction in printing processes under acid conditions. Molecular weight 106.5; density 2.5. Colorless crystals, hygroscopic, toxic; water-soluble. Textiles moistened with sodium chlorate are readily ignitable. Uses: powerful oxidizing agent especially in textile printing and aniline black dyeing.

**Sodium Chloride:** \( \text{NaCl} \); common salt. Sodium chloride is used in large quantities as an electrolyte in application of direct dyes and reactive dyes.

**Sodium Chlorite:** \( \text{NaClO}_2 \); molecular weight 90.5; white crystals or crystalline powder, odourless, very stable product. Acidic solutions decompose very rapidly: Uses: bleaching agent for cellulose (chiefly linen and cotton), cellulose pulp, paper, cupro, acetate and viscose fibres, as well as polyamide, acrylic, polyester and polyvinyl chloride fibres, waxes and straw products, edible and inedible oils, etc.; oxidation of vat and sulphur dyeings.

**Sodium Chlorite Bleach:** (1) Cellulosic fibres: sodium chlorite produces excellent bleaching effects with a high degree of fibre protection. It can be applied by full bath treatments or by discontinuous and continuous padding methods. Bleaching reaction only proceeds quickly enough in acidic media below pH 5. Damage to the fibre can occur at pH < 3. For full bath bleaching, organic acids (acetic or formic acid) are preferred to adjust the pH. In addition, diammonium or sodium phosphate are added as stabilizers. In pad-steam processes, organic acids are substituted by products which split off acids by the action of heat, i.e. so-called activators (e.g. ethyl acetate, chloral hydrate). (2) Synthetic fibres: with the exception of polyurethane and some individual acrylic fibre types, the sodium chlorite bleach is the suitable bleach for synthetic fibres in which the material is treated exclusively in a long liquor.

**Sodium Dithionate:** sodium hydrosulfite; dithionite is technically more correct. Uses: the most important reducing agent for stripping dyeings; reducing agent for the dyeing of vat, indigo and sulphur dyes; reducing agent for the printing of vat dyes by the 2-phase process; bleaching agent (especially for wool); antichlor; spotting agent (for dye, fruit, perfume, rust and ink stains,
perspiration, etc.). Sodium dithionite-formaldehyde compounds (so-called sulphoxylates) are used for stripping dyes, and as more stable reducing agents for the dyeing and printing of vat dyes, and discharge printing.

**Sodium Formaldehyde Sulphoxylate**: A reducing agent used in discharge techniques and for stripping dye; Formosul and Rongalit C are trade names; designated in Colour Index as Reducing Agent 2 This chemical is useful for discharge on cellulose and silk, but not usually on wool. It requires alkaline conditions that may damage wool (alkaline conditions can also reduce the sheen of silk). It does not contain free formaldehyde. Also see zinc formaldehyde sulfoxylate.

**Sodium Hexameta Phosphate**: \( \text{Na}(x+2)\text{P}x\text{O}(3x+1) \), where \( x = 6 \) to 21; a sequestrant used to treat hard water; SHMP, often referred to in art dyeing literature as “metaphos” Sodium hexametaphosphate softens water by sequestering calcium and magnesium, effectively making them unavailable to participate in other reactions. Typical use would be about 0.5 grams per litre of water. Calgon T is one trade name for sodium exametaphosphate, though retail Calgon products contain other chemicals, and are not the preferred products for dyeing applications.

**Sodium Hydrosulphite**: \( \text{Na}_2\text{S}_2\text{O}_4 \); a reducing agent used in discharge techniques, dye stripping, and in vat dyeing; more properly called sodium dithionite; dyehouse term is “hydro” or “hydros” For stripping, it is usually used in an alkaline solution at a temperature near the boiling point of water. This is the active ingredient in some of the “whiteners” or “dye removers” sold in small packages like the “household” dyes in the grocery store. It produces a rather strong sulfurous smell. Sodium hydrosulfite is a flammable powder, and must be handled with care. Do not confuse this with sodium hydrosulphide, which is used with sulfur dyes.

**Sodium Hydroxide**: \( \text{NaOH} \); a strong base; commonly sold as beads or flakes, or as a 50% solution; also called caustic soda or lye, often just called “caustic” in dyeing Sodium hydroxide is used in some dyeing processes requiring very high pH. A solution of 4 grams per litre will have a pH of 13. It is common in vat dyeing, some reactive dye methods, and is used in mercerizing cotton. It is commonly used for industrial scouring of cotton. Sodium hydroxide must be handled with great care, since it will cause severe skin burns. It should be dissolved by SLOWLY adding it to stirred VERY COLD water, since a great deal of heat is liberated as it dissolves. Never use aluminum vessels or tools with NaOH: they will be corroded, and explosive hydrogen will be generated. Sodium hydroxide is deliquescent - extremely hygroscopic.

**Sodium Hypochlorite**: \( \text{NaOCl} \) Household type chlorine laundry bleach contains about 5% sodium hypochlorite as the active ingredient. Stronger
solutions are available for industrial use. See bleach, chlorine. Normally used as the hypochlorite lye: clear, yellow-green, free from calcium salts, stabilised (stable for cool storage during months); density 1.21–1.23 with 140–160 g/l active chlorine, equivalent to 147–168 g/l NaOCl.

**Sodium Hypochlorite Bleach:** In comparison to Calcium hypochlorite has an advantage in the absence of calcium, hard water salts. Therefore easier rinsing, weaker acidification (cost), softer fabric handle, also retains white effects better and helps to avoid local fibre damage by calcium chlorite particles. Clear disadvantage: AOX loading in effluent.

**Sodium Hypophosphite:** The most effective catalyst for promoting Durable Press properties. DP rating and shrinkage control equivalent to DMDHEU have been obtained. Catalyst is expensive higher than normal amounts are needed. The hypophosphite is a reducing agent. This is beneficial for maintaining white fabrics, however, it discolors certain dyes especially sulfurs.

**Sodium m-nitrobenzene sulphonate:** Often referred to by BASF’s tradename Ludigol®. This chemical is a mild oxidizing agent that is sometimes used to protect dyes from degradation caused by reducing conditions that exist at high pH and high temperature, especially where air is excluded from the dyeing vessel. Such conditions are quite common in processes for some of the low-reactivity dyes, but very rare in processes for MX dyes, except in steam fixing. Recommended amounts for protecting dyes from reduction range from 1 to 10 grams per litre of dyebath. When used in printing it is sometimes called a resist salt. It is also used as an oxidizing agent for some vat dyes.

**Sodium Metabisulphite:** See sodium bisulphite.

**Sodium m-nitrobenzene sulphonate:** Used to inhibit the reductive effects of caustic and soda boiling, (bleaching dyed goods), as reserving agent for vat dyestuffs in discharge printing and similar methods.

**Sodium N-benzylsulphanilate:** Fine white to yellowish powder, easily soluble in water with neutral reaction. Extensively used in dissolving hydrotropic dyestuffs and as a dispersing agent, especially for vat and leuco-vat dyestuffs in printing: effective as a leveling agent, increases the yield and improves fixation.

**Sodium nitrite:** (nitrite, saltpetre). NaNO₂; molecular weight 69; density 2.17, white to pale yellow crystals, weakly hygroscopic, easily soluble in water, slightly soluble in alcohol. Applications: Diazotising azo dyestuffs (1 part sodium nitrite and 3 parts nitric or sulphuric acid; ratio is important to produce the required nitrous acid); dyeing with leuco-vat dyestuffs; in printing, etc.
Sodium number (SN): Expression for the required minimum alkalinity (to avoid hard water deposits) of feedwater in mg/l of NaOH. Calculation:

\[
SN = mg \text{NaOH} + 0.222 \text{mg Na}_2\text{CO}_3 + 0.667 \text{mg Na}_3\text{PO}_4 \cdot 12\text{H}_2\text{O} + 0.222 \text{mg Na}_2\text{SO}_3.
\]

Sodium Perborate: NaBO\textsubscript{3}. This is the bleaching compound that is most commonly found in laundry detergents that contain “colour safe” bleach. Such detergents often contain special activators that make the perborate work more effectively at moderate temperatures.

Sodium Percarbonate: A dry chemical made by reacting sodium carbonate with hydrogen peroxide. Sodium percarbonate can be used as an alternative to hydrogen peroxide for oxidizing bleaching. It is considerably more expensive, but is safer to handle (relative to industrial-strength hydrogen peroxide). Oxi Clean® is a retail cleaning compound believed to be primarily sodium percarbonate.

Sodium peroxide: (sodium superoxide). Na\textsubscript{2}O\textsubscript{2}; molecular weight 78; density 2.81. Pale yellow, fine particulate powder (or compact granules of 0.3–1.5 mm ø) 19–20% active oxygen, very hygroscopic, odorless; 97% purity. Application: Oxidizing agent for vat and sulphur dyestuffs; bleaching agent for silk, wool, cotton, linen, viscose, etc.) In soluble form after the addition of sulphuric acid (to neutralize) and addition of phosphate to make weakly alkaline, stabilizer etc. to produce a non-yellowing full white product (softer fabric handle and less fibre damage).

Sodium Phosphate: Primary sodium phosphate (monosodium phosphate, sodium dihydrogen phosphate) NaH\textsubscript{2}PO\textsubscript{4}. Not as effective in promoting DP ratings. Requires higher temperature cure. Much less expensive than hypophosphite. Discolors whites at higher temperatures. Does not affect dye shade. Application: Water preparation especially for boiler feed as corrective method after base exchange. Dosing ca. 20 g. sodium phosphate crystals/m\textsuperscript{3}/l\textsubscript{°} hardness whereby there is a minimum 1° carbonate hardness from sodium hydrogen carbonate. II. Secondary sodium phosphate (disodium hydrogen phosphate). Na\textsubscript{2}HPO\textsubscript{4} · 12H\textsubscript{2}O; density 1.53; molecular weight 358. Application: Water preparation especially for boiler feed (60 g/m\textsuperscript{2} and residual hardness) especially after the softening stage; weighting of silk, dyebath additive as a mild alkali (substantive sulphur dyestuffs), fixing agent for aluminium mordant (alizarin red), flame retardant impregnation, builder for laundering detergents. III. Tertiary sodium phosphates Trisodium phosphate.

Sodium sesquiphosphate: Na\textsubscript{3}H\textsubscript{3}(PO\textsubscript{4})\textsubscript{2}. Known as a polyphosphate; changes on heating to a neutral mixture of alkaline mono phosphates at 300–500°C. Application: as detergent and boiler de-scaling agent.
**Sodium Silicate**: $\text{Na}_2\text{Si}_3\text{O}_7$ and similar compounds, usually as a solution in water. Sodium silicate is used as a stabilizer in hydrogen peroxide bleaching. It can also be used in direct application of reactive dyes to cellulose fibres. Here it is applied essentially full-strength after the dye is applied, acting as an alkali to cause the dye to fix to the fibre. Because it is a syrupy liquid, it makes the dye spread less than other postapplied alkalies. Care must be taken to avoid making solutions of sodium silicate acidic, since this will result in a water-insoluble gel that is extremely difficult to remove. Sodium silicate solution is also called water glass. It can be very irritating to skin. Application: Degumming of silk; caustic and keir boiling; stabiliser for peroxide bleaching; silk weighting; dyeing of alkali blue (wool); flame retardant impregnation; in printing; matting of viscose; soaping assistant; component in washing powder and liquid soaps; adhesives, etc.

**Sodium Sulphate**: Glauber’s salt; $\text{Na}_2\text{SO}_4$, molecular weight 142; density 1.46. Sodium sulphate is used as an alternative to common salt (sodium chloride) in some dyeing processes, such as those involving MX turquoise where it is a simple electrolyte. When used with some acid dyes for wool, it may act as either an electrolyte to enhance exhaustion, or as a retarder to aid leveling, depending on conditions such as pH. It is also used as a diluent for many dyes. Sodium sulphate is often sold in anhydrous form. It will absorb water from the air, so it should be stored in tightly closed containers. In the dye industry, some use “sodium sulphate” only to refer to the anhydrous form, known as “Duisburger sodium sul硫酸ate”, white powder, iron free and 99.5–99.8% pure, water soluble with gentle heating and “Glauber’s salt” to refer to the decahydrate form ($\text{Na}_2\text{SO}_4 \cdot 10\text{H}_2\text{O}$) is colorless crystals of high purity, easily efflorescent, water soluble with temperature lowering. Application: Salt in the dyehouse (neutral baths: like sodium chloride for salting out dyestuffs, increases dyestuff rate of exhaustion; acid baths: reducing acidity, slows the rate of exhaustion of dyestuffs); in standing baths for increasing the salt content and raising the boiling point; component in many powderform dyestuffs (diluent); additive in weighting formulations, etc..

**Sodium stannate**: (preserving salt, tin soda). $\text{Na}_2\text{SnO}_3 \cdot 3\text{H}_2\text{O}$; molecular weight 267. Easily water soluble crystals, solution (hydrolysed) strongly alkaline. Used as a swelling agent e.g. for viscose filament yarn (by diffusion of salt solution into the fibre) and, by thermal decomposition for the stabilising and storage of stannic acid gels (similar effect and improved by a treatment with barium chloride solution with the formation of barium stannate), as matting pigments. Application: weighting of silk; flame retardant impregnation (textile finish); matting of viscose.
Sodium stearate: (sodium salt of stearic acid). C_{17}H_{35}COOH molecular weight 306.46. Saponified stearic acid. White flakes; soluble in water and alcohol. Application: manufacture of household soaps and tallow soaps, finish component, etc.

Sodium sulphide: (sulphuretted sodium). Na_{2}S ·9H_{2}O; molecular weight 240. Fused mass or crystals (ratio 1 : 2), colorless (also weakly yellow), smell of hydrogen sulphide, hygroscopic, water soluble with alkaline reaction; gradually decomposes in the presence of air; reducing agent. Application: dissolving and dyeing with sulphur and vat-sulphur dyestuffs; de-hairing agent (tanning), etc.

Sodium sulphite: (sodium salt of sulphurous acid). Na_{2}SO_{3} ·7H_{2}O; molecular weight 252. White crystalline powder, ca 25% SO2, easily efflorescent (with oxidation to sodium sulphate), water soluble, weakly alkaline solution. Application: antichlor; reducing agent (printing); preservative; corrosion inhibitor in process water (binds acids), etc.

Sodium tetrapophosphate: Na_{6}P_{4}O_{13}. Anhydrous sodium tetraphosphate contains ca. 60.4% P_{2}O_{5} and 36% Na_{2}O, is hygroscopic and reacts weakly alkaline. In contrast tripolyphosphate will bind more calcium ions. Used as builder for paste/highly viscous synthetic detergents.

Sodium tripolyphosphate: (TPP, triphosphate, tripolyphosphate, sodium polyphosphate). Na_{5}P_{3}O_{10}; washing powder additive. Application: chelating agent for water softening; feed-water preparation; hot water supply systems; laundering; milling; after-rinsing, etc.

Sodium Thiosulphate: Na_{2}S_{2}O_{3}, a chemical used to neutralize chlorine in water for dye baths. The chlorine present in tap water can actually destroy small amounts of dye. This can be a problem, particularly when dyeing very pale shades where loss of a little dye can influence the final shade noticeably. Sodium thiosulfate is preferred for neutralizing chlorine for this application. Typical use would be about 0.15 grams per litre of bath. Sodium thiosulfate is the main ingredient in fixer (types sold as dry powder mixture) for black and white photographic processing. Most antichlor products for aquarium use are sodium thiosulfate.

Sodium tungstate: (sodium salt of wolframic acid), Na_{2}WO_{4} ·2H_{2}O; molecular weight 330; density 3.25. Colorless crystals, water soluble. Application: flame retardant and water repellent finishes.

Sodium Xylenesulphonate: C_{6}H_{4}(CH_{3})_{2}SO_{3}Na. Highly effective hydrotropic agent for fat free soaps, scouring agents, washing powders and similar.
**Sof**: (1) A very fine, plain woven fabric, made by the natives of Kashmir of the finest sort of mohair; obsolete; (2) Very light, changeable or brocaded fine woollen from Asia Minor.

**Soft dyeing technique**: Term used for gentle handling of fabrics in the dyeing process with overflow or jet dyeing machines having controlled liquor flow.

**Soft flow rope dyeing machines**: Fabrics with a sensitive surface character that may be subject to creasing or surface roughening during the dyeing process are dyed on machines using the overflow principle in soft flow dyeing machines. Here the goods are not moved through a jet pipe but fall onto a smooth plate or are twice overflow-treated.


**Soft silk**: A silk from which the natural gum (sericin) has been completely removed by degumming.

**Soft soap**: See Soap.

**Soft waste**: See Waste, soft.

**Soft water**: Water with little or no carbonate hardness or non-carbonate hardness. It may originate in the hard rock areas or from peaty moorland, but not from chalk, nor from limestone formations. Soft water may be corrosive, as in plumbosolvency.

**Soft window covering**: Curtains, draperies, or other accessories on wall or window openings that are either lined or unlined and primarily constructed of textile fabrics.

**Softener**: A chemical or chemical mixture intended to give fabric a soft hand. Softeners act primarily as lubricants for fibres, allowing them to slide over each other more easily, giving a softer feel. Some also help reduce static electric charge build up, and some are antimicrobial. Many softeners are surfactants, and they may be cationic, anionic or non-ionic. Household laundry softeners are often based on cationic surfactants. Softeners can interfere with dyeing, so they should be removed by scouring. Some, such as silicones, can be quite difficult to remove.

**Softener (Fabric)**: When the hand is made to drape more or to feel silkier, the fabric is said to have been softened. Chemicals that do this are called Softeners. Many softeners are derived from naturally occurring Fats, Oils and Waxes. Sources and reactions of fats, oils and waxes have been discussed in a Chapter 3. Some softeners are derived from synthetic raw materials. Many
of the compounds that work as softeners also function as surfactants or water repellents. These topics are covered in greater detail in other sections. It is hoped that the reader will come to appreciate that certain chemicals can serve many functions as textile finishes and processing auxiliaries. Softeners are divided into three major chemical categories describing the ionic nature of the molecule, namely Anionic, Cationic and Nonionic. Nearly all surfactants are softeners; however, not all softeners are surfactants. Surfactants are two-ended molecule, one end being lyophobic and the other hydrophilic. The lyophile is usually a long hydrocarbon chain, the essence of most lubricants. The ionic portion is responsible for water solubility, (a necessary feature for applying the softeners) and as will be discussed later, in how the molecule aligns itself at the fibre surface. This section will be devoted to describing the chemical structures of important softeners, some of their properties and their fabric uses. It is well to remember that the same chemical structure may describe a surfactant used for other purposes such as detergents, wetting agents, emulsifying agents etc.

**Softener (water):** Chemical(s) added to water to prevent hardness ions from interfering with other solutes Sodium hexametaphosphate (SHMP) is commonly used as a softener in dyeing. It will hold moderate amounts of hardness ions in solution. Soda ash will soften water, but it does it by formation of insoluble precipitates that can deposit on fabric or equipment, so SHMP is often added before soda ash to prevent this. Water softening systems which use common salt exchange hardness cations for sodium.

**Softening point:** The temperature at which substances without a sharp melting point change from viscous to plastic flow.

**Softening range:** The temperature range for synthetic fibres (according to each fibre type) that lies between becoming thermoplastic and the true melting point. It is not identical to the Transformation temperature but lies somewhat above.

**Softness, in water:** A relative absence of dissolved calcium, magnesium and other salts that react with soluble soaps to form insoluble precipitates.

**Softness index:** Calculated from the factors of surface smoothness or friction, yarn thickness and compressibility. Fabrics are tested as 1 cm. wide strips. Evaluation is based upon a 10 batch. The softness index indicates e.g. treatment with dist. water 1; with 0.5 gpl soap 1.10; after acidic bleach on cotton 1.36.

**Sofu:** Plain woven unbleached cotton sheeting in Japan, made usually 36 inches wide and 44/44.

**Soie:** French for silk.
Soie Mi-serree: French term for loose twist, glossy silk yarn for crochet.


Soie Ondee: Silk yarn used for gauze; it is made by twisting a fine and coarse thread together.

Soie Ovale: French term for silk embroidery yarn.

Soie Platte: French floss silk yarn used for embroidery, tapestry, etc.

Soie Vegetale: Flax treated to have a high, permanent lustre. It bleaches and dyes well; used for braids, laces, etc. silk.

Soil affinity: The reduction in Y value between new and soiled fabrics.

Soil burial Test: A test of resistance of textile material to certain microorganisms present in soil. The samples are buried in soil for an extended period, then removed and measured for strength loss.

Soil Hiding: Ability of carpet to hide soil.

Soil redeposition: Redepositing of removed dirt from another fabric, onto the goods which is clean or relatively clean during washing or dry-cleaning processes. Anti-soil redeposition: Counteracts the re-deposition of dirt during washing.

Soil release: The property of dirt, especially oil based, being more easily released from textiles during cleansing processes. Synthetics and resin finished synthetic/cellulosic mixtures are poor in this respect in comparison to natural fibres.

Soil release Agent: Soil release products currently in use can be based on the following chemicals, for example: Silicium compounds, carboxymethylcellulose, ethoxylated compounds, polyglycol ester of terephthalic acid, acrylic acid polymers, and fluorochemicals.

Soil release Finish: Application of finishing processes that are specifically designed to ensure more efficient laundering of soil and stains. Good soil release effects are achieved through application of the Dual action principle, using fluorochemicals that are oleophobic and hydrophilic. See Antisoiling finish.

Soil repellency: Alternative term for Antisoiling finish Resistance to soiling as a finishing effect, which prevents soil penetration, or makes it difficult. Examples of soiling include dry soil (dust), wet soil (fruit juice, ink), oils and fats (engine oil and skin grease). Should not be confused with Soil release finish. Anti-soiling finishes.

Soil resist agent: Agents which are used in producing the Soil resistant finishes.
Soil resistant: Resistance against water-bound soil, fatty substances and pigment soiling.

Soiled end: Self explanatory.

Soiling: The staining or smudging of textile materials resulting from the deposit of dirt, oil undesirable dye, etc.

Soiling behaviour: Soiling behaviour of textiles is extremely dependent on the type of fibre, Soil release. No standardized tests exist for the soiling behaviour of carpets, because there are so many different types of soiling (dust, mud, lint of all types), and different colours and patterns. However, institutes use internal testing methods that permit absolute conclusions under specified conditions.

Soiling test: Wash or dry clean a test sample of a textile that has been artificially soiled, so that the level of optical brightening (Whiteness, degree of) achieved after washing or dry cleaning can be comparatively assessed. In principle, the soil test incorporates a combination of three soil types, such as carbon pigment, saponifiable fat, mineral oil (standard soil types).

Soil Resistance Merit Rating (SMR): Factor of soil resistance for carpets, taking into account the influence of colour. SMR indicates how high the soil concentration should be in a white test sample, so that the same apparent level of soiling as a specific colour can be achieved. The higher this value is, the greater the soil resistance of that colour. These values are defined on the basis of reflection measurements using a green filter (y value). Evaluation:

1.0–3.9 very bad
4.0–7.9 bad
8.0–15.9 fairly good
16.0–30.9 good
> 31.0 very good

E.g., white 1.0; mid-blue 33.0; coffee brown 190.0.

Soils: Soils can be defined as unwanted substances at the wrong place. Most common soils fall into one of four categories: (a) water borne stains, (b) oil borne stains, (c) dry particulate soils and (d) composite soils involving oil and grease adsorbed on particulate matter. Water borne stains are not much of a problem, the stains are soluble in the wash water. Food stains and dried blood, although not water soluble, are responsive to proteolytic enzymes found in most commercial detergents. Dry particulate soils such as flour, clay and carbon black are mechanically entrapped in the yarn interstices and reside on the surface of the fibre. Removal of particulate soils depends on overcoming the work of adhesion between the particle and the fibre surface, facilitating
the transport of detergent solution to where they reside and transporting the particle into the wash water. Mechanical energy (agitation) is important for latter.

**Soisette**: The name given to a fine cotton made from mercerized yarns. Its use is confined mainly to good quality nightwear and negligees, due to its softness.

**So-Iron**: A durable press rating. Fabric must have a smooth appearance after it is laundered dried (line dried or tumble dried). Fabric smoothness is referred to as Durable Press Rating (DP Rating) and is judged on a 1 to 5 scale. A 5 DP rating is the highest (most smooth) and a 1 is the most wrinkled. A 3.5 rating is considered commercially acceptable.

**Soleil**: The name of a very highly finished wool fabric woven in twill broken-rib effect. The weave and finish give the fabric a shiny appearance. The term is also used to describe any shiny, light reflecting fabrics in any fibres.

**Solid braid, in rope**: A braided construction in which each strand alternatively passes under and over one or more of the other strand while all strands are rotating around the axis with the same direction of rotation.

**Solid Coloured**: Fabric dyed in one colour.

**Solid content**: Dry substance content (in g) per kg of thickener, e.g. locust bean flour 20–25, locust bean flour derivatives 20–250, guar derivatives 40–250, starch ether 100–400, carboxymethyl cellulose 40–200, hydroxymethyl cellulose 15–40, crystal gum 250–330, carragheenates 50–100, polysaccharides 40–200, alginates 30–120, tragacanth 65–80, starch 80–100, polyvinyl products 100–200, polyacrylic products 200–250, British gum 500.

**Solid-state polymerization**: Reaction of the active end-groups within a solid polymer. It may be intentional as in heating and drying nylon 66 to increase the final degree of polymerization; or it may be undesirable such as that which occurs in fibres under high temperature conditions in tires that leads to increased degree of polymerization, cross-linking, and subsequent brittleness and loss of strength.

**Solubilised sulphur Dyes**: See **Solubilised vat dyes**. Sulphur dyes are insoluble pigments which are usually converted to soluble form with the addition of sodium sulphide and soda ash, which is the leucoform of the sulphur dye and is not stable. For the ease of application the sulphur dye can be converted to solubilised stable form by esterification of the leuco form and these are called solubilised sulphur dyes. These solubilised dyes are applied directly on the fabric and converted to original sulphur dye on the fibre fabric by suitable treatment.
Solubility: Symbol: S The amount of one substance that can dissolve in another to form a saturated solution under specified conditions of temperature and pressure. Solubilities are stated as moles of solute per kilogram of solvent (molality), or as kilograms of solute per cubic meter of solvent (density). The solubility of a solid in a liquid generally increases with temperature, whereas that of a gas in a liquid generally decreases. An increase in pressure on a gas above a liquid leads to a proportional increase in the solubility of the gas. See also concentration.

Solubilized vat dye: Also called Vat Leuco Ester Dyes. They are basically vat dyes which have been esterified by chemical reaction and thus made soluble for ease of application. The leuco compounds of a Vat or a Sulphur dyes are unstable unless special measures are taken.

Dyeing with vat dyes is often accompanied by levelling problems since water-insoluble pigments are involved, which have to be made water-soluble by the addition of appropriate chemicals in order to dye the substrate. Vat leuco ester dyes, on the other hand, are already water-soluble products which produce very level dyeings. In most cases, these dyes have only slight substantivity and are used for dyeing and printing cotton as well as other cellulosic fibres. They are developed to the parent dyes using appropriate treatment after applying these on the fabric / fibre.

Solidonia: Proprietary name for a fibre of gloss and metallic whiteness and harsh feel, used for knit goods as substitute for silk or wool. It is made of a fibrous grass.

Solomon Bar: In macramé lace four threads braided together flat.

Solubility product: The equilibrium constant for a reaction involving a precipitate and its constituent ions is known as the solubility product.

Soluble: Capable of being dissolved, i.e., passing into solution.

Soluble chemical oxygen demand (SCOD): COD can be fractionated practically to particulate and soluble CODs. But there are little standardization on the definition of soluble versus particulate COD. Where filtration is the technique is used to fractionate the sample, the relative distribution between
soluble and particulate COD will vary greatly depending on the pore size of the filter. An alternative method used to determine the soluble COD involves precipitation of the suspended solids and a portion of the colloidal material. The COD of the clarified liquid corresponds to the soluble COD.

**Solute**: A material that is dissolved in solvent to form a solution.

**Solution**: A liquid system of two or more species that are intimately dispersed within each other at a molecular level. The system is therefore totally homogeneous. The major component is called the solvent (generally liquid in the pure state) and the minor component is called the solute (gas, liquid, or solid). The process occurs because of a direct intermolecular interaction of the solvent with the ions or molecules of the solute. This interaction is called Solvation. Part of the energy of this interaction appears as a change in temperature on dissolution. See also heat of solution; solid solution; solubility.

**Solution-dyed**: A type of fibre dyeing in which coloured pigments are injected into the spinning solution prior to the extrusion of the fibre through the spinneret. Fibres and yarns coloured in this manner are colour-fast to most destructive agents.

**Solvent**: A liquid capable of dissolving other materials (solids, liquids, or gases) to form a solution. The solvent is generally the major component of the solution. Solvents can be divided into classes, the most important being: **Polar**. A solvent in which the molecules possess a moderate to high dipole moment and in which polar and ionic compounds are easily soluble. Polar solvents are usually poor solvents for nonpolar compounds. For example, water is a good solvent for many ionic species, such as sodium chloride or potassium nitrate, and polar molecules, such as the sugars, but does not dissolve paraffin wax. **Nonpolar**. A solvent in which the molecules do not possess a permanent dipole moment and consequently will solvate nonpolar species in preference to polar species. For example, benzene and tetrachloromethane are good solvents for iodine and paraffin wax, but do not dissolve sodium chloride. **Amphiprotic**. A solvent that undergoes self-ionization and can act both as a proton donator and as an acceptor. Water is a good example and ionizes according to: \( 2H_2O = H_3O^+ + OH^- \) **Aprotic**. A solvent that can neither accept nor yield protons. An aprotic solvent is therefore the opposite to an amphiprotic solvent.

**Solvent bleaching**: Oxidation bleach with sodium chlorite in organic solvents. Peroxide bleaching of wool using tetrachloroethylene liquors was an example of an exhaustion process in Solvent technology in textile finishing. Aqueous emulsions of \( H_3O_2 \) in tetrachloroethylene have 100% attraction to hydrophobic wool, which they bleach during the drying phase, continuing for 24 hours until bleaching is complete.
**Solvent bonding**: A method of making nonwoven fabrics in which a solvent is used to soften the fibre surfaces in a web or batt and hence cause bonding.

**Solvent dye**: See **Solvent dyeing**. These water-insoluble but solvent-soluble dyes are devoid of polar solubilizing groups such as sulfonic acid, carboxylic acid, or quaternary ammonium. They are used for colouring plastics, gasoline, oils, and waxes. The dyes are predominantlyazo and anthraquinone, but phthalocyanine and triarylmethane dyes are also used.

**Solvent dyeing** (organic solvents). A process developed in the 1970s, which was designed to replace water as a dyeing medium with suitable solvents, because water was becoming more and more expensive and scarce. Solvent dyeing is only used in specialist dyeing areas as a complementary process for existing aqueous dyeing processes.

**Solvent dyeing process**: There are two different types of dyeing process: (a) Ionic dyeing process for polyamide and wool: water soluble acidic dyes and special tetrachloroethylene-soluble acidic dyes are used for both fibre types. Since hardly any dyeing occurs without the addition of a “solvent aid”, it is essential to add water, because otherwise no ionic bond will be able to form between the dye and the fibre. (b) Non-ionic dyeing process for polyester: in this process, the coloristic advantages and the process advantages stand out particularly in comparison with the aqueous process. Tetrachloroethylene, ethylene glycol, diethylene glycol and glycerine are all examples of a possible solvent medium.

**Solvent extraction**: (liquid–liquid extraction). A method of removing a substance from solution by shaking it with and dissolving it in a better solvent that is immiscible with the original solvent.

**Solvent impregnation**: (solvent waterproofing). Specialist technique for waterproofing in organic solvents (benzine, heavy benzine, tetrachloroethylene, etc.) with Solvent impregnation agents. Important in dry-cleaning for re-impregnating garments after cleaning.

**Solvent relative humidity**: The humidity of air over a drycleaning bath and in equilibrium with the solvent and a small amount of water.

**Solvent scouring**: Washing off scrooping or solvent preparations (solvent finishing). In the treatment of polyester, it should be remembered that this type of fibre is capable of solvent sorption, which accelerates dye diffusion.

**Solvent sizing**: Sizing of warp ends (widthwise) using organic solvents. It is carried out in a completely sealed pressure system in a suitably constructed solvent sizing machine. Polystyrene, for instance, is applied cold, can
subsequently be removed from the fabric by means of tetrachloroethylene (desizing; extraction possible using ultrafiltration), and long-term experiments in the weaving industry have shown that this method is well suited to sizing.

**Solvent spinning:** See **Spinning, Dry-spinning.**

**Sommiere:** All-wool, French serge, made very soft and napped on one or both sides; used for lining of winter garments. Comes in bleached, ecru or dyed in the piece.

**Sorbitol:** Hexahydric alcohol. Manufactured by reducing d-glucose or dextrose derived from starch or maize. There are different forms: a) white powder or colorless needle-shaped crystals, melting point 100–120°C, easily soluble in water, pyridine, methanol, acetic acid, phenol, not so easily in cold alcohol; b) syrupy solution with 70–80% sorbitol content, density greater than 1.26, neutral, non-reducing, odourless, non-toxic, sweet taste. Application: alternative to glycerine for sizing, finishing, dyeing, printing; for plasticizing rubber and glue; for softening the gelatinous layers on print rollers.

**Sorption:** The process of taking up or holding a material by adsorption or absorption or both.

**Soumak Rugs:** All-wool tapestry ruga woven in Transcaucasia. They come in all sizes. The design is geometrical. The hook is often used, the stitches being made in the herringbone fashion. It is also called Kashmir. Modern Soumarks are made in loose weave and with coarse dye.

**Souple:** Single filament of natural silk with the gum only partly boiled out (also called Mi-cuit).

**Sourbassis:** White or yellowish Persian raw silk of fine quality.

**Source:** To find suppliers of the required materials.

**Souring:** Any treatment of textile materials in dilute acid. Its purpose is the neutralization of any alkali that is present.

**Soutache:** Narrow rounded braid woven in herringbone effect with odd number of threads made either plain or fancy; used for trimming.

**Space dyeing:** Sectional printing or dyeing of yarn and cable in varying stages of processing, various colour shades, as well as in different intervals and lengths. In space dyeing it is scarcely possible to differentiate between dyeing and printing. The space dyeing process provides an opportunity to create interesting types of pattern. Multi-coloured, irregular motifs and imaginative effects on the fabric can be achieved by using yarn with partially bordered patches of colour. The washed out looking, asymmetrical patterns on upholstery covers and domestic textiles (floor coverings) are particularly dominant.
Spacer: Spacers are for supporting and sealing the yarn layers in yarn package dyeing.

Spacer Fabric: Spacer fabrics can be described as three-dimensional orthogonal structures with yarns in the $x$, $y$ and $z$ directions (Fig. below). Numerous definitions of a spacer fabric exist. Roye and Gries (2007) describe such materials as comprising a three dimensional yarn architecture and a three-dimensional textile architecture, produced by the weaving process (woven spacer fabrics), by circular knitting machines (weft-knitted spacer fabrics), or by double needle bar warp knitting processes (warp-knitted spacer fabrics). Two separate fabrics faces knitted independently and then connected by a separate spacer yarn.

These fabrics can be produced on both circular and flat knitting machines. Spacer fabrics have the properties of good breathability, crush resistance, and a 3D appearance.

Span length, in length testing of cotton with Fibrograph: The distance spanned by a specified percentage of the fibres in the test beard, taking the amount reading at the starting point of the scanning as 100%.

Spandex: A synthetic elastic fibre of polyurethane lycra (Invista, formerly Dupont) is a well-known brand of spandex. Spandex is found in fabrics either as bare fine filaments or covered with another fibre. Spandex can be dyed with disperse dyes and some acid dyes.

Usually where bare filaments are used, they are quite inconspicuous even if they are not dyed to match the fabric. Spandex will withstand most preparation and dyeing processes without damage, but is damaged by chlorine bleach.

Spandex fibre: A manufactured fibre in which the fibre forming substance is long chain synthetic polymer comprised of at least 85 % of a segmented polyurethane.

Spanish lace: The most common Spanish lace is made of silk in flat designs, usually floral, and held together with a mesh, but the term Spanish lace also refers to all lace made in Spain.
**Spanish Stitch**: In embroidery cross stitches arranged in a row to form a line on the face of the fabric and squares on the back.

**Spanish Stripes**: A lightweight, wide and fulled woollen cloth, originally made of Spanish wool with striped selvage, now made mostly in England. It is light, very soft and well finished with a light nap.

**Spatterdash**: A sort of overgaiter or legging.

**Sparta carpets**: Isparta carpets.

**Sparterie**: Stiff fabric, used in making hat bases as it can easily be shaped.

**Spau press**: Cold Flat press.

**Specialty felt**: One of a number of special purpose felt structure available for, but not limited to, specific use or application.

**Specific area, of wool**: The ratio of the fibre surface to fibre volume.

**Specific gravity**: Ratio of the mass of a material to the mass of an equal volume of water at 4°C. The range for modern fibres is not too great and is dependent to some extent on the liquid used as an immersant in measurements, because of fibre swelling and of possible absorption of liquid into fibre voids. (Also see Density.)

**Specific gravity, of felt**: The relative mass per unit volume of felt expressed as a percentage of mass per unit volume of water.

**Specification**: A precise statement of a set of requirements to be satisfied by a material, product, system, or service that indicates the procedures for determining whether each of the requirements is satisfied.

**Specimen**: A specific portion of a material or a laboratory sample upon which a test is performed or which is selected for that purpose.

**Speck**: (1) A contaminant in polymer such as gels, metal, or dirt that shows up as a dark spot. (2) A small particle of foreign substance that has not been removed from the stock before spinning.

**Speck printing**: The Specks that are usually not required in printing are produced artificially by using encapsulated dyes, so that the resulting print profile consists of dots of equal sizes in a mono or multi colour way. This print effect can be carried out on various different types of fibre if suitable dyes are used, for example in transfer printing on polyester.

**Speckiness**: See Specky fabric.

**Specking**: The removal of burrs, knots, and other objects that impair the finished appearance of woollens and worsteds.

**Speckle**: Uneven dyeing in yarns or cloths.
Specks, in woollen fabric: Small pieces of undyed vegetable matter which can be removed by carbonizing or can be covered by dyeing or inking.

Specky: A term used to describe dyed woollen fabric with specks of undyed vegetable matter on the face. The specks can be removed by carbonizing or covered by speck dyeing.

Specky cloth: See Specky fabric.

Specky fabric: Dyed fabric which shows small specks of undyed vegetable matter in the face.

Spectrophotometer: Photometric device that measures spectral transmittance, spectral reflectance or relative spectral emittance.

Spectral Curve: A colour’s “fingerprint”—a visual representation of a colour’s spectral data. A spectral curve is plotted on a grid comprised of a vertical axis—the level of reflectance intensity; and a horizontal axis—the visible spectrum of wavelengths. The percentage of reflected light is plotted at each interval, resulting in points that form a curve.

Spectrophotometric curve: A curve measured on a spectrophotometer; a graph with relative reflectance or transmittance (or absorption) as the ordinate, plotted with wavelength or frequency as the abscissa.

Spectroscopy: The study of methods of producing and analyzing spectra using spectroscopes, spectrometers, spectrographs, and spectrophotometers.
The interpretations of the spectra so produced can be used for chemical analysis, examining atomic and molecular energy levels and molecular structures, and for determining the composition and motions of celestial bodies.

**Spectral Data:** The most precise description of the colour of an object. An object’s colour appearance results from light being changed by an object and reflected to a viewer. Spectral data is a description of how the reflected light was changed. The percentage of reflected light is measured at several intervals across its spectrum of wavelengths. This information can be visually represented as a spectral curve.

**Spectral power distribution curve:** Intensity of radiant energy as a function of wavelength, generally given in relative power terms.

**Spectral energy distribution:** The variation of energy due to the source over the wavelength span of the emitted radiation.

**Spectral Power Distribution (SPD):** The spectral power distribution (SPD) of a light source provides the required numerical description of it. The SPD gives the emitted power (watts per square metre of emitter surface per unit wavelength interval, W m⁻² nm⁻¹) as a function of the wavelength.

**Spectral transmittance:** The percent of incident radiant energy passing through a given material and not absorbed in the process, as a function of wavelength.

**Spectral distribution of energy:** See *Spectral energy distribution.*

**Spectrograph:** A spectroscope equipped with a camera or some other device for recording the spectrum. Also see *Spectroscope.*

**Spectrometer:** (1) An instrument for examining the different wavelengths present in electromagnetic radiation. Typically, spectrometers have a source of radiation, which is collimated by a system of lenses and/or slits. The radiation is dispersed by a prism or grating, and recorded photographically or by a photocell. There are many types for producing and investigating spectra over the whole range of the electromagnetic spectrum. Often spectrometers are called *spectroscopes.* See also *spectrophotometer.*

(2) Any of various other instruments for analyzing the energies, masses, etc., of particles. See mass spectrometer.

**Spectrophotometer:** An instrument used to measure the transmission or reflectance of light as a function of wavelength. A form of spectrometer able to measure the intensity of radiation at different wavelengths in a spectrum, usually in the visible, infrared, or ultraviolet regions.

**Spectroscope:** An instrument for forming a spectrum for visual examination.
**Spectroscopy:** The identification of materials by the analysis of their spectra.

**Spectrum:** Spatial arrangement of components of radiant energy in order of their wavelengths, wave number or frequency.

**Specular gloss:** The relative luminous fractional reflectance of a specimen in the specular direction. Relative luminous fractional reflectance from a surface in the mirror or specular direction. It is sometimes measured at 60° relative to a perfect mirror.

**Reflectance factor:** The ratio of the light reflected from the specimen to the light reflected from the perfect reflecting diffuser under the same geometric and spectral conditions of measurement.

**Specular reflectance:** Reflectance of a beam of radiant energy at an angle equal but opposite to the incident angle; the mirror-like reflectance. The magnitude of the specular reflectance on glossy materials depends on the angle and the difference in refractive indices between two media at a surface. The magnitude may be calculated from Fresnel’s Law.

**Specular reflectance excluded (SCE):** Measurement of reflectance made in such a way that the specular reflectance is excluded from the measurement; diffuse reflectance. The exclusion may be accomplished by using 0° (perpendicular) incidence on the samples. This then reflects the specular component of the reflectance back into the instrument by use of black absorbers or light traps at the specular angle when the incident angle is not perpendicular, or in directional measurements by measuring at an angle different from the specular angle.

**Specular reflectance included (SCI):** Measurement of the total reflectance from a surface, including the diffuse and specular reflectances.

**Specular reflection:** The reflection without diffusion, in accordance with the laws of optical reflection, as in a mirror.

**SPF (Sun Protection Factor):** SPF measures the effectiveness of sunscreen on the body. The test for SPF is done by using a living organism or body to measure the length of time it takes for the skin to redden without coverage or protection.

**Spencer:** Short, narrow-waisted jacket with lapels; sleeveless or short sleeved.

**Spherulite:** A common form of polymer crystallization from melts or concentrated solutions. These crystallites show a radial symmetry from a central point and have a distinctive maltese cross pattern of birefringence under the polarizing microscope.

**Spider Leno:** See Net leno.
Spider silk: Product of silk spider (Madagascar). Without silk glue. Extremely light. Strength, glaze and elasticity similar to genuine silk but finer. Spiders silk also known as gossamer is a protein fibre spun by spiders. Spiders use their silk to make webs. Many small spiders use silk threads for ballooning, the scientific term for dynamic kiting spiderlings (mostly) used for dispersal. They extrude several threads into the air and let themselves get carried away with upwards wind.

Spider Weave: Name for weaves producing a net-like effect on the face of the cloth by floating and deflecting either the warp or the weft threads.

Spider Wheel: See Catherine wheel.

Spiking: Use of spikes fixed to one edge of a hinged table to facilitate the even laying up of fine material. The table top is tilted vertically for hanging the material and back to the horizontal for cutting.

Spin finish: “Oiling agents” consisting of oils or fats and surfactants the behaviour of which, depending on the task in hand and composition, comes somewhere between textile lubricants and textile softening agents. See Lubricant.

Spin multiplier: See Twist Multiplier.

Spin stretch Ratio: In man-made filament extrusion, the ratio of taken-up or haul off speed to the average speed of the spinning fluid as it leaves the spinneret.

Spin drawing: (1) The reduction of roving during spinning by a roller drafting mechanism similar to that used on the roving frame. (2) Combined spinning and drawing in one operation in melt-spun fibres.

Spindle: (1) Device on spinning and twisting machines for holding packages and the like for imparting a twist to or roll-batching yarn on a spinning frame, roving frame, twister, winder, or similar machine. A bobbin is placed on the spindle to receive the yarn as the spindle is rotated at high speed. (2) Hydrometer. (3) Threaded shaft for the transmission of turning motion.

Spindle tape: A woven narrow fabric of width normally not greater than 50 mm. usually of high warp density and designed for the transmission of power spindle wharves of small diameter.

Spinneret: A metal disc containing numerous minute holes used in manufactured fibre extrusion. The spinning solution or melted polymer is forced through the holes to form the fibre filaments.

Spinnerette: Same as Spinneret.
**Spinning**: The process or processes used in the production of yarns or filaments. (a) This term may apply to the drafting and twisting of natural or man-made fibres (see continuous spinning, intermittent spinning, open-end spinning), to the extrusion of filaments by spiders and silkworms, or to the production of filaments from glass, metals or fibre-forming polymers. (b) In the spinning of man-made filaments, fibre-forming substances in the plastic or molten state, or in solution, are forced through the holes of a spinning jet (q.v.) or die at a controlled rate (extrusion). There are five general methods of spinning man-made filaments, but a combination of two (or more) of these methods may also be used. They are the following:

(i) **Dispersion Spinning**: The process in which polymers that tend to be infusible, insoluble and generally interactable (e.g. polytetrafluoroethylene) are dispersed as fine particles in a carrier, such as sodium alginate or sodium xanthate solutions, which permits extrusion into fibres, after which the dispersed polymer is coalesced by a heating process; the carrier is removed either by a heating or by a dissolving process.

(ii) **Dry Spinning**: The process in which a solution of the polymer is extruded into a heated chamber to remove the solvent and leave the solid filament.

(iii) **Melt Spinning**: The process as used in the manufacture of nylon in which the fibre-forming polymer is melted and extruded into air or other gas or a suitable liquid, where it is cooled and solidified.

(iv) **Reaction Spinning**: The process in which polymerisation is achieved during the extrusion through spinning jet (q.v.) system of reactants.

(v) **Wet Spinning**: The process as used in the manufacture of viscose rayon in which the solution of the polymer is extruded into coagulating media where the polymer is regenerated.

(c) In the bast fibre and leaf fibre industries, the terms “dry spinning” and “wet spinning” refer to the spinning of fibres in the drystate and in the wet state, respectively.

**Spinning, general**: (1) The process or processes used in the production of single yarns:

- **Yarn from staple fibre**: The formation of yarn from sliver or roving by drafting and twisting. **Filament yarn or tow**: The formation of filaments by extrusion of fibre forming substance either in molten form, in solution or in a form suitable for regeneration.

- **Yarn from filament tow**: The formation of yarn from tow by cutting or breaking drafting and twisting in a single operation often called direct spinning.
(2) Spinning: The process or processes used in the production of single yarns or of fabrics generated directly from polymer:

**Yarn from Staple Fibre:** The formation of a yarn by a combination of drawing or drafting and twisting prepared strands of fibres, such as rovings.

**Filament Yarn:** In the spinning of manufactured filaments, fibre-forming substances in the plastic or molten state, or in solution, are forced through the fine orifices in a metallic plate called a spinneret, or jet, at a controlled rate. The solidified filaments are drawn-off by rotating rolls, or godets, and wound onto bobbins or pirns. There are several methods of spinning manufactured filaments:

**Dry Spinning:** The process in which a solution of the fibre-forming substance is extruded in a continuous stream into a heated chamber to remove the solvent, leaving the solid filament, as in the manufacture of acetate.

**Gel Spinning:** A spinning process in which the primary mechanism of solidification is the gelling of the polymer solution by cooling to form a gel filament consisting of precipitated polymer and solvent. Solvent removal is accomplished following solidification by washing in a liquid bath. The resultant fibres can be drawn to give a product with high tensile strength and modulus.

**Melt Spinning:** The process in which the fibre-forming substance is melted and extruded into air or other gas, or into a suitable liquid, where it is cooled and solidified, as in the manufacture of polyester or nylon.

**Phase-Separation Spinning:** Extrusion of polymer and solvent at high temperature into a cooling zone. During the cooling process, a phase separation occurs, usually accompanied by crystallization of the solvent. Solvent can be removed before or after drawing.

**Reaction spinning:** Process in which an initial prepolymer is formed and then extruded into a reagent bath where polymerization and filament formation occur simultaneously. Spandex fibres can be made by this process.

**Wet Spinning:** The process in which a solution of the fibre-forming substance is extruded into a liquid coagulating medium where the polymer is regenerated, as in the manufacture of viscose or cuprammonium rayon.

**Yarn from Leaf and Bast Fibre:** In the manufacture of leaf and bast fibre yarns, the terms “wet spinning” and “dry spinning” refer to the spinning of fibres in the wet state and in the air-dry state, respectively.

**Yarn from Filament Tow:** The formation of a yarn from filament tow by a combination of cutting or breaking, drafting, and twisting in a single series of operations. Also known as converting.

**Nonwoven Fabric:** Fabrics can be produced directly from molten or dissolved fibre-forming substances by several continuous processes:
Flash Extrusion: The process in which a fibre-forming substance in a volatile solvent is extruded from a high-temperature, high-pressure environment into lower temperature and pressure conditions, causing the solvent to rapidly evaporate, leaving a lacy, net-like fabric.

Spinning, direct: The manufacture of yarn from sliver on the cotton system, bypassing the roving process.

Spinning, dry: Conversion of a dissolved polymer into filaments by extrusion and evaporation of the solvent from the extrudate. Solvent is removed through flows of warm gas suitably directed to the extruded filaments; gas temperature should be higher than the boiling temperature of the solvent, which will be extracted from the filaments, recovered and recycled.

Spinning, flash: A modification of the accepted dry spinning method in which a solution of a polymer is extruded at a temperature well above the boiling point of the solvent such that on emerging from the spinneret evaporation occurs so rapidly that the individual filaments are disrupted into a highly fibrillar form.

Spinning cake: (spindle crown), a yarn package which has been spun according to the centrifugal or so-called can or pot spinning method (rotating pot resulting in the shape of a ring-shaped cake with the characteristic hole in the centre. These slightly conical spinning cakes occur in different sizes but they are always in the form of compact blocks of yarn tightly wound in almost parallel layers.

Spinning frame: A machine used for spinning staple yarn consisting of a number of spinning positions for converting slivers, slubbings or rovings into yarns. It drafts the roving to the desired size, inserts twist, and winds the yarn onto a bobbin. The term is generally used to indicate a ring spinning frame, although it does cover flyer spinning and cap spinning on the worsted system.

Spinning limit: The finest yarn number that can be spun satisfactorily form a specified lot of fibre under specified conditions.

Spinning performance: A method for the evaluation of end breakage rate during spinning which is commonly expressed in units of ends down per 1000 spindle-hours, but may be based on other units such as ‘spinnable limit’ or ends down per specified time other than 1000 spindles-hours, yardage, or condition.

Spinning solution: A solution of a fibre-forming polymer (e.g., cellulose acetate) in a suitable condition to be extruded by either dry spinning or wet spinning.
Spinning test: The processing of a specific lot of stock into yarn for evaluation of processing performance and and product quality at various stages of processing or both.

Spinning twist: The twist added to yarn during spinning to give it strength and other desired characteristics.

Spinning, dry: See Spinning.

Spinning, open end: See Open end Spinning.

Spinning, break: See Spinning, open end.

Spinning, cap: A spinning system in which the lower edge of a stationary cap is supported by the spindle, the lower edge of which guides the yarn on to the revolving spinning package which is traversed.

Spinning, collapsed balloon: A system of ring spinning in which the rotating yarn balloon is eliminated by contact with the top of the spindle. Note (a): The system is normally used for economic spinning of semi-worsted and woollen carpet yarns by permitting the use of larger package sizes and/or higher spindle speeds. Note (b): Special spindle top extensions are used to obtain the desired effects.

Spinning, direct: See Spinning.

Spinning, double roving: A system in which two rovings are fed to each spindle of a ring frame so producing a pseudo two-fold or two-strand yarn. The rovings are separated in the drafting system by means of special guides and the two drafted strands are combined after the drafting system.

Spinning, flyer: A spinning system in which yarn passes through yarn passes through a revolving flyer leg guide on to the package rotating at slightly different speeds.

Spinning, friction: A method of open-end spinning which uses the external surface of two rotating rollers to collect and twist individual fibres into a yarn. At least one of the rollers is perforated so that air can be drawn through it surface to facilitate the fibre collection. The twisting occurs near the nip of the rollers and because of the relatively large difference between the yarn and roller diameters, high yarn rotational speeds are achieved by the friction between the roller surface and the yarns.

Spinning, hollow spindle: A system of yarn formation in which the feed stock (sliver or roving) is drafted and the drafted twistless strand in wrapped with a yarn as it passes through a rotating hollow spindle. The binder or wrapping yarn is mounted on the hollow spindle and is unwound and wrapped around the core because of the rotation of the spindle. This technique may be used for
producing a range of wrap yarns, fancy yarns by using different yarn and fibre feed stock fed to the hollow spindle, at different speeds.

**Spinning, jet**: (Also called Airjet spinning). A system of staple fibre spinning which utilizes air to apply the twisting couple to the yarn during its formation, The air is blown through small holes arranged longitudinally to the yarn surface and this causes the yarn to rotate. The majority of systems using this technique produce faciated yarns but by using two air jets operating in opposing twist direction it is possible to produce yarn with more controlled properties but of more complex structure.

**Spinning, ring**: A spinning system in which the twist is inserted in a yarn by revolving traveller.

The yarn is wound on by the package rotating faster than the traveller.

**Spinning, rotor**: A method of open-end spinning which uses a rotor (high speed centrifuge) to collect and twist individual fibres into a yarn. The fibres on entering the rapidly rotating rotor as distributed around its circumference and temporarily held there due to the centrifuging force. The yarn is withdrawn from the rotor wall and because of the rotation of the rotor, twist is inserted.
Spinning, self twist: A method of making a yarn from rovings fed to a drafting unit; the emerging strand of fibres is subjected to a cyclically reversing false twisting action which can be imparted in a number of ways. Two adjacent strands delivered from the false twist system are brought together by guides, and the torque in the two strands causes them to wrap about each other. This wrapping action is defined as ‘self twist’ and produces a self twist pattern of –S-Zero-S-Zero- etc. in the yarn produced. The self twist yarn is then taken up as a cheese.

Spinning, Semi collapsed balloon: A system of ring spinning in which the rotating yarn balloon is eliminated at the start of an empty bobbin and is allowed to expand later when the bobbin is becoming filled with the yarn. The small balloon condition is achieved by allowing contact between the rotary balloon and the spindle top. As the contact is broken and the yarn balloon is allowed to reform Notes (a) The system is often used for worsted and semi worsted spinning. (b) Special spindle top extensions are used to obtain the required effect.

Spinning, Suppressed balloon: See Collapsed balloon spinning.

Spinning, Twistless: A system of yarn formation which relies on the use of a permanent or temporary adhesive to bond the fibres together. Note: Where a temporary adhesive is used it is removed during fabric finishing and the yarn (and fabric) strength is obtained through lateral pressure on the yarn produced by the yarn inerlacings in the fabric. A similar fabric construction can be achieved by using warp spun yarns which have been produced with a soluble binder.

Spinning, warp: See Spinning.

Spinning, wet: It is the process in which a solution of the polymer is extruded into a liquid when the polymer is regenerated as in the manufacture of viscose or cuprammonium rayon.

Spiral yarn: Specialty yarn made by winding heavier, slackly twisted yarn around a finer yarn with a hard twist to give a slubby appearance.

Splash voile: See Voile.

Splice: (1) The joining of two ends of yarn or cordage by intertwining or interweaving strands. (2) The joining of two ends of yarn or cords by means of several knots joining individual yarns or strands the knots being staggered that is, located at some distance from each other along the yarn or the cord. (3) The joining of two ends of a material whereby ends are tapered, lapped and subsequently seized, bound, stitched or stapled.

Splice defective: A slice having irregular final twist, untrimmed ends or excessive thickness or thinness.
Spliced: Reinforced parts of hosiery where the wear is the greatest.

Splicer: Controllable ancillary device on automatic bobbin winders which carry out the splicing operation at the winding head when there is a thread break.

Splicing: (1) The joining of two ends of yarn or cordage. There are several methods used, e.g., by interweaving the strands, by the use of knots, by tapering, lapping, and cementing the ends, etc. Splicing technology is regarded as a genuine alternative to knot-free joining technology. (2) A method of reinforcing knits, e.g., the heels and toes of hosiery, by introducing an additional yarn for strength.

Splinter: Two or more staple fibres adhering together, causing a stiff cluster that resists pulling apart in normal processing, and reacting in the yarn spinning process similarly to higher than nominal denier fibre.

Splinter count: A measure of the number of coalesced fibres, mealy particles, or other such matter in staple fibre.

Split: Two or more lengths of fabric that are woven side by side and subsequently separated from each other by cutting along lines formed by leaving one or more dents. Fraying at the cut edges may be prevented by the use of a leno edge (q.v.) or other suitable means.

Split end: See Broken filament. (1) A defect in fabric caused by breakage of some of the singles yarns in a plied warp yarn. (2) A defect in manufactured filament yarn caused by breakage of some of the filaments.

Split stitch: A flat chain stitch used in old church embroidery. Bring the thread through at A and make a small stitch over the design, piercing the working thread with the needle. Split Stitch may be used as a filling where a fine flat surface is required.

Split weft (strained weft): A continuous-filament thread that has lost some of its filaments, usually as a result of abrasion or excessive tension during winding or weft insertion and that appears as a thin yarn.

Split Filaments: See Broken filaments.

Split Harness: A knot in each double-harness cord below the comber board and above the mail to form a loop long enough to allow a proper depth of shed. A rod is passed through the loops of each long row of harness cords so that each is capable of lifting all the ends in one row of cords independently of the figuring cards. The jacquard lifts the required ends to form the ground weave. The harness is used in weaving jacquards with a finely sett warp and move open weft.
**Split-Draft Metier**: An extrusion cabinet for dry spinning in which the drying medium (hot air) is introduced between the jet and the yarn outlet and flows in both directions.

**Split-Flow Metier**: See Split-draft Metier.

**Split-Stitch, in knitted fabrics**: A stitch in which one part of the yarn is knit and the other part is dropped.

**Splitting**: (1) In the processing of tow, a defect in which the integrity of opened tow is disturbed by separation or division into two or more segments longitudinally. Splitting can be continuous or intermittent, long or short term. (2) In slashing, the separation of sized yarn ends before takeup on the slasher beam.

**Splitting resistance, in felt**: The force required to overcome the interfacial strength of a of a material and specifically to separate a felt into two layers (of approximately equal thickness).

**Sponge**: (1) Name for a crepe weave made with equal number of warp and weft floats; (2) A honeycomb weave, made with small diamonds on a satin ground, resulting in very small cells.

**Sponge Cloth**: (1) coarse fabric, made of cotton waste and used for cleaning machinery; (2) fine dress fabric of cotton, wool or silk, made of nub yarn in twill weave.

**Sponging**: A pre-shrinkage process which involves the dampening with a sponge to woollen and worsted fabrics. The process is accomplished by rolling in moist muslin, or by steaming. This procedure is performed at the fabric mill prior to cutting to insure against a contraction of the material in the garment.

**Spool**: A flanged wooden or metal cylinder upon which yarn, thread, or wire is wound. The spool has an axial hole for a pin or spindle used in winding. (Also see **BEAM**.)

**Spool (Axminster and gripper spool)**: A double flanged bobbin on which a number of threads of pile yarn are wound in a predetermined order for use in Spool Axminster and Gripper spool loom. The yarns from a spool for all or a part of a row in the carpet design.

**Spool rack**: Spool rack is a frame with thin horizontal metal rods that can support many spools of thread. Multiple ends can be unwound at the same time from the rotating spools to fill a section of a sectional warp beam or to pass through the slots and holes of a warping paddle.

**Spoon bonnet**: Small bonnet tied under the chin with a ribbon.
**Spot**: A small discolored area on, or in, a fabric.

**Spot and stain removal**: see **Spotting**. A cleaning procedure for localized areas using cleaning agents and mechanical action specific to the removal of the foreign substances present.

**Spot bonding**: See **Bonding, Point bonding**.

**Spot clean**: To remove localized spots and stains by treating them with cleaning agents and mechanical actions specific to the fabric, fibre and the product type and the foreign material present.

**Spot weave**: Spot designs are formed by extra warp or filling yarns. The yarns are inserted the entire length or width of the fabric, spots or dot designs are formed. The long floats on the back side are cut away, leaving the dots. The threads can be pulled easily. Filling threads are easy to cut but warp floats are difficult. Example: **Dotted swiss**.

**Sport shirt, for boys**: A shirt made in numerical sizes, designed for informal wear and may be worn with or without a jacket.

**Sport shirt, for men**: A shirt designed for informal wear and made with body sizes such as small, medium, or large, and may be worn with or without a jacket.

**Sports jacket**: Fashionable men’s jacket with sack-shape cut; without shape, used as a summer jacket; shaped, used as a sports jacket (also high-quality, elegant designs, 250–500 g fabric weight) with shape retaining interlining also used as a holiday jacket (See **Topper**).

**Sports clothing**: Functional clothing for special requirements ( Active wear); not to be confused with Sportswear.

**Sportswear**: Leisure sports and town and weekend clothing in the form of Casual wear in a functional but smart genre, with sports-like attractive details; includes knitted wear and imitation leather.

**Spotclean**: See **Spotting**.

**Spotting**: (1) A cleaning procedure for localized areas with cleaning agents and mechanical action specific to the removal of the foreign substances present.

(2) In England same as crabbing.

**Spotting agent**: Used for removing local contamination (spots, etc.) on textile goods.

**Spotting powder**: Used to absorb moisture during spotting in order to prevent the appearance of the feared stain borders. Active components: talcum, kaolin, fullers earth and gypsum.
Spray bonding: A process of binding fibres into a nonwoven fabric involving the spray application of a fabric binder to the fibre web or batt. See Bonding.

Spray-dampening: Finishing character work; particular usual for washing cloths and wool cloths and the like in order to impart the desired moisture content and heavy, soft handle to the fabric. In most cases with nonsupersaturated moist air after the drying frame (stenter drying) on the spraying machine by spray jets or rotating brush rollers according to the so-called “natural moisture” principle.

Spray dyeing machine: A form of Hank dyeing machine for dyeing hank yarn on perforated yarn-carrier tubes with firmly connected rotating hanks. The machine gently turns suspended hanks. The liquor is sprayed on the hanks through the perforations.

Spray finishing: Finishing with Spray dyeing machine, used particularly for pressure-sensitive silk, viscose filaments and blended fabric articles such as crêpe de chine, marocain crêpe, flamisol crêpe, georgette crêpe, bark crêpe, moss crêpe, blister crêpe, matelassé, hammer blow and even for taffeta and similar smooth articles as well as for dress fabrics and linen fabrics for correcting the final handle.

Spray finishing machine: Special machines derived from older spray dampening machines which apply finishing liquors in the form of powders or low viscosity mists through nozzles either on one or both sides as a form of spray finishing.

Spray printing: The pattern is produced by Stencils for spray printing. The thin and finely matched printing ink solutions are sprayed through the fine stencil voids on to the goods using nozzle atomizers or compressed-air spray guns (air extraction and safety spectacles required).


Spread stitches: See Pin hole.

Sprig: Patterns of flowers and leaves in hand-made laces, made separately and appliqued on a net ground.

Spring needle: A knitting machine needle with a long, flexible hook, or beard, that allows the hook to be closed by an action known as pressing so that the loops can be cast off. The hook springs back to its original position when the presser bar is removed. Also see Latch needle.

Sprouting: Defect in Brussels and tapestry rugs and carpets, consisting of some of the loops protruding above the surface.

Spun-bonded products: Nonwoven fabrics formed by filaments that have been extruded, drawn, then laid on a continuous belt. Bonding is accomplished by several methods such as by hot roll calendering or by passing the web through a saturated-steam chamber at an elevated pressure.

Spun-dyed fibres: Man-made fibres dyed in the spinning paste (spun-dyed).

Spun fabric: A fabric made from staple fibres that may contain one or a blend of two or more fibre types.

Spun Glass: Glass thread of great fineness, dyed in various colours, braided and made into neckwear, as in Venice.

Spun laced fabric: A nonwoven fabric made from a staple fibre web or batt bonded by entanglement using high pressure water jets.

Spun laid fabric: A nonwoven fabric made by the extrusion of filaments which are laid down in the form of a web and bonded.

Spun polyester: Lightweight woven or knitted fabric that have a soft, warm feel. Comfortable for sports and casual clothes, dresses and nightwear.

Spun rayon: Yarn spun from rayon staple fibres.

Spun silk: This is a type of silk yarn, although the fabric itself may be labeled this way. The yarn is made by breaking up the short fibres of waste silk and spinning them together, and this yarn is then woven into fabric. Although the fabric should be cheaper than silk as it is made from waste yarn e processing is lengthy and hence expensive. The fabric may be produced of any weight.

Spun yarns: A strand shaped structure made from Staple fibre which is held together by twisting (spinning) as opposed to Continuous filament yarn.

Spunbond Fabric: Random webs.

Spun-dyed: Man-made fibres dyed in the spinning paste (spun-dyed).

Spun viscose: This is really the name of the yarn, but fabric also carry this title. They are in plain weave and may be plain or printed. These fabric were once considered poor in quality and performance but the fabric finishing techniques have improved so much that they are now good fashion fabrics. They are soft and drape well and are fairly warm, but they crease in wear and highly inflammable. Used for dresses, blouses, shirts nightwear, and childrens clothes.
Spyndle number: See Yarn numbering system. Count for dry-spun flax yarn and jute yarn, consisting of 48 cuts (or leas) of 300 yards each, which make up a spyndle of 14,400 yards, the weight in pounds of a spyndle being the count of the yarn.

Spyndle number, in jute: A direct yarn numbering system for jute rove and jute yarns in which the number of pounds per spyndle, or fourteen 400 yd (thirteen 167 m) length, is expressed as pounds per spyndle.

Square construction: See Balanced fabric.

Squeegee: The portion of a screen-printing apparatus consisting of a blade that forces the print paste through the screen onto the fabric.

Squeegee pass: The movement of the doctor blade from one side of the screen to the other. This movement can be carried out once or several times depending on the substrate, print style and printing press.

Squeegee pressure: Together with the Squeegee contact angle, this controls the amount of printing paste which is applied during flat and rotary screen printing. In the case of the magnetic-rod squeegee system, it is established by differences in the strength of the magnetic field, but in the case of the blade squeegee, it is determined by appropriately adjusted spring pressure (See Squeegee systems in printing).

Squeegee profile: The squeegee profile is characterized by the cross-section of the squeegee rubber. Depending on requirements, synthetic rubbers of different thicknesses are used which lead out on the side turned towards the screen gauze with the edge rounded off or cut flat or steep. Squeegee systems in printing.

Squeeze rolls: Rolls used to apply pressure for removal of water or chemicals from fabric.

Stress-strain curve: A graphical representation, showing the relationship between the change in dimension (in the direction of the applied stress) of the specimen from the application of an external stress, and the magnitude of that stress. In tension tests of textile materials, the stress can be expressed either in units of force per unit cross-sectional area, or in force per unit linear density of the original specimen, and the strain can be expressed either as a fraction or as a percentage of the original specimen length. See also Load de-formation curve.

Srinagar: Knotted rugs made in Kashmir, India, of very fine wool.

s/s type fibres side-by-side, Bicomponent fibres.

ST: (1) Tussah silk. (2) Mineral silicate fibres.
Stabilised Yarn: Yarn which has been subjected to heating and cooling or other setting treatment in order to reduce its tendency to shrink, contract. Twist Or snarl.

Stability: A term used to describe the tendency of a fibre or fabric to return to its original shape after being subjected to external influence, such as tension, heat, or chemicals.

Stability To Thermal Oxidation, for polyolefin monofilament: The time-to-failure, when polyolefin monofilaments are exposed to circulating air, at 125°C.

Stability To Thermal Oxidation, for polyolefin fabrics: That property of a fabric which resist breaking under a specified tensile strain, when exposed to a current of air at an elevated temperature.

Stable fabric: A textile fabric, the dimension of which does not change significantly during processing, with multiple passes through measuring devices or during use.

Stabilized Fibre: Fibre that is heat or chemically treated to set the fibre properties and prevent deterioration, shrinkage, etc. Also see Heat stabilised, Heat setting, and UV Absorber.

Stabilization, in effluent treatment: The biological process by which the organic matter in the sludge produced in the primary settling and biological treatment of waste water is stabilized, usually by a conversion to gases and cell tissue. Depending on whether the stabilization is carried out under aerobic or anaerobic conditions, the process is known as aerobic or anaerobic digestion.

Stabilizer: In Hydrogen peroxide bleach baths: A chemical compound which when added to an alkaline peroxide bleaching liquor, will control the rate and nature of decomposition of peroxide, thus providing a controlled process of bleaching with minimum tendering of the substrate. These substances are used to regulate the release of oxygen, help prevent oxygen decomposition by catalysts such as copper, manganese and iron, etc. and prevent the loss of oxygen and prevent local fibre damage. Stabilizers are usually not needed in hard water.

Staggered twill: See Broken twill.

Stain: An area of discoloration that penetrates the fabric surface.

Stain And Soil Retardancy: Fabric quality of retarding staining and soil.

Stain Blocking: Finishing effect. Active stain blocking prevents penetration of stains and dirt into the substrate (oil-repellent finish). Passive stain blocking
eases the removal of dirt which has got on to, or stains which have penetrated into the substrate (Soil-release finishing).

**Stain removing table:** A table specially made for the removal of stains on the garments or cutpieces. Usually used in garment industries it will have a Steel Table top provided with steam gun for wet and dry steam, spry guns, vacuum extraction and air blowers, various solvents and air blowers for drying the treated area etc. Steel Table top with perforations or even ss steel mesh as table tops are also used. The table is usually operated with the aid of foot pedals. Most of the stain removing table will have a swivelling sleeve board which also has a vacuum connection to an automatic vacuum vibrating valve which switches on when in use and is automatically switched off again when swivelled away from the working area. Spotting brushes are reserved for special purposes only.

**Stain Repellency:** Stain Repellency is the ability of a treated fabric to withstand penetration of liquid soils under static conditions involving only the weight of the drop and capillary forces.

**Stain Repellent Finish:** See *Oil repellency, Oil repellent finish*.

**Stainblocker:** A chemical substance which, when applied to a textile substrate, imparts partial or total resistance to staining.

**Stained Cloth:** Antiquated term for drapery painted with figures, to imitate tapestry.

**Staining:** (1) Any adventitious (unwanted) colour, owing to dye, dirt or iron, on textile material. A severe stain is one that will resist processing. (2) The fugitive or permanent coloring of material for identification purposes.

**Stainless Steel:** A broad class of corrosion-resistant iron alloys Stainless steel is often recommended for vessels for dyeing. It is made of iron alloyed with metals such as chromium, molybdenum, nickel, and others. There are a great many stainless steel alloys. The best alloy for chemical resistance is “316S”. “316” is almost as good, followed by “308”, “304” and “18-8”. You will sometimes see these numbers on the packaging or literature for higher quality stainless ware. High chloride ion concentration, particularly at high temperature, can corrode even the best stainless steel. This is unlikely to cause concern for home dyers. Because there is a possibility that stainless steel pots can become pitted from use in dyeing, and the pits may make it hard to completely remove contaminants, such pots should not be used for food purposes. Beware of aluminum rivets that are sometimes used to fasten handles to inexpensive stainless steel pots.
**Stainless-Steel Fibre**: (non-rusting metal fibres). Stainless steel metal filaments, e.g. metal filaments produced from stainless steel 18/8 or other stainless variants.

**Stalagmometer**: An apparatus consisting of a glass capillary with a specified orifice which is used to measure the surface tension of a liquid by the drop method: suitable for dilute aqueous solutions (1–3 g/l). Measurements are based on a comparison, usually against the drop count of pure water: the results can also be converted into absolute values. Principle: low surface tension = smaller drops = a higher drop count. The apparatus is particularly suitable for determining the efficacy of surface-active textile auxiliaries in terms of the drop count and dependence on concentration (at the same temperature).

**Stalk fibres**: Bast fibres.

**Stamped Velvet**: Velvet having patterns stamped into the pile with heated engraved rollers.

**Standard**: A reference against which instrumental measurements are made. Standards are written agreements setting out technical specifications or other clearly defined criteria that are consistently applied as rules, guidelines or designations of properties to ensure that materials, products, processes and services fulfil the intended purpose.

**Standard Atmosphere for preconditioning, in textiles**: An atmosphere having a relative humidity of 5–25%, +/- 2% tolerance for the selected relative humidity, and a temperature of not over 50°C (122°F), with +/- 1°C (+/- 2°F) tolerance for the selected temperature and used to partially dry the material before further treatment or conditioning.

**Standard Atmosphere For Testing, in Textiles**: An atmosphere for testing in which the air is maintained at a relative humidity of 65 +/- 2% and a temperature of 21 +/- 1°C (70 +/- 2°F). (a) Standard Temperature Atmosphere An atmosphere having a relative humidity of 65 ± 2% and a temperature of 20 ± 2°C. (b) Standard Tropical Atmosphere. An atmosphere having a relative humidity of 65 ± 2% and a temperature of 27 ± 2°C.

**Standard Atmosphere For Testing, in glass textiles**: An atmosphere for testing in which the air is maintained at a relative humidity of at least 45% and no greater than 67%, tolerance of +/- 2% for the selected relative humidity, and a temperature of at least 20°C (68°F) and not greater than 25°C (77°F) with a tolerance of +/- 1°C (+/- 2°F) at the selected temperature.

**Standard Condition**: The state of being in moisture equilibrium with the standard atmosphere for testing.
Standard Condition for physical testing: The condition of a textile material that has been dried to approximately constant mass in an atmosphere that has a relative humidity not exceeding 10%, and then kept in the appropriate standard atmosphere for testing (q.v.) until it has reached equilibrium. In cases where a textile material is not likely to lose volatile matter other than water, or to change dimensions, the preliminary drying may be carried out in an oven at 50–60°C situated in the standard atmosphere for testing which is a convenient way of achieving a relative humidity of about 10%. When the oven is supplied with the supplementary standard atmosphere, an oven temperature of 60–70°C is required. Equilibrium with the standard atmosphere for testing may be assumed when successive determinations for mass at intervals of at least 2h show no progressive change exceeding 0.25% in the mass of the textile material.

Standard depth scale, in colour measurement: A series of dyed samples of different hue and chroma that have been accepted to have the same depth.

Standard depth of shade: Since dyeings vary in depth, it is common practice to determine a fastness property at a standard colour depth. Variations in the dye content of commercial dyes do not allow standardisation of colour depth of a dyeing on the basis of the % owf of the dye. The ISO recommends a series of reference colours in 20 different hues ranging from yellow to black. The standard depth is called the standard 1/1 depth. Black and navy are only available in two depths. For the other colours, other depths include the 2/1 standard depths, which are twice as deep as the 1/1 standards, or the 1/3, 1/6, 1/12 or 1/25 standard depths that are successively paler. For fastness testing, a dyeing is produced having a hue and strength matching as closely as possible one of the standard colours.

Standard deviation: Standard deviation is defined as the square root of the average of the squared deviations of the observations from the group average. Squaring the deviations eliminates negative signs and concentrates attention on the magnitude of the deviations and not their sign.

Standard Deviation, of a sample: A measure of the dispersion of variates observed in a sample expressed as the positive square root of the sample variance.

Standard dyeing time: \([t_{70}-\text{value}, t_{70} (0.5)]\). A parameter characterizing the dyeing process which is roughly inversely proportional to the dye diffusion constant. It gives the time in min at 100°C (at a liquor ratio of 40 : 1) required to achieve a bath exhaustion of 70% when dyeing is carried out at half the saturation depth (according to Hoffmann).
Standard Illuminant: Known spectral data established by the CIE for four different types of light sources. When using tristimulus data to describe a colour, the illuminant must also be defined. These standard illuminants are used in place of actual measurements of them light source.


Standard Moisture Regain: The moisture regain of a material at equilibrium with the standard atmosphere for testing textiles.

Standard Moisture Regain: Accepted moisture allowance for textile materials expressed in percentages of their dry weight.

Standard Observer 2,10 (CIE): (1) A hypothetical observer having the tristimulus colour-mixture data recommended in 1931 by the CIE for a 2° viewing angle. A supplementary observer for a larger angle of 10° was adopted in 1964. (2) The spectral response characteristics of the average observer defined by the CIE. Two such sets of data are defined, the 1931 data for the 2° visual field (distance viewing) and the 1964 data for the annular 10° visual field (approximately arm’s length viewing). By custom, the assumption is made that if the observer is not specified, the tristimulus data has been calculated for the 1931, or 2° field observer. The use of the 1964 data should be specified.

Standard pressure: An internationally agreed value of 101 325 Pa (approximately 100 kPa), equal in non-SI units to a barometric height of 760 millimeters of mercury at 0°C or one Atmosphere.

Standard solution: A solution that contains a known mass of reagent in a definite volume of solution. A standard flask or volumetric flask is used for this purpose. The solutions may be prepared by direct determination of mass for primary standards. If the reagent is not available in a pure form or is deliquescent the solution must be standardized by titration against another known standard solution. See primary standard.

Standard temperature: An internationally agreed value for which many measurements are quoted. It is the melting temperature of water, 0°C (273.15 K). See also STP.

Standard white: (Ideal white). For comparative reflectance measurements, only those pigments capable of giving a full matt white of 100% white content with as near complete reflection of the incident light rays are used. Relatively few substances are able to satisfy these requirements in practice however. For colour measurement applications, the following two pigments are used as standard whites: (a) barium sulphate (2) freshly prepared magnesium oxide.
Standing bath dyeing: In exhaust dyeing where many batches of the same shades are to be dyed the standing bath dyeing is attractive in both cost reduction and environmental protection. In this method the dyebath is continuously used with the addition of exhausted dye in the previous batch and chemicals if necessary in order to restore the dyebath to its original state and ensure reproducible results.

Standing dyebaths: Dyeing from a standing bath makes use of exhausted dye liquors to produce further dyeings and therefore represents a worthwhile recycling technique. See Standing bath dyeing.

Standing Wire: A broad term describing fixed rods or strips extending through the loom reed, that control the height of the pile in a woven pile fabric.

Stannic chloride: (pink salt, tin tetrachloride, tin perchloride, tin (IV) chloride), SnCl₄, molecular weight 260, density 2.229–2.26. Colorless, waterfree, corrosive, fuming liquid, almost chemically pure with a 45.4% tin content. Evolves heat on contact with water. Uses: mordant for alizarin dyeing, weighting of silk, clearing and softening of silk, manufacture of fuchsin, colour lakes.

Stannous acetate: (tin (II) acetate, acetate of tin), Sn(C₂H₃O₂)₂, molecular weight 236. Aqueous solution. Used as a reducing agent in discharges on substantive dyes (especially black).

Stannous chloride: (tin crystals, tin salt, tin dichloride, tin (II) chloride), SnCl₂·2H₂O, MW 225, density 2.71. White salt, hygroscopic, soluble in water, powerful reducing agent. Uses: discharge printing, tin mordant (for shading alizarin red and pink on the yellower side to give fiery shades); aftertreatment (with soap) of alizarin red; resists (wool resists); spotting agent.

Stannous oxalate: (tin (II) oxalate), SnC₂O₄, molecular weight 206.5. Uses: dyeing and printing of textiles; mordant for alizarin print pastes and dyeing (more vivid pink and red shades).

Staple: Natural fibres or cut length from filaments. The staple length of natural fibres varies from less than 1 inch as with some cotton fibres to several feet for some hard fibres.

Manufactured staple fibres are cut to a definite length, from 8 inches down to about 1-1/2 inches (occasionally down to 1 inch), so that they can be processed on cotton, woollen, or worsted yarn spinning systems. The term staple (fibre) is used in the textile industry to distinguish natural or cut length manufactured fibres from filament.

Staple crimp, in wool: (1) General- The natural waves in a grease lock. (2) Specific- One complete wave on undulation of crimped lock.
**Staple length**: Is the average length of Staple fibre which, in the case of man-made fibres, can be any predetermined cut length. The staple lengths (in mm) of some natural and regenerated cellulose fibres are as follows:

1–5 = jute
5–50 = recovered wool
10–25 = hemp
0–50 = cotton
15–50 = bourette silk
25–45 = flax
30–150 = viscose staple fibre
60–150 = schappe silk
70–200 = ramie
50–300 = wool
approx. 1000 = raw silk

**Staple, in grease wool**: A tuft or lock of fibres which naturally cling together, as found in a fleece.

**Staple, in button**: A looped metal shank securely positioned perpendicular to and at centre back of the button flange for use in attaching the button to one part of a flexible substrate by means of a needle and thread, a ring or a toggle.

**Staple Fabric**: See **Spun fabric**.

**Staple Fibre, man made**: See Man-made staple fibre. Fibre of spinnable length manufactured directly or by cutting filaments.

**Staple Fibres, multiple length**: See **Multiple length staple fibres**.

**Staple Fibre, overlength**: Overlength staple fibres. Man-made staple length that are at least 10% longer than the nominal or average cut length.

**Staple glass, yarn**: Yarn made from filaments that are nominally 200 to 380 mm (8 to 15 in.) in length.

**Staple in grease wool**: A tuft or lock of fibres which naturally cling together, as found in a fleece.

**Staple length in grease wool**: The length of a staple without stretching or disturbing the crimp of the fibres.

**Staple**: The conversion of staple into spun yarns suitable in evenness, size, twist, and strength for use in the weaving or knitting of fabrics. (Also see **Textile processing**.)

**Staple Yarn**: See **Spun Yarn**.
**Stapled Seam:** A seam formed by shaped metal devices such as U-shaped staples.

**Star ager:** This steaming machine is the oldest steaming system. It consists of a cylindrical heater with a jacket to allow the steam to be blown from the top and the bottom of the cylinder (the steam heats the walls avoiding the formation of drops of condensation). The cover is sealed hermetically to allow the machine to operate under pressure.

**Star Stitch:** Similar to **Double stitch**.

**Star Tape:** A coarsely woven tape typically 2/28s cotton count.

**Starch:** (1) Historically, starches and flours have been the film-formers of choice for textile sizing. The key difference between flours and starches is the gummy substance gluten, starches are flours which have had the gluten removed. Nature produces a wide variety of starches as a white granular substance found in seeds, roots and stem piths of growing plants. Flours or meal is leached with water (to remove the gluten) leaving the white, free-flowing granule which has limited solubility in cold water. Sources of starch are Corn (maize), Tapioca (cassava), Wheat, Sweet potato, Potato (farina), Sago, Rice, Yucca.

(2) A polysaccharide with a much higher molecular weight than that of a sugar, but typically lower than that of cellulose; amylose and amylopectin are the major plant starches. The starches used in the textile industry are derived from plants. In North America, most starch comes from corn (maize), but starch from rice or tapioca is also common. Starch is extensively used as a size for warp yarns in commercial weaving. It must be removed before dyeing, because it can interfere with the uptake of dye by the fibre. It isn’t appropriate for thickening reactive dye solutions for printing or direct application because much of the dye will react with the starch instead of the fibre. It can be used...
to as a thickener for some other types of dye. Starches are also chemically processed to produce dextrin, starch ethers (see Monagum) and starch esters. Unmodified starch has very low solubility in water. It is also used in finishing. Its use in all these operations depends on its adhesive or film forming properties and hence different starches (different origin) used for different purposes.

**Starch Esters:** These are starch products esterified with acetic anhydride, phosphoric acid or other acids which can be used as textile sizing and finishing agents. Starch esters produce more or less free-flowing pastes.

**Starch Ethers:** Starch ethers are made by reacting the hydroxyl groups in the anhydroglucose ring with appropriate reagents. These reactions add to the hydrophilic nature of the starch and decrease the ability to form hydrogen bonds between polymers, modifying solution and dry film properties. Examples are carboxylated starch, hydroxyethyl and hydroxypropyl starches.

**Starch Indicator:** Solution that is used to detect starch by a colour reaction. Starch indicator is usually a solution of iodine and potassium iodide in water (typically about 2.3% potassium iodide and 0.33% iodine in distilled water). It will react with starch to produce a violet to blue-black colour, depending on the specific type of starch. This can be useful for detecting starch size in fabrics. Mercerized cotton will also give a blue-black colour with this test, though the colour seems to appear slowly, whereas with starch it appears almost instantly.

**Starch Lump:** See Hard size.

**Starch paste:** External characteristics: opaque, sticky; iodine reaction: dark blue; solubility: insoluble in water; technical qualities: fibre adhering, pore blocking (suitable for use as a printing thickener), good covering properties, subject to chalking, readily forms dust. The starch films are non-transparent, of average strength and low elasticity.

**Starch size:** Starch is still the most commonly used sizing agent for the weaving of cotton and viscose fabrics and has the advantage of being biodegradable. The question of Size recycling, as in the case of synthetic sizing agents, does not arise with starch sizes.

**Starch sugars:** (starch syrup). As the end product of starch degradation, starch sugar is identical to Maltose (malt sugar) and Glucose (grape sugar). External characteristics: aqueous, without body; iodine reaction: colorless; solubility: readily soluble in cold water. Technical qualities: starch sugar has neither a stiffening nor a hardening effect and is hygroscopic.

**Star dyeing:** A process for dyeing (usually delicate) textile fabrics in Star dyeing machines, especially velour upholstery fabrics and other pile fabrics made of cotton, natural silk, acrylic, polyester, acetate, etc.
**Star frame**: A frame having radial arms resembling the points of a star with hooks placed fairly close together on each arm. It is used to suspend delicate fabrics, like silk in the open width state in Star dyeing machines, either from one edge (vertical star dyeing machine) or both edges (horizontal star dyeing machine). Starting from the centre of the frame, the fabric is suspended from the hooks to form a spiral batch. For fabrics with sensitive edges, a narrow cotton or linen strip is first sewn along the edge/s to be suspended.

**Start-Up Mark**: See **Set Mark**.

**Stash**: It is your fabric collection.

**Static**: An accumulation of negative or positive electricity on the surface of fibres or fabrics because of inadequate electrical dissipation during processing. Static results in an electrical attraction or repulsion of the fibres relative to themselves, to machine parts, or to other materials, preventing the fibre from traveling in a normal path in the process.

**Static Adhesion**: In tire cord, the measurement of the strength of a cord-to-rubber bond under static conditions or very low strain rate.

**Static charge**: Whenever two materials are separated a electrostatic charge is developed in between them. The charge can be influenced by various factors like relative humidity, friction, distance between the objects etc. In textile it is important in case of the carpets. When the person walks on a carpet static charges are formed on the shoe and it is distributed all over the person and finally discharged to earth when the person touches any conductive material like door knob or an electronic equipment etc. During the discharge the person can feel a mild shock or it can affect a sensitive electronic equipment. The simplest solution to the problem is to increase the conductivity of the carpet so that when the surfaces are separated the charge is conducted away rapidly and cannot build up further. See **Walk Test**.

**Static Crack**: See **Shier**.
**Static friction**: Friction developed between two touching bodies at the time one body starts to move relative to another.

**Static load in textile testing**: A mass which excerts a force by means a mass alone without motion.

**Stature**: See **Height**.

**Statute Galloons**: Narrow cotton or silk braids, used in England for binding flannel underwear.

**Stay**: A piece of fabric or sometimes a tape used to hold another piece of fabric in place, or to add strength to a seam or tack; corsets.

**Staying**: Binding Tape to lace women’s corsets.

**Std Atm. For Preconditioning**: See **Standard atmosphere for preconditioning**.

**Std. Atm. For Testing**: See **Standard atmosphere for testing**.

**Steam black**: Aniline black produced on the fibre with sodium chlorate as oxidizing agent and yellow prussiate of potash (potassium hexacyanoferrate II) as aniline black catalyst. Steam black is also referred to as prussiate black.

**Steam boiler**: Various types of steam boiler can be classified a) according to the steam pressure (low-pressure boilers up to 1.5 bar, high-pressure boilers above 1.5 bar); or b) according to the construction (natural circulation; controlled circulation boiler; forced flowthrough boiler).

**Steam Calender**: A machine used after the drying of finished knitgoods for steaming, compacting and stretching the fabric to the desired tubular width.

**Steam Chest**: A steam-heated cabinet used in manufactured fibre production. Usually refers to the heated cabinet in which spin-drawing is done or to the cabinet around a stuffer-box crimper.

**Steam Cleaning**: Often mistakenly used in place of Hot water extraction in the carpet cleaning. See **Hot water extraction**.

**Steam Cure Process**: A process for the continuous moist crosslinking of cotton with a nitrogen-methylol compound in the presence of a highly active catalyst mixture (magnesium chloride and citric acid) in a steamer supplied with superheated steam for drying and crosslinking (6–10 min at 130–140°C). Reaction takes place in the 15–5% moisture content range. Subsequent neutralization is not necessary.

**Steam decatizing**: A process in which decatizing is carried out with steam (also known as blowing) in contrast to Wet decatizing.
Steam finisher: An equipment used in garment industry, laundry for batchwise or continuous steaming of outerwear garments. It is a steaming cabinet or steaming tunnel through which garments are passed and a notable finish effect is produced especially in the case of blended fabrics.

Steam-setting method: A heatsetting method. Short staple polyester yarns including polyester/cotton blends are normally set by relaxation in saturated steam. The most effective means of stabilising these materials are to steam at 107°C on the ring spinners tube and soft dyeing packages under minimum tension. Steaming is carried out in an autoclave fitted with vacuum pump, e.g. two times 15 rain at 125–135°C with intermediate evacuation or alternatively, for 60 rain with saturated steam. Sewing threads receive special setting treatments, designed to confer stability whilst preserving their high tensile properties. Polyester garments, garment lengths and hosiery are also stabilised by steaming in much the same way as for yarns.

Steam trap: Steam traps. A self-acting device which, operating under steam pressure, automatically ejects condensed steam (condensate) from steam pipes, etc. without permitting the escape of steam. Various designs and systems are available, e.g. with float valve, ball valve or slide valve, bimetallic strip control (valve opens with a drop in pressure resp. temperature and closes with a rise in temperature).

Steamer: (1) A program-controlled yarn steamer with radial through flow to ensure uniformity of the steaming effect. (2) An apparatus for steaming printed or padded piece goods, yarns, tops, hosiery, garments, etc. These steamers are of two types, (a) batchwise or discontinuous steamers and (b) continuous steamers.
Steamer grey: A light woven fabric which is run into a steamer together with printed goods to prevent the dried print pastes on a printed fabric from marking off on to adjacent layers of the same fabric during the steaming process.

Steaming: Finishing process causing general increase in moisture levels, increased swelling, and therefore, further effects, such as improved washing. There are further specific effects on wool-based fibres, including partial alleviation of tension (tension-free steaming), fluffing and raising the pile, removal of creases caused by laying, storage, pressing and decatizing, stripping of shine caused by pressing, etc. The best method to use is to steam for approx. 3 min with saturated steam, but complete saturation of the fibre should be avoided (detrimental effects to the handle).

Steaming at atm. pressure, fastness to: Capacity of the colour shade to resist being affected by steam (e.g. during steaming). The sample is placed between undyed cotton and the adjacent fabric for colour fastness testing. After rolling, the test sample is placed in the neck of a glass cylindrical flask, which is filled with boiling water. It is boiled for 30 min and then dried in warm air (< 60°C) without being touched. Any staining of the undyed adjacent fabric is evaluated using grey scales for fastness testing.

Steaming of prints: Prints are usually set or developed by steaming the various different substrates (details can be found under the relevant dye classification). The steaming process is carried out in open or sealed systems, either at atmospheric pressure or at pressure for temperatures in excess of 100°C.

Stearates: Stearic acid salts, e.g. aluminium stearate, which is used as a water-repellent treatment.

Stearite, soapstone: Mineral mass with a greasy feel, a derivative of Talcum consisting of 60–85% talcum, 5–7% magnesium carbonate, 0–24% barium carbonate, 0–2% lime, 0–2% beryllium oxide. Used to remove grease stains and as tailor’s chalk.

Steel cord: A formed structure made by twisting together two or more steel filaments or steel strands.

Steel cord wrap: A filament wound helically around a steel cord.

Steel Fibres: See Metal fibres.

Steel strand: A group of steel filaments combined together to form a unit product.

Steeping: In textile processing, steeping is dipping and keeping the material for a stipulated time in water or chemical or a mixed recipe.

Steeple: Tall, conical women’s head-dress with a flowing veil.
Steiner Tunnel Test: Method for testing the burning properties of carpets. The specimen is exposed to open flames in a tunnel. See Flammability test.

Stem stitch: In embroidery stitches placed next to each other to imitate the twine of a rope. Work from left to right, taking regular slightly slanting stitches along the line of the design. The thread always emerges on the left side of the previous stitch. This stitch is used for flower stems, outlines, etc. It can also be used as a filling, rows of Stem Stitch worked closely together within a shape until it is filled complete.

Stencil printing: Stencil printing was developed by the Japanese. Designs are cut in stencil paper which is coated with wax. The stencil designs are placed on fabric and colour is applied by sponge, air brush or by spray gun. This method is done on minimum fabrics like scarves and similar products.

Stenter: An open-width fabric-finishing machine in which the selvedges are so held by attachments to a pair of endless travelling chains that the fabric is finished to a specified width.

(a) Attachments may be pins (pin stenter) or clips (clip stenter).
(b) Such machines are used for:
   (i) Drying;
   (ii) Heat-setting of thermoplastic materials;
   (iii) Fixation of chemical finishes.

See Tenter. There are different types of stenters: Horizontal stenter, vertical stenter, tier stenter, double return stenter. There are special stenters for knit goods.

Stentering: The process of drying textile fabrics on stenter driers; See Stenters.

Step-And-Repeat Machine: The step-and-repeat machine has a print roller pre-prepared with light-sensitive paint, upon which the positive slide is placed and exposed.

Step-Growth Polymers: As the name suggests, the step growth polymerization involves stepwise intermolecular condensation, taking place through a series of independent reactions. Each reaction involves a condensation process involving the loss of a simple molecule like H2O, NH3, HeI, ROH etc. This type of polymerisation occurs if the monomer molecules have more than one similar or dissimilar functional groups. The step growth polymerisation starting with two monomers A and B as:
The stepwise process of chain growth thus goes on. This process can also occur in another way:

Step 1

\[ A + B \xrightarrow{\text{Condense}} A - B \]

Step 2

\[ A - B + A \xrightarrow{\text{Condense}} A - B - A \]

Step 3

\[ A - B - A + B \xrightarrow{\text{Condense}} A - B - A - B \]

**Stephanie Lace**: Modern handmade lace in imitation of the Point Venise.

**Stereochemistry**: Applies to the spatial arrangement of atoms within the molecule structure, e.g. Stereoisomerism; Isomeric compounds; Isotactic polymers.

**Stereoselective polymerization**: In this type of polymerization one type of ordered structure is preferentially formed in contrast to the other.

**Stereospecific polymerization**: Polymerizations which yield ordered structures (isostatic or syndiotactic).

**Stewart**: Various Highland tartans, composed as follows:

**Stewart, Royal**: Wide red stripe; light blue stripe, almost one-eighth of the red; black stripe, wider than pale blue; group of yellow, black, white and black lines; green stripe, about one-quarter of wide red stripe*; red stripe, twice as wide as the green, split by one fine white line (in the center) and two, somewhat heavier black lines, the three lines spaced evenly; repeat, in reversed order groups mentioned between the two*. Old Stewart: Dark brown stripe, edged by red lines and split by a finer red line; dark green stripe, twice as wide as the former, divided into three even parts by two dark blue stripes, each edged by black lines; dark brown stripe, as above; dark blue stripe, split by two groups of narrow stripes, each group consisting of three black and two grey.

**Stick-slip**: Phenomenon occurring when boundary lubrication is deficient, manifested by alternative periods of sticking and slipping of the surfaces in contact.
Stiffened Fabrics: Stiffening Interlinings between the top cloth and the lining, Front fusing.

Stiffened Linen Extremely strong Buckram, board-like, hard, barely flexible, used for stiffening uniform collars.

Stiffening Agents: Used specifically for finishing and sizing. There are different types (a) Vegetable colloids: starches, mucilages, mosses, algae, gums. (b) Animal colloids: glue, gelatine, casein, protein sizes. (c) Synthetic colloids: polyvinyl products and similar, cellulose derivatives, synthetic resins.

Stiffness: Resistance to bending. (rigidity, flexural rigidity). Flexural rigidity is a measurement of the resistance exhibited by a material when subjected to bending.

Stilb: Unit of Radiant intensity per unit area. Radiant intensity is defined as the quotient of candela and square metres: \( L = 1 \text{ cd/m}^2 \).

Stilbene: (trans 1,2 diphenylethylene) Most of the Optical whitening agents are stilbene derivatives. They are usually derived from diamino stilbene disulphonated acids and as such they don’t have any fluorescent property but an amino group is added on to the two benzene structure it shows fluorescent properties.

![Stilbene and Fluorescent Dye](image)

Stilbene dyes: Stilbene dyes are in most cases mixtures of dyes of indeterminate constitution that are formed from the condensation of sulfonated nitroaromatic compounds in aqueous caustic alkali, either alone or with other aromatic compounds, typically arylamines. The sulfonated nitrostilbene is the most important nitroaromatic, and the aminoazobenzenes are the most important arylamines.

Stiletto: This is a pointed metal with a wooden handle and is used to make eyelet holes or openings.

Stitch: The repeating unit of sewing thread formation in the production of sewn seams and stitching.

Stitch, in knitting: Stitch: stitch is the smallest unit in knitted fabric. A knitted fabric surface is formed by repeating it, side to side and one on top of the other. It consists of loop head, loop leg and loop feet. Plain stitch: this is
the technical face side of stitch where loop legs are above the neighbour stitch and loop head is below the neighbour stitch.

**Stitch, in sewn seams**: The repeated unit formed by the sewing thread(s) in the production of seams.

**Stitch (Backstitch)**: Used at the beginning and end of stitching to reinforce and prevent raveling. Also called backtack or stay-stitch.

**Stitch (aste)**: A stitching which holds the fabric in place until permanent stitching has been completed.

**Stitch, Blind**: A stitch that is not visible on one side of the fabric.

**Stitch, Chain/Class 100**: A stitch formed with one or more needle threads, the loops of which are passed through the material and through the loops of the preceding threads.

**Stitch, Contrasting**: When the stitching thread contrasts the garment colour.

**Stitch, Double lock/class 400**: A stitch formed with two or more groups of threads that interlace each other. The loops of needle thread are passed through the material where they are secured by looper threads; no bobbins used. This stitching ravel s in one direction.

**Stitch, Flat seam/class 600**: Multi-needle stitches that provide the elasticity necessary for knits.

**Stitch, hand/class 200**: A stitch formed by hand with one or more needles---one thread per needle passing in and out of the material.

**Stitch, Lock/class 300**: A stitch formed with two or more groups of threads that interface each other. The loops of needle threads are passed through the material where they are secured by bobbin threads.

**Stitch, overedge/class 500**: A stitch formed with one or more groups of threads at least one of which passes around the edge of the material.

**Stitch, safety**: A combination chain-stitch and overedge stitch made simultaneously on the same sewing machine.

**Stitch, Top**: A second row of stitching close to the edge of a seam, after two or more pieces of fabric have been sewed together and turned to bury the raw seam margin side.

**Stitch, Zig-zag**: A stitch made on a sewing machine in which the needle bar comes down alternately on the right and left side of an imaginary center line. Also refers to the type of machine producing this stitch.

**Stitch Bonding**: A bonding technique for nonwovens in which the fibres are connected by stitches sewn or knitted through the web. Also known as quilting.
Stitch density, in knitted fabrics: Stitch density: this is a product of course density and wale density. It gives a total number of stitches in a square area of fabric. Stitch density tends to give more accurate measurement for fabric dimensions compared to course density and wale density, due to the fact that the adverse effect of tension on the course and wale densities may be eliminated.

Stitch density, in sewn fabrics: The number of stitches per unit length in one row of stitching in the seam.

Stitch gauge, in sewn fabrics: The perpendicular distance between adjacent parallel rows of stitching.

Stitch in the ditch: Stitch in the ditch is a technique for quilting the quilt top, batting and fabric back together by stitching very close to a seam or appliquéd edge on the top of the quilt.

Sticker: A distortion in the weave characterised by tight and slack places in the same warp yarns.

Stick-Slip: A phenomenon that occurs when boundary lubrication is deficient and manifests itself by alternate periods of sticking during which time the frictional force slowly rises to a peak value and slipping where the frictional force rapidly decreases to a minimum value.

Stitch type: A numerical designation relating to the essential characteristics of the interlacing of sewing thread(s) in a specified stitch.

Stitch Balance: Refers to the balancing of the sewing machine tension systems so that a proper stitch is formed. Generally, it is desirable to balance the stitch with minimum sewing machine thread tension.

Stitch Guage, in sewn seams: The perpendicular distance between adjacent parallel rows of stitching.

Stitch Bonded Carpets: Loop pile carpets manufactured using the stitch-bonding technique. The stitch-bonded fabrics are then bonded on the reverse side and coated.

Stitch Bonded Fabric: A multicomponent fabric, one component of which is a series of interlaced stitches running along the fabric length. The other component may be fibre web or batt, yarn or preformed fabric. Examples of stitch bonded fabrics are: (a) A film web or batt bonded by stitching yarns (arcane, maliwatt); (b) Cross laid yarn with or without machine direction yarn bonded by stitching yarns (malimo); (c) A structure in which either sewing yarns or other threads lying in the machine direction, are taken over sinkers
to form a loop pile (araloop, malipol); (d) A structure in which the stitching loops are formed from the fibres of the web or batt (arabeva).

**Stitch-bonded nonwovens**: Nonwoven fabric bonded with chain-stitch seams (stitch-bonding technique using long fibres, not sewing thread).

**Stitch-bonded pile fabrics**: In principle the many different qualities of stitch-bonded pile fabrics can be divided into the following categories: – type used for floor coverings, – type used for rear window shelves, – type used for car boot upholstery.

**Stitch-bonded thread-layer fabric**: Stitch-bonded fabrics made from criss-crossed thread layers piled on each other as a backing material, bonded with the stitches formed by warp threads that are sewn in.

**Stitch-bonded weft pile fabrics**: Stitch-bonded fabrics (Stitch-bonded composites) in which threads formed into pile loops are bonded to the backing material by means of sinker loops created by a pillar stitch chain.

**Stitch bonding**: A method of stitching webs of fibres together, resulting in a non-woven fabric.

**Stitch Course**: Stitches arranged adjacently to one another. In standard knitting they are formed consecutively, in warp knitting they are formed at the same time. The number of stitches in the stitch course is dependent on the stitch size.

**Stitch density, in sewn seams**: The number of stitches per unit length in one row of stitching in the seam.

**Stitch density**: Construction characteristic of all knit fabric types; calculated as the product of the stitch course count and the stitch wale count. This figure represents the number of stitches within an area of 100 cm².

**Stitch gauge**: This is the total stitch count (= needle count) per 11/2 inch (Engl.) = 3.81 cm fabric width. This stitch fineness is known as Gauge (g), which can also be abbreviated to gg. The higher the gg number (usually between 36 and 66), the more stitches there are in the knitted fabric, it is finely woven and therefore has better elastic properties. See **Cover factor**.

**Stitch length (Loop length)**: This is the yarn length used in one stitch. It is generally calculated by dividing the course length, which is the yarn length used in one course, into the number of needles used in that course length. Loop length is very important in determining the fabric dimension, since fabric parameters such as course density, wale density and fabric weight are affected by the loop length.
Stitch sewknit fabrics: Variant of Malimo fabric, manufactured for instance from weft layers sewn (using pillar stitch) with woven fabric, Malimo fabric, expanded foam, fleece or knitted fabric as a basis fabric. Synthetic sewing thread is usually used. Use: imitation fur fabrics, friezé for coats, suedette, corduroy, upholstery fabrics.

Stitch type: A numerical designation relating to the essential characteristics of the interlacing of sewing thread(s) in a specified stitch.

Stitch wale: Stitches arranged above each other made by the same needle. The stitch wale count is dependent on the distance between the needles.

Stitch width: The distance between two Stitches, also characterized by the number of stitches per cm or inch. Mesh number. This is important in screen gauzes, for instance.

Stitch, Back-and-fore: A hand stitch employed for sewing linings and pockets. It involves taking a backstitch and the running stitch before the needle is removed.

Stitch, back: A hand stitch used to seam garment parts. So called because the needle, on emerging goes back to be inserted at the end of the previous stitch.

Stitch, blind: A stitch (either by hand or machine) which does not go right through the material.

Stitch, chain: A stitch formed with one or more needle threads and characterized by intralooping. One or more loops of thread are passed through the material and secured by intralooping with a succeeding loop or loops after they are passed through that material.

Stitch, covering chain: A type of chain stitch produced on twin or multineedle machines used for covering seams.

Stitch, cross: A handstitch formed by passing the needle alternately on and off the edge slightly through the material and in advance of the last stitch. Used as a substitute for falling or ornamentation of raw edges.
**Stitch, Fagot:** A form of lock stitch using modified zig-zag machine, for joining materials, allowing a narrow gap between two edges.

**Stitch, Feather:** A decorative stitch, similar to the fagot stitch, but in which the joining of two edges is not involved.

**Stitch, in sewing:** The configuration of the interlacing of sewing thread in a specific repeated unit.

**Stitch, in knitting:** Stitch is the smallest unit in knitted fabric. A knitted fabric surface is formed by repeating it, side to side and one on top of the other. It consists of loop head, loop leg and loop feet.

**Stitch, Flat lock:** A stitch formed by the ‘flat lock’ machine with four needles, four loopers and a covering thread.

**Stitch, four thread Overedge:** See **Stitch, Mock safety.**

**Stitch, Lock:** The plain stitch in which two separate threads are used. In formation one thread is passed through the material forming a loop on the underside, second is passed through the loop on the underside of the material. This loop is pulled into the material bringing with it the locking thread.

**Stitch, Loop:** A type of handstitch used for oversewing edges so as not to increase their thickness by having an edge turned in.

**Stitch, Mock safety (four thread overedge stitch):** A type of overedge stitch which has an appearance similar to that of a safety stitch on the top surface of the material but has a common looper thread joining the two rows of stitching which can be seen underneath the fabric.

**Stitch, Single thread Overedge:** A type of chain stitch, in which the needle thread loop is carried from the underside of the fabric over the edge and turned to the line of stitching to be secured by the needle on its next downward stroke. Varying amount amount of edge cover can be obtained by using machines employing more threads.
**Stitch, three thread Overedge:** See single thread overedge stitching. Here three threads are used in stitching.

**Stitch, two thread Overedge (edge looping):** Here two threads that are used in stitching.

**Stitch, two thread Overedge and double chain (Combination safety stitch):** Safety seams are a combination of two stitch types. Thread consumption can be up to 16 m thread per 1 m seam.
Stitch, two needle multithread chain: Two or more needle are interlaced on the underside by a looper thread on the needle side by a cover thread.

Stitch, plain: This is the technical face side of stitch where loop legs are above the neighbour stitch and loop head is below the neighbour stitch.

Stitch, Prick: A stitch made by passing the needle straight through the material at right angles to the surface alternately from one side to the other.

Stitch, Running: A stitch formed by an overedge stitch reinforced by a chain stitch (or sometimes a lock stitch) further in from the material edge.

Stitch, Skipped: A stitch which appears twice as long as the other stitches in a line of stitches. It is caused by failure in the stitch formation allowing the needle thread to return to the surface without being held by the bobbin (lower) thread.

Stitch type, in sewn seams: A numerical designation relating to the essential characteristics of the interlacing of sewing thread(s) in a specified stitch.

Stitched and pinked seam finish: Used for fabric which has a tendency to ravel, it is a finish for the raw edges of the seam allowances of a plain seam, in which each raw seam allowance edge in machine stitched and then cut to a zig-zag raw edge. Using a sewing machine thread with thread to match your fabric and pinking shears stitch a line of straight machine stitches 6 mm. (1/4 in.) in from the cut edge. Use short stitch, 15 stitches per inch. Pink just on the edge of the seam allowance, taking care not to cut into the stitching.

Stitched seam: See Sewn seam.

Stitchel: Hair-like wool with little serrations on the surface.

Stitches: Thread loops that are linked together and constitute the smallest units of Knitted fabrics. They consist of 1 head (upper part), 2 shanks (middle part) and 2 feet (lower part); each having 4 bonding points (2 upper and 2 lower, i.e. at the top and bottom).

Stitches Per Inch: Refers to the number of the stitches made in one inch of seam, starting at a needle penetration and measuring the lengths of thread between needle penetrations.
**Stitches, in tufted pile floor coverings:** The number of pile tufts per inch in the lengthwise direction.

**Stitching:** A series of stitches embodied in a material or materials of planar structure such as woven textile fabrics, usually for ornamental purposes or finishing an edge, or both.

**Stock colour:** Print paste with a high concentration of dye (large quantities are usually kept in stock), used in combination with other stock colour pastes or Reduction thickeners as mixes.

**Stock dyeing:** See Dyeing. The process of dyeing fibres in raw state (in the grain) before being spun.

**Stock in process, in textiles (spinning):** Staple fibres at any stage of manufacture between the opening of the bale and the completion of the spinning process.

**Stock paste** Print pastes consisting of all the necessary chemicals except for the dye.

**Stock solution:** A solution of known strength, made up with the intent of dilution or mixing before final use. Stock solutions are a convenient way of avoiding the need to weigh chemicals each time you need to use some. For example, if you need 0.27 grams of Smurf extract in a blue dye formula, and you have a stock solution of 10% extract, you would measure 2.7 milliliters of stock solution to get that amount. Some chemical solutions have limited shelf life.

**Stock thickener:** (stock thickening). Printing thickeners containing setting chemicals (large quantities are usually kept in stock), to which dye is added at a later point, in powder, paste or solution form.

**Stock vat:** It is not possible to vat individual vat dyes in a dye bath, they need to be dissolved in concentrated form. This method is known as stock vatting.

**Stockinet:** A plain, elastic texture made on a knitting frame, used for underwear, etc.

**Stockinette:** A knit fabric in tubular or flat form made with a plain stitch from yarns of wool, cotton, manufactured fibres, or a combination of these fibres. Stockinette fabrics are used for underwear, industrial applications, and other purposes. In heavier constructions, dyed and napped stockinette finds apparel uses.

**Stocks:** Solid silicon rubber compounds, which can, for example, be forced through calenders to coat fabrics.

**Stola:** Women’s outer robe in the form of a shift, worn belted over the tunic.
Stoll-quartermaster universal wear tester: A versatile testing apparatus for measuring wear resistance of fabrics, yarns, thread, etc. It can be equipped with either of two testing heads, one for testing abrasion resistance of flat surfaces and the other for testing resistance to flexing and abrasion.

Stolling: Rib trim put on so that the rib is at right angles to the direction of the rib on the body.

Stomacher: Lengthening of the lower bodice front into a pointed or rounded peak.

Stone finish: A finish obtained by vigorous tumbling with pebbles.

Stone polishing: In print roller manufacture, the polishing process on copper print rollers during Copper electroplating. It occurs when agate stones (rolls) are pressed onto rotating rollers, causing the copper crystals that form vertically to be polished.

Stone washed fabric/garment: Denim fabrics (Jeans) dyed with indigo or other dyes are sized with a large quantity of starch and manufactured into garments. Once the textile has been made into a garment it is desized immediately (30 min at 60–70°C) and then treated with sodium hypochlorite. The technique is known as “Stone-Wash” or denim finishes because pumice stones are used as an abrasive agent to achieve special effects (1 kg of stone or sand per kg of fabric). The bleaching effects can be altered by varying the pH and liquor temperature of the sodium hypochlorite bath. The higher the temperature and the lower the pH (pH 8), the stronger the bleaching effect and the attack on the fibre. There are many other methods (mechanical, chemical, enzymes, or a combination of these) to make stone wash effect made today on any type of dyed materials like pigment dyed, reactive dyed, double dyed etc.

Stop mark: A visible range in the density of the weave across the width of the fabric caused by the tension on the warp not being adjusted properly after the loom has been stopped. See Set mark.

Stop motion: Any device that automatically stops a textile machine’s operation on the occurrence of a yarn break, a high defect count, etc.

Stop, in Zipper: The device at the top and bottom of the chain or stringer that prevents the slider from leaving the chain.

Stop, Bottom, in Zipper: See Bottom stop.

Stop, Bridge top, in Zipper: See Bridge top stop.

Stop, Releasing, in Zippers: See Releasing stop.

Stop, Top, in Zippers: See Top stop.

Stopping motions: Electrical or mechanical devices employed on many textile machines when a fault develops in raw material feeding, arrangements
(openers, scutchers, spinning frames etc.) or a yarn breaks in winding, warping, weaving etc.

**Store lighting**: (TL 84), type of lighting for colour matching booths, defined as cool, white fluorescent light at a colour temperature of 4400 K. Some customers may ask colour matching of dyed/printed samples in these lights.

**Storm Serge**: In the United States a very light serge weighing about 7 ounces, made of single warp and filling; used for women’s coats.

**Storm Shell**: Wind proof, wind resistant outerwear.

**Stormwater, storm water**: Water from any form of precipitation. In wastewater engineering it means the overland flow that enters the sewers, which can be estimated from the rational method or from unit hydrographs.

**Stormwater drain system**: Gutters, stormwater sewers, combined sewers, streams, ditches, etc. that are used to carry stormwater.

**Stout**: A property of certain fabrics, being the combination of close weave and weight.

**Stoving**: The process of bleaching raw wool or fabrics with sulphur fumes.

**Stoving fastness**: Level of resistance against the influence of sulphur dioxide.

The guideline applies to wool and silk, even when mixed with other fibres. The fabric sample undergoing testing must be wetted for 5 min at 25°C in soap solution and squeezed at 100% liquor uptake. Fabric sample and control sample is then exposed to an environment containing sulphur dioxide for 16 h. Fabric samples are hung for 2 h in air without rinsing. Textile mixes are rinsed for 10 min after sulphur treatment and then dried at 60°C. The result is analyzed using the grey scale method.

**STP**: (NTP) Standard temperature and pressure. Conditions used internationally when measuring quantities that vary with both pressure and temperature (such as the density of a gas). The values are 101 325 pascals (Pa) (approximately 100 kPa) and 0°C (273.15 kelvin). See also Standard pressure; Standard temperature.

**Stradella**: A French woollen damask shawl.

**Straight draws**: These form the simplest and most common method of drawing-in. We begin with the first heddle on the left side of the shaft nearest to the warp-beam, then take the first heddle of second shaft and so on until all the shafts the set contains are used in rotation. This completes one “draw,” and this operation is repeated until all the warp-threads are taken up.

**Straight stitch, in embroidery**: This is shown as single spaced stitches worked either in a regular or irregular manner. Sometimes the stitches are of
varying size. The stitches should be neither too long nor too loose. This stitch may also be worked on evenweave fabric.

**Straight stitch, in sewing**: A simple machine stitch pattern of straight, single stitch segments of equal length. The simple machine stitch pattern is by the down and up movement of the needle while the fabric moves through the feed mechanisms in either the forward or reverse direction.

**Straightness in steel cord**: The property of a cord characterized by a lack of deviation from its central axis over short lengths of a cord.

**Strain**: Deformation of a material caused by the application of an external force.

**Strain recovery curve**: See *Tensile hysteresis curve*.

**Strain, Tensile**: A relative length deformation exhibited by a specimen subjected to a tensile force strain is expressed as a fraction of normal length; also as a percentage.

**Strand**: (1) A single fibre, filament, or monofilament; (2) An ordered assemblage of textile fibres having a high ratio of length to diameter and normally used as a unit, including slivers, rovings, single yarns, plied yarns, cords, braids, ropes, etc.

**Strand, Irregularity, in textiles**: Variation in a property along the strand.

**Strand, in braided rope**: One of a number of similar units which are intertwined to produce a braided rope, each unit consisting of one or more yarns which are not twisted together and which follow a prescribed path through the braided rope etc.

**Stranfa**: Fibre obtained from straw; used in Germany as substitute for jute.

**Strapping**: Narrow width rib trim, usually 1 x 1 rib or of a half milano construction, applied so that the rib runs along the garment lengthways.

**Strasse**: Sort of floret silk obtained by converting duppions into waste.

**Straw**: A general term for plant fibres obtained from stems, stalks, leaves, bark, grass, etc.

They are made into hats, bags, shoes, mats, etc., by weaving, plaiting, or braiding.

**Strazza**: See *Bourre*.

**Strazza (Italian)**: Waste of silk in Italy.

**Streak**: A stain (rust, oil, dye, grease, soap etc.) extended as an irregular stripe in the cloth.

**Streak Stitch**: The open veins of leaves in hand-made laces.

**Streak**: An extended unintentional stripe of narrow width, often a single yarn.
Strength: A generic term for the ability of a fabric to resist strain or rupture induced by external forces.

Strength analyzer: An instrument which determines the tensile strength and elongation at breaking load for a test beard of cotton.

Strength count product: See Break factor.

Strength, Breaking: (1) The maximum internal cohesive forces of a material which resist rupture during a tensile test.
(2) The ability or capacity of a specific material to withstand the ultimate tensile load or force required for rupture. Breaking strength is particularly significant as the characteristic of a sample as distinct from a specimen.

Strength, Bursting: (1) General: The ability of a material to resist rupture by pressure. (2) Specific: The force applied at right angles to the plane of the fabric under specified conditions.

Strength, Tearing: See Tearing strength.

Strength, Tensile: See Tensile strength.

Streptocyanine dyes: Dyes in which both charged terminal atoms are not part of a heterocyclic ring are called streptocyanine dyes.

Stress: The resistance to deformation developed within a material subjected to an external force. Typical examples are tensile stress, shear stress, or compressive stress. Stress usually reaches a maximum at the time of rupture. When a textile material is subjected to a stress below that causing rupture, the stress gradually decreases or decays with time.

Stress-Strain Curve: A graphical representation of the stress and strain relationship of a material under conditions of compression, shear, tension, or torsion. A graphical representation, showing the relationship between the change in dimension (in the direction of the applied stress) of the specimen from the application of an external stress, and the magnitude of that stress. In tension tests of textile materials, the stress can be expressed either in units of force per unit cross-sectional area, or in force per unit linear density of the original specimen, and the strain can be expressed either as a fraction or as a percentage of the original specimen length. (Also see Load deformation curve.)

Stretch: General term for elastic textiles made from stretch yarn or stretch fabric, for instance. Slimline clothes are frequently fashionable, which means that stretch garments are popular in the ladies’ outerwear fashion sector. Polyurethane elastomer fibres have a better chemical resistance, a higher level of elongation and better recovery properties than rubber thread, which was commonly used in the past.

Stretch Breaking: In conversion of tow-to-top, fibres are hot stretched and broken rather than cut to prevent some of the damage done by cutting.
**Stretch cord**: Collective term for different qualities of elastic cord. Depending on elasticity they are ideally woollen or cotton and textured polyamide, in addition the warp contains 2–6% elastic thread covered with textured polyamide. Example: Warp – approx. 85% textured polyamide and 15% elastomer yarn (elasticity 15–30% depending on quality); overall composition: 80% cotton, 16–17% polyamide, 3–4% polyurethane (elastomer fibre).


**Stretch fabrics**: (elastic fabrics), elastic textiles with comfortable wearing properties (retain shape and are crease-resistant), elasticated either lengthways/warp (ideally) and/or crosswise/weft. The yarns used for this are highly-elasticated synthetic textured yarns, elastomer and rubber thread wrapped with yarn, or corespun yarns, frequently in the form of synthetic mix yarns, with/without natural or synthetic fibres, and also specialist wool and cotton yarns (e.g. with Slack mercerization), etc. See Power stretch, comfort stretch.

**Stretch ratio, Draw ratio**: (1) Machine draw ratio: In a drawing process, the ratio of the peripheral speed of the draw roller to that of the feed roller (2) True draw ratio: In a drawing process, the ratio of the linear density of the undrawn yarn to that of the drawn yarn. (3) Residual draw ratio: The draw ratio required, in draw texturising, to convert a partially oriented yarn into a commercially acceptable product.

**Stretch spinning**: A term used in the manufacture of rayon. Rayon filaments are stretched while moist and before final coagulation to decrease their diameter and increase their strength.

**Stretch stitch, in sewing**: A complex machine stitch pattern or of various combinations of straight stitch, single stitch zigzag, or multiple stitch zigzag. It is produced by co-ordinated motions of needle and feed mechanism in forward or reverse direction.

**Stretch towelling**: A knit fabric with short loop pile to give it a thin Terry toweling appearance on the right side. It is produced in plain colours and in patterns and stripes. Made from cotton and polyamide, it has a great deal of stretch. Very useful for baby clothes, children’s clothes, sports outfits, jumpsuits, bath robes etc.

**Stretch woven fabric**: A woven fabric which is capable of at least 20% stretch either in warp or weft direction, or both, under loads and conditions encountered in use, and of almost complete recovery on removal of the load.

**Stretch yarn**: See Bulk yarn. Yarns with exceptional elasticity, e.g. Textured yarns; Core-spun yarns Continuous filament synthetic yarns that have been altered through special treatments or modification to give them elasticity. Techniques include: twisting and untwisting, use of air jets, stuffer boxes,
knife blades, crimping, heat setting, curling, steaming, or looping. Use of these yarns gives fabrics a degree of elasticity and comfort.

**Stretch yarns, dyeing:** Usually in the form of tubeless cross-wound yarn packages (muff) on pack system dyeing machines with a cylindrical yarn carrier in the pack dyeing system (brick-type) or a packing system onto dye tubes.

**Stretch, comfort:** Stretch fabrics having lower elasticity, yield on stretching, no body-shaping properties but mould to fit the body, used in ladies’ hosiery, underwear, sportswear and outerwear.

**Stretch, low power:** See Low-power stretch.

**Stretch, power:** Stretch fabrics having high level of elasticity, with bodyshaping properties, for corsetry, swimwear, surgical stockings.

**Stretch-spun fibres:** Synthetic threads that have been stretched during wet spinning to increase their strength and fineness, e.g. cupro filaments and highstrength viscose fibres.

**Stretched filling:** See Tight pick.

**Striations:** Streaks or bands or various nature in fibres or fabrics.

**Strié:** A term describing any cloth having irregular stripes or streaks of practically the same colour as the background.

**Strike:** Term referring to the speed of dye uptake on the substrate (Half-dyeing, time of). First strike is the ending, which depends on substantivity, in paddler dyeing.

**Strike off:** (1) Sample prints on fabric for pattern and colour approval. (2) (knocking-over), term originating from old-style hand or block printing. Colour is applied to the print block in the colour trough, and the print is then positioned on the fabric. The print is strengthened by hitting the block with a small hammer, which transfers the dye onto the fabric. Nowadays the term strikeoff is used to mean the printing of a repeat run.

**String:** (1) Two or three-ply coarse thread of hemp or flax of various thickness and fineness; (2) A unit of ten feet, according to which woollen warps are calculated in Yorkshire, England.

**Stringer, In Zippers:** The tape, bead and element asmbly that constitutes one side of a chain.

**Stringy:** (1) Thin, delicate stapled wool; (2) A flaw in the wool, consisting in slight matting, caused by imperfect scouring; (3) Defective raw cotton, the fibres forming strings, caused through the ginning of too wet cotton.
Stringy selvage: See Slack selvedge.

Strip Test, in fabric testing: A tensile test in which the full width of the specimen is gripped in the clamps.

Strip test, Cut: See Cut strip test.

Strip test, Ravelled: See Ravelled strip test.

Stripback: See Broken filament.

Stripe Braid: Has stripes, often of different colours or materials interlaced with each other.

Striping Yarn: Any yarn plain or fancy, used singly or as small number of threads and made from any textile raw material, to produce stripe effects in a fabric.

Stripper, in textiles: A product usually a reducing agent. That changes the coloring material, dye, or soil stain to reduced colour.

Stripping: Removal of dye from fabric. Stripping is usually done with a reducing agent such as thiox, formosul or sodium hydrosulphite and often requires hot to boiling conditions. Some dyes are difficult to strip, and the result often is not white.

Stripping agent: (decolorizing agent). A product for Stripping of dyeings and prints. Reduction bleaching agents on a sodium dithionite basis or hypochlorites are usually used.

Stripping auxiliaries: is used to aid the Stripping of dyeings and printing. Has the task of supporting the brightening effect in the stripping reduction process by restricting the re-uptake of reduced, dissolved dyes. Sometimes also combined with Fibre protective agents, principally in wool. The addition of anthraquinone might be recommended in the stripping of naphthol, vat dyes, etc.

Stroll, in tufting: A pattern attachment consisting of a number of yarn roller which are capable of being driven at different speeds. The pattern is read from an acetate sheet on a pattern drum.

Strong wool: A term with several meanings including extra long staple wool from any wool clip, an Australian term for crossbred sheep, and description of British lustre wools.

Structured needle Felt: A pile fabric formed by subjecting a previously needled web or batt to a further punching operation with forked, single barb or side-hook needles. Rib, velour and pattern structures may be produced.

Studio: The place where a designer works. It can be anything from an area set aside on the factory floor to a large smart office, or even a suite of offices.
Strussa: Waste silk, obtained from double cocoons (duppions).

Strusa (Italian): See Frisons.

Stubble, in shorn floor covering: The portion of the pile that remains after shearing.

Stubble Height: The distance the stubble extends above the backing fabric.

Stuff: An old eighteenth century word used to describe any fabric containing worsted yarns.

Stuffer box: A crimping device consisting of a confined space into which a tow, converted tow, a sliver, a yarn or a similar assembly of filaments or fibres is injected by feed rollers or other means such as fluid jets and in which the fibre assembly is packed and compressed into a configuration where the individual filament or fibres became folded or bent.

Stuffer box texturing: See Texturing, stuffer box.

Stuffer channel: (compression channel). Is used for compressing the piece goods together in a longitudinal direction when milling on a rotary milling machine for rope treatment or in open-width washing machines to relax the fabric.

Stuffer yarn: An extra backing yarn running in the warp direction through a woven pile floor covering.

Stuffers: Extra yarns running in the warp direction through a woven fabric to increase the fabric’s strength and weight.

Stumba: Combing silk obtained from the waste of shappe silk; it is quite coarse and is used for filling yarn, coarse knitted fabrics, etc.

S-Twist: See Yarn Twisting.

Stylist: Designer who puts together a range of products.

Stymboline: Felt made of woollen and linen yarn in France.

Styrene: An unsaturated hydrocarbon, \( \text{C}_6\text{H}_5\text{CH} = \text{CH}_2 \), prepared from coal tar. Polystyrene is a colorless, transparent plastic used for molding various articles for insulation, transparent parts, radio parts, etc.
**Styryl dyes:** The styryl dyes are neutral molecules containing a styryl group C₆H₅CH=CH=C, usually in conjugation with an N,N-dialkylaminoaryl group. Styryl dyes were once a fairly important group of yellow dyes for a variety of substrates.

**Sublimation:** The conversion of a solid directly to a gas, for instance, at standard pressure iodine, solid carbon dioxide, and ammonium chloride sublime, without passing through a liquid phase. At certain conditions of external pressure and temperature an equilibrium can be established between the solid phase and vapor phase. Some disperse dyes will sublime. This can make dyed fabric subject to fading due to heating, as from ironing at high temperature. Sublimation printing of synthetic fibres, mostly polyester, is used commercially. Typically, the pattern is printed on paper, then the dried pattern is heat transferred to the fabric. The dye gas penetrates the hot fibre, where it becomes physically trapped as it cools back to solid form. Washfastness is very high. There are now a number of special sublimation inks available for computer printers and others for screen printing, both for making transfers. One t-shirt maker also makes shirts that have a polyester outer layer and a cotton inner layer, also specifically for “digital” transfer printing.

**Sublimation printing:** A form of transfer printing (q.v.) that uses dyes that sublime readily and have substantivity (q.v.) for the substrate to which they are applied.

**Sublimation Fastness:** Fastness of a dye or dyeing against sublimation. Usually a property of Disperse dyes which sublimes and stains the adjacent fabric. See Sublimation.

**Sublistatic® process:** A method of applying print designs to fabrics containing manufactured fibres by paper-transfer techniques. Developed by Sublistatic Corp. (Also see Prin Heat Transfer Printing.)

**Submerged spin process:** Used for dyeing continuous yarn and cross spools with reactive dye substances using the cold residual process. Cross spools are impregnated in a dye bath by a centrifuge. Commercial interest is limited to Space dyeing.

**Submerged test:** Testing method for water repellent impregnation of textiles (particularly yarn, activity products and knitted fabrics). Technique: weigh textile to be tested, submerge in sieve 10 cm under water for 5 minutes whilst agitating sieve to free trapped air, remove from water, allow to drip for approx. 10 minutes, weigh and ascertain water absorption.

**Submerged thermosol process:** Follow-on process for (bleaching and) whitening synthetic fibres (also cotton mixtures): stretching process 2–5
min in hot fluorescent brightening liquor in the residence device (immersion accumulator), then squeeze out, dry and thermo fix. When fixing the fibre non-bound or diffused, whitener is thermostol fixed.

**Substantivity**: The attraction, under the precise conditions of test, between a substrate and a dye (or other substance) where the latter is selectively extracted from the application medium by the substrate. A dye that is substantive will leave the dye bath and be concentrated on the fibre in the bath. Without substantivity, most of the dye would simply remain in solution or dispersion in the bath. Dye substantivity is generally associated with the molecular structure of the dye, and often big molecules have high substantivity, while small molecules have low substantivity. Dye bath conditions, including temperature and additives such as salt influence substantivity. Substantivity is often produced in ways that differ from the final bond of the dye to the fibre. Also see Affinity.

**Substituent**: An atom or group substituted for another in a compound. Often the term is used for groups that have replaced hydrogen in organic compounds. For example, in chlorobenzene (C₆H₅Cl) chlorine can be regarded as a substituent.

**Substitute**: A cheaper or inferior fibre which takes the place of a more expensive one, as for instance cotton used instead of wool or silk.

**Substitution reaction**: A reaction in which an atom or group of atoms in an organic molecule is replaced by another atom or group. The substitution of a hydrogen atom in an alkane by a chlorine atom is an example. Substitution reactions fall into three major classes depending upon the nature of the attacking substituent. *Nucleophilic substitution*: the attacking substituent is a nucleophile (i.e. a molecule or ion that can donate electrons). Such reactions are very common with alcohols and halogen compounds, in which the electron-deficient carbon atom attracts the nucleophile and the leaving group readily exists alone. Examples are the hydrolysis of a haloalkane and the chlorination of an alcohol:

\[
C_2H_5Cl + OH^- \rightarrow C_2H_5OH + Cl^- \\
C_2H_5OH + HCl \rightarrow C2H5Cl + H2O
\]

*Electrophilic substitution*: the attacking substituent is an electrophile (i.e. a molecule or ion that accepts electrons). Such reactions are common in aromatic compounds, in which the electron-rich ring attracts the electrophile. The nitration of benzene in which the electrophile is NO₂⁺ is an example:

\[
C_6H₆ + NO₂⁺ \rightarrow C_6H₅NO₂ + H^+
\]
**Free-radical substitution**: a free radical is the attacking substituent. Such reactions can be used with compounds that are inert to either nucleophiles or electrophiles, for instance the halogenation of an alkane:

\[ \text{CH}_4 + \text{Cl}_2 \rightarrow \text{CH}_3\text{Cl} + \text{HCl} \]

The term ‘substitution’ is very general and several reactions that can be considered as substitutions are more normally given special names (e.g. esterification, hydrolysis, and nitration). *See also* electrophilic substitution; nucleophilic substitution.

**Substrate**: Fabric to which coatings or other fabrics are applied. It can be of woven, knit, nonwoven, or weft-insertion construction. Generally, substrate properties are dependent both on fibre type and fabric construction. Usually the fabric is scoured, heat-set, and otherwise finished prior to coating or bonding. Many smooth-surfaced manufactured fibre fabrics require impregnation with a latex prior to coating to ensure adequate adhesion.

**Substrate, in effluent treatment**: The term used to denote the organic matter or nutrients that are converted during biological treatment or that may be limiting the biological treatment. For example the carbonaceous organic matter in waste water referred to as the substrate that is converted during the biological treatment.

**Subtractive, colour chemistry**: With reference to colour, removal of colours from light reflected from a surface A surface that is illuminated by white light and that reflects all visible colours will appear white. The surface can be made to appear some other colour than white by altering it with materials that absorb or subtract colours present in the white light. The subtractive primary colours are designated cyan, magenta and yellow. If a white material is coloured with something that absorbs magenta, for example, then cyan and yellow will be reflected, making the material look what is normally called green. If another material is added that absorbs the cyan component “subtracts” cyan, then only the yellow is reflected, and the material looks yellow. If all colours are subtracted or absorbed, then the material appears black. Dyes used on fabric work according to subtractive principals. In theory, if truly pure cyan, yellow and magenta dyes were available, any other colour could be mixed from them. In practice, there are limitations. Colour theory and practice are complex topics.

**Subtractive colour mixing**: The subtractive primary colours are cyan, yellow and magenta and when mixed together they subtract from the light producing black. When different pairs of subtractive primaries are mixed, the colours red, green and blue are produced.

**Subtractive primaries**: Cyan, magenta and yellow. Theoretically, when all three subtractive primaries are combined at 100% on white paper, black is
produced. When these are combined at varying intensities, a gamut of different colours is produced. Combining two primaries at 100% produces an additive primary, either red, green or blue:

100% cyan + 100% magenta = blue
100% cyan + 100% yellow = green
100% magenta + 100% yellow = red

**Suction-drum drier**: Sieve-drum drier. Hot-air dryer for loose material, tow (fibre manufacturers), hank yarn, cloth and knitted fabrics. The material is sucked in through the perforated, rotating drum by airflow, soaked heavily and then dried.

**Suede**: The correct term is Suede Leather, because it is usually calfskin treated on the inside to give a napped or sueded finish. It is smooth and attractive and can be dyed in a variety of fashion colours. Readily available for sewing and can be made into a variety of garments.

**Suede cloth**: See Suede, Suede Fabric.

**Suede Fabric**: There is a wide variety of simulated suede or suede fabric available. Most types are fairly expensive, although advantage over real sued is that they do not take on permanent creases or show wear easily, and most of them are washable. The method of manufacture and fibre content vary. It is suitable for dresses, jackets for men and women, skirts, children's clothes, sports and leisure outfits.

**Suede finish**: See Suede fabric.

**Suède leather**: (1) Roughened Leather and is also called genuine suède leather (for example leather made from deer). It is either polished grain (e.g. Nubuk) or polished velour (e.g. lamb, sheep, calfskin, cow velour). Imitation suede leather Imitation suède. (2) (suède) Leather with a velvety rough or fluffy surface. The flesh side is cut and worn on the outside (for example Danish, suède leather). The grainy side is smoothed to obtain a special soft velvety texture (e.g. Nubuk Leather).

**Suede look**: “Swedish Leather” with suède characteristics, for example Duvetine and rough suede jeans material with flocked variants.

**Suedette**: See Velour. This is a five or eight stem reinforced satin material. A velvety effect is obtained by strongly roughing the right side of the fabric. Another name for this is fabric is Duvetine.

**Suedine**: This is an imitation leather fabric with suède characteristics.

**Sueding**: (emerizing). This is performed on the surfaces of cloth or knitted fabrics. During emerizing the fabric is covered by a thin pile that does not
damage the machine or the structure of the fabric. The effect is dependent on the structure of the yarn and the surface.

The shorter and thinner the fibre in the yarn, the lighter and easier it is to obtain the pile. The initial emerizing refining materials are also influenced by this.

**Suèding machines**: (emerizing machines). Material with suède leather characteristics is produced on the emerizing machine by the emerizing rollers which split and emerize the fibre. A carrier roller ensures the cloth is guided correctly under constant tension. The emery rollers which are wrapped in a spiral with emery paper are driven by a high performance motor and can be rotated (generally 950, 1200 or 1600 rpm), as desired, with or against the passage of fabric.

**Suedoise**: French serge, made with 8 harnesses and 4 picks in a repeat.

**Suedyne**: See Velour.

**Suessen Heat Setting**: Process using dry heat to set twisted yarn.

**Suffolk Lace**: English bobbin lace of plain patterns, the design usually outlined with a thick thread.

**Sugar**: (saccharide) One of a class of sweet-tasting simple carbohydrates. Sugars have molecules consisting of a chain of carbon atoms with \(-\text{OH}\) groups attached, and either an aldehyde or ketone group. They can exist in a chain form or in a ring formed by reaction of the ketone or aldehyde group with an \(-\text{OH}\) group to form a cyclic hemiacetal. Monosaccharides are simple sugars that cannot be hydrolyzed to sugars with fewer carbon atoms. Two or more monosaccharide units can be linked in disaccharides, trisaccharides, etc., by a glycosidic link. Monosaccharides are also classified according to the number of carbon atoms: a pentose has five carbon atoms and a hexose six. Monosaccharides with aldehyde groups are aldoses; those with ketone groups are ketoses. Thus, an aldohexose is a hexose with an aldehyde group; a ketopentose is a pentose with a ketone group, etc. The ring forms of monosaccharides are derived by reaction of the aldehyde or ketone group with one of the carbons at the other end of the chain. It is possible to have a six-membered (pyranose) ring or a fivemembered (furanose) ring.
**Sugar fibres**: Cuban. Raw material fibre from the waste from sugar production.

**Suint**: Mainly from Wool fat and Wool grease suint (consists of between 8 and 58%).

**Suint scouring**: In this process the dusted raw wool is steeped in water at 16°C and then the liquor is withdrawn and clarified by sedimentation or centrifuging. The pH of the suint liquor is between 5.5 to 8.8. For removal of wax the suint liquor should be heated at 60°C when wax is emulsified. The material is then rinsed, washed with soap and finally rinsed in the subsequent bowl.

**Suiting lace**: The term is used to describe any type of firm lace which would be suitable and durable for formal garments such as jackets and skirts. The yarns are usually thick and matt and firm such as cotton and viscose. The motifs or designs are deliberately close together to provide stability and to prevent fabric from being too see through.

**Sujini**: Embroidered quilt made by women of Bihar India. See Kanthas.

**Sulfamic acid and ammonium**: Combinations of these compounds also function as non-durable flame retardants.

**Sulfur fibre**: A manufactured fibre in which the fibre-forming substance is a long chain, synthetic polysulfide in which at least 85% of the sulfide (-S-) linkages are attached to two aromatic rings (FTC definition). The raw material is polyphenylene sulfide which is melt spun and processed into staple fibres. These are high performance fibres with excellent resistance to strong chemicals and high temperature. They show excellent strength retention in harsh environments; are flame retardant; and are non-conducting. They find use in high-temperature filter fabrics, electrical insulation, coal-fired boiler bag houses, papermaker’s felt, and high-performance composites.

**Sulphate Pulp**: Kraft pulp.

**Sulphates**: A salt or ester of sulphuric(VI) acid. Organic sulphates have the formula $R_2SO_4$, where R is an organic group. Sulphate salts contain the ion $SO_4^{2-}$.

**Sulphites**: Salts from the sulphuric acids (H2SO4; Sulphur oxyacids). They are either acid salts (e.g. Sodium bisulphite) or normal salts (Sodium sulphite). Only alkali salts are soluble, and as a result have an alkaline hydrolysis reaction. Usage: they are reducers, bleachers and separators.

**Sulfonated**: A term describing a material that has been reacted with sulfonic acid, usually to impart solubility, dyeability with cationic dyes, or other properties.
Sulphonates: A salt or ester of a sulphonic acid.

Sulphonation: A reaction used in the dyes chemistry. By sulfonation is meant the introduction of an $-\text{SO}_3\text{H}$ group into a molecule. The operation results in a product which is usually very soluble in water, either in the form of the free sulphonic acid, as is often the case, or in the form of its salts. Of the salts, the inexpensive sodium salt is usually encountered. Sulfonation is effected:
(a) With ordinary concentrated sulfuric acid ($66^\circ$Be); (b) With 100 per cent sulfuric acid; (c) With fuming sulfuric acid (oleum), with the concentration of SO$_3$ varying from 5 to 70 percent; (d) With chlorosulfonic acid, with or without diluent; or (e) by “baking” (dry heating) the acid sulphate of an amine, often in vacuum.

Sulphonation, degree of: A percentage of the organic bonded sulphuric acid and SO$_3$ in Fatty alcohol sulphates and similar sulphates. Fats are water-soluble during contact with the Sulphonic (acid) group.

Sulphonic acid: Any acid containing the sulfonic group, (SO3H).

Sulphonyldiethanol: Used as a crosslinking agent for cotton. It can be made by the reaction of di-vinyl sulphone with alkali.

$$\text{Sulphur dye}: \text{a class of dyes made by reacting sulfur with organic compounds; most are of unknown chemical structure. Sulfur dyes are insoluble in water, and must be converted to a soluble form for application. The process is quite similar to that used for vat dyes. Sulfur dyes are typically inexpensive, but dull in colour. They generally have good washfastness, but are sensitive to bleaches. Sulfur dyes on fabric, particularly some blacks, may decompose under warm, humid conditions, forming an acid. This can cause tendering of cellulose fibres, but can generally be prevented by making the finished fabric slightly alkaline. Sulfur dye is often used commercially to produce a good black at low cost on cellulosic fabrics.}

Sulphamic acid Sufamic acid: NH2SO3H Sulfamic acid, applied to wool typically by printing, followed by baking then steaming, fixes to the wool much like an acid dye. It is colorless and prevents the treated wool from taking up other acid dye, so it is an effective.

Sulphobetaines: Used for high grade finishing. Examples include Triethylsulphateamine, disodium salt.

Sulphonated fatty acids: These products are used in textile as surfactants. The are made by reaction of fatty acids and sulphuric acids in so doing, finally react (with the efflux of water) with a CH$_2$-group and which explains, with
Sulphonic acids, the direct bonding of carbon-sulphur (–C–SO\(_3\)H–COOH) with the fatty acids- carboxyl group. Sodium salts possess a high level of resistance to acid and alkali, form very soluble lime salts and are (for example with a mixture of Fatty sulphuric acid esters) very active in the processes of saponifying, rinsing, dyeing, softening and modifying finishes. They are also resistant to bitter salts.

**Sulphonated fatty acid esters**: A good detergent stable to hard water can be produced by the esterification of oleic acid:

\[
\begin{align*}
\text{C} & \text{O} \\
\text{N} & \text{SO}_{3}\text{Na} \\
\text{R} & 
\end{align*}
\]

They were originally made by esterification of castor oil and further sulphonation. These products are used as wetting agents and softening agents:

\[
\begin{align*}
\text{O} & \text{SO}_{3}\text{Na} \\
\text{O} & \text{R} 
\end{align*}
\]

**Sulphonated succinic acid esters (sulphosuccinates)**: One of the highly efficient wetting and detergent of high stability. They are used as mild washing agents and are degradable (by comparison to other products). Sulphuric succinic acid esters from stearic acid monoethanolamides are useful for special after washing in many countries. Washing can be performed without additional electrolytes or alkali to neutralise.

\[
\begin{align*}
\text{CH}_2 & \text{COO—C}_6\text{H}_{13} & \text{CH}_2 & \text{COO—C}_6\text{H}_{13} \\
\text{CH}_2 & \text{COO—C}_6\text{H}_{13} & \text{CH}_2 & \text{COO—C}_6\text{H}_{13} \\
& & \text{SO}_{3}\text{Na} & \\
\text{ester} & & \text{sulphosuccinate} & 
\end{align*}
\]

**Sulphonic (acid) group**: (SO\(_3\)H): Monovalent. Characteristic of many textile auxillaries and numerous dyestuffs (auxochrome).

**Sulphosuccinamates**: They are excellent foaming agents and emulsifiers of the typical formula:
They are characterized by the presence of two entirely different ionisable groups (sulphonic acid group and carboxyl group) which differentiates them from other surface active agents. The consequent bifunctionality in interaction with the amide group yields specific characteristics which predestine them for use in emulsion systems. Thus certain sulphonates are used alone or in mixtures with e.g. potassium oleate sulphate or sodium lauryl sulphate as an emulsifier for latex compounds, as well as as an emulsifying and foaming additive in the manufacture of foamed carpet backing coatings.

**Sulphoxylate, Sodium formaldehyde:** (NaHSO$_2$CH$_2$O · 2H$_2$O) mostly 98–99%, stable (if protected against moisture and heat), soluble in cold water; used as: deoxidant in cloth printing (vat dyes), discharging of direct and naphthol dyeings.

**Sulphoxylates, Zinc formaldehyde:** (a) Primary salt [Zn(SO$_2$CH$_2$OH)$_2$], water-soluble; used for: stripping of dyeing, deoxidant in vat-dye printing, discharge printing of acetate fibres, etc. (b) Secondary salt [Zn(SO$_2$CH$_2$O)], not soluble in water, soluble in ethanoic acid or formic acid bath; used for: stripping of dyeings, discharge agent.

**Sulphoxylate, Zinc acetate aldehyde:** oxyethane sulphinic acid zinc: [ZnSO$_2$(CH$_2$OH)$_2$], difficult to dissolve in water, used for: stripping.

**Sulphoxylate, Calcium formaldehyde:** deoxidant for printing with vat dyes.

**Sulphur dyeing:** Dyeing with sulphur dyes. Dyeing is very similar to vat dyes, i.e. dye is applied in the reduced form on the substrate and oxidized to form the original insoluble form on the fibre. Na$_2$S is usually employed as the reducing agent in the presence of sodium carbonate. There are mainly two types of sulphur dyes – Normal and modified types. Normal types should be boiled with 1 to 3 times the amount of sodium sulphide. This solution must be filtered before being added to the dye bath. Modified types, on the other hand, are water-soluble or can be diluted with water and they can be prereduced or otherwise. Method of application as per manufacturers directions. The affinity of these solutions are very less and hence taken up by the substrate slowly. Material can be padded and steamed also. Oxidation is done after rinsing with hydrogen peroxide. It can be oxidized by dichromate, hypochlrites etc which is not well practiced now due to various reasons.
**Sulphuric acid:** $\text{H}_2\text{SO}_4$; A very potent inorganic (“mineral”) acid; a strong acid. Sulfuric acid is used in some preparation and dyeing processes, most often with wool. Concentrated acid will absorb water very rapidly, releasing heat in the process. Skin burns are caused by both this heating and by corrosive action, and can happen within seconds. See comments under acid regarding mixing. Sodium bisulfate (not bisulfite) can sometimes be used as an alternative.

**Sultanabad:** Medium and large size Persian rugs made with thick pile. The design consists of floral patterns in brilliant blue, red and green colours.

**Sumach:** Leaves and twigs of several species of Rhus, containing tannic acid. It is sold in the form of crushed leaves or as a powder (15–20% tannin).

**Summer Silk:** Same as Louisine.

**Suningchow:** Soft silk serge in solid colours, made in China; is about 32 inches wide.

**Sunn:** A bast fibre obtained from the plant Crotolaria juncea, south Asian, water-retted, coarse and hard. Used for cords and ropes.

**Super Light Weight:** Term used to describe a fabric used in outerwear, which allows for a minimum pack volume and weight. These lightweight, packable garments offer the most versatile weather protection. Some of these fabrics have a protection layer on the membrane, which provides durability. This means that the garments made from the extra lightweight fabrics need no separate lining.

**Super Micro Fibres:** The so-called supermicrofibres are finer than Microfibres by a power of ten; supermicrofibres are obtained by dissolving out the polyester “islands” in “islands in the sea” technology. They are generally of less than 0.1 dtex. In island in the sea technology composite fibres are spun with many super microsize (less than 0.1 dtex) inside another polymer which can be later on dissolved and super microfibres can be separated. See fig. below.

**Superabsorbent:** A material that can absorb many times the amount of liquid ordinarily absorbed by cellulosic materials such as wood pulp, cotton, and rayon. Absorbent compounds such as highly absorbent polyacrylate powders, can be used in the hygiene sector for the absorption of wetness which occurs suddenly.
Superba Heat Setting: Process using steam and pressure to set twisted yarn.

Supercop: (1) A wooden or plastic conical base on which weft is wound for use in a shuttle loom. (2) A weft package produced by winding a yarn on to the base defined above.

Superdull fibre: Superdull fibres are fibres with 1-3% titanium dioxide, which is used to dullen the fibre.

Superfine wool: The finest, most expensive wools used for mens suitings and luxury knitwear. Mainly from Australian Saxon Merino sheep.

Superimposed yarn layer: Bonded yarn fabrics which are arranged randomly or deliberately.

Supermicrofibres: The so-called supermicrofibres are finer than Microfibres by a power of ten; supermicrofibres are obtained by dissolving out the polyester “islands” in “islands in the sea” technology.

Supermilling: A class of acid dye Supermilling acid dyes offer moderate brightness and good to very good washfastness, but have poor to fair leveling tendency. Their leveling characteristics mean that extra care is required in the process to produce level results. There is no clear distinction between milling and supermilling acid dyes. These dyes are used for wool and work well on polyamide (nylon).

Supernatant: Denoting a clear liquid that lies above a sediment or a precipitate.

Superpolyamide fibres: Carothers (the inventor of the polyamide 6.6 fibre), used this name to denote all fibre-forming polyamides with a molecular weight over 10,000.

Superwash: A quality term defined by the International Wool Secretariat (IWS) for wool articles which have been finished to be resistant to machine washing.

Superwash wool: See Super wash.

Supewash process: See Superwash process.

Suples: Silk yarn dyed with only part of the gum removed.

Supported needle felt: A needled felt that is composed entirely of fibres physically interlocked and reoriented in combination with interlay, scrim, or foundation of knitted, stitched, bonded, or extruded structure.

Supukwenkin: Silk fabric similar to lustring; made in China; used for scarfs.

Surah: (1) Thread dyed warp of orgazine and weft of tram with 45’ diagonal weave structure. Even sided twill with strrongly marked slant-ribbed effect. A twilled silk similar to serge; first made in Surat, India.
(2) A soft twill fabric made from filament yarns, including silk, polyester acetate, triacetate. It is always printed, shiny fabric. It is not hard wearing, and tends to develop slippage at seams and points if strain, and creases easily. Used for loose dresses, blouses, scarves, ties and as a lining fabric.

**Surah de Laine:** Fine, twilled, soft dress goods, made of silk and wool.

**Surcot:** Women’s or men’s over garment, usually sleeveless and unbelted, often trimmed with fur.

**Surface activity:** Surface activity of a substance is generally related to the balance between hydrophilic and hydrophobic portions of its molecule. For example, among anionic surfactants C8-C12 alkyl hydrophobes tend to be predominantly wetting agents, while the C12-C15 homologues exhibits better detergency and emulsifying properties. They have different levels of surface activity due to the property of the molecules described above.

**Surface active agent:** See **Surfactant**.

**Surface charge:** The electrical charge on the surface of a substance.

**Surface contour:** Divergence of a surface from planeness rough (high) to slippery (low).

**Surface energy:** (1) The free energy of the surfaces at an interface that arises because of differences in the tendencies of each phase to attract its own molecules. (2) The work that would be required to increase the surface area of a liquid by one unit area.

**Surface finishing:** Finishing, mechanical or chemical which is made on the surface of a fabric to enhance the quality, appearance etc. In pretreatment, special surface finishing steps such as singeing, emerizing, brushing or roughening can be applied to the dry or wet goods, in order to shape the quality. Raising, shearing peaching, polishing, sanding are other finishes which are applied at various stages of processing which can be considered as the surface finishes.

**Surface friction:** Resistance to slipping offered by surface harsh (high) to slippery (low).

**Surface print:** Prints with a greater colour intensity resulting from the concentration of dye printed onto the fibre surface. This effect is achieved by using suitable thickeners, which should be in combination with semi-emulsions if reactive dyes are used. For any other type of dye, thickener combinations containing starch should be used.

**Surface printing machine:** The pattern is printed by means of raised relief-type printing elements. In contrast to Roller printing machines, the surface
printing machine can print all wovens using the same rollers. The only difference is that print paste application to the print rollers is varied with a paste application device.

**Surface reflectance**: A small portion of the incident light (less than 2% with textile materials and paper) is immediately reflected from the surface due to different optical material/air density. This portion is termed surface reflectance or residual reflectance.

**Surface tension**: Surface tension is defined as the interfacial tension between a liquid and its vapor. Intermolecular forces acting on the molecules at the free surface of a liquid tend to minimize the surface area of the liquid and give the surface properties similar to those of an elastic skin under tension. When two dissimilar liquids make contact, these intermolecular forces will cause the shape of the interface to change until the potential energy of the entire molecular system is at a minimum. A very simple method of measuring surface tensions is with a du Noy tensiometer. This technique measures the force necessary to pull a platinum ring away from a liquid. For pure water, the force is 72 dynes/cm.

**Surface water absorption, in a fabric**: The process of removing liquid water from a surface such as human skin, dishes, furniture, car etc.

**Surfactant**: The word surfactant is coined from the expression “surface active agent”. As the phrase implies, a surfactant molecule possesses surface activity, a property associated with the chemical structure of the molecule. The characteristic feature of a surfactant molecule is its two ends attached by a covalent bond. The two ends have diametrically opposed polarities. The non-polar end is lyophilic (strongly attracted to organic molecules) while the strongly polar end is lyophobic (having little attraction for organic molecules) yet strongly hydrophilic (water loving). Duality of polarity causes the molecule to align itself with respect to the polar nature of the surfaces it contacts. When used in association with dyeing, this term almost invariably refers to a synthetic detergent. Detergents operate at the surface between a solvent (water) and some material that is to be removed from where it is, and made to enter solution or suspension in the solvent. One end of the surfactant molecule is hydrophilic (“likes” water, and the other is hydrophobic (“fears” or water; sometimes lipophilic - oil loving). Surfactants can be synthesized to have specific properties by varying the structure of the hydrophilic and hydrophobic ends. Surfactants are used to scour fibres or fabric, act as wetting agents in dyeing, as retarders in dyeing, and to help remove unfixed dye after dyeing. They may be classified as anionic, non-ionic or cationic. There are even types that can behave as anionic or cationic, depending on conditions.
Some fabric softeners are surfactants. There is a vast array of surfactants on the market.

**Suri fibre**: Fine animal hair originating from a species of South American camel. From a quality point of view, it is the best type of Alpaca fibre, having an even colour shade and even linear density (approx. 25 mm, about 90–110 scales per mm).

**Surikome printing**: Ancient Japanese technique, a multi-coloured version of Kasuri dyeing.

**Surinam**: Variety of raw cotton from Guyana; the fibre is white or yellowish, lustrous and strong.

**Surtout**: An overcoat cut in the style of a frock coat.

**Suspended growth process, in ETP**: Biological treatment process in which the microorganisms responsible for the conversion of organic matter or other constituents in the waste water to gases and cell tissue are maintained in a suspended form within the liquid.

**Suspended solids, in waste water**: Solids that are held in the waste water, which are not soluble. It can lead to the development of sludge deposits and anaerobic conditions when untreated waste water is discharged in the aquatic environment.

**Suspended web**: See Brace web.

**Suspoemulsion**: A mixture of anionic and non-ionogenic emulsifiers or anionic dispersants, with specific stabilizers and de-foamers. With a suspoemulsion, it is possible to combine biocides with varying physical and chemical properties, because it has a mixed structure.

**Sutherland**: A Highland tartan, composed as follows: dark green stripe, split in the center by a very narrow black stripe; black stripe, half as wide as the green; dark blue stripe, as wide as the green, split by a pair of very narrow black stripes, placed near the edges and spaced from each other and from the edge their own width; green stripe, width and split as above; dark blue stripe, as wide as above, split in the center by a single pair of very narrow, black stripes, spaced their own width.

**Sutwan**: Various Chinese piece dyed silk satins.

**Suzeni**: Embroidery Persian needlework, consisting of couched silk or gold threads.

**SVCC**: Schweizerischer Verein der Chemiker-Coloristen (Swiss Association of Chemical Colorists).
Swansdown: A narrow fuzzy decoration originally made from the downy breast feathers of the swan, but now more often made from synthetic fibre. Used to trim nightwear, evening gowns.


Sweated wool: Skin wool treated using the sweating process (sweating: controlled rotting process, the oldest biological method of dewooling). See Mazametwool.

Sweating: The process of removing wool from the skin, by exposing the skins, which are first soaked in water, to high temperature.

Sweatshirt Fabric: Acrylic or cotton knit fabric with a bumpy fleecy back in a variety of plain colours and striped designs. The yarns used are often marled. Some fabrics are quite thin; all stretch easily and lose their shape. Not hard wearing. Used for sports and leisure clothes.

Swedish lace: Swedish lace is said to be very very old. Fragments of cloth woven in this structure was found in the marshes in Sweden dating from the time of the Vikings. These structures are effected by the distortion of warps and wefts. The distortion of the warp and weft in this handsome structure results from the interlacing some of the threads from time to time so that the ends/picks slide to gether. The effect is emphasized by the use of smooth, plain, and particularly hard-twisted yarns and by washing the fabric. The manipulation is involved in the washing process allows the threads to come to the most stable configuration: Threads not held apart come together. It happens every time. Soft woollen yarns may be used to make warm and cuddly shawls, scarves and blankets. The structure of the cloth is somewhat blurred when those yarns are used, but the results are still lovely. Swedish lace needs four shafts. In a typical construction the ends carried on shafts 1 and 4 weaves plain weave everywhere.

Swelling: In textile usage, expanding of a fibre caused by the influence of a solvent or chemical agent. A property often used to facilitate dyeing.

Swelling agent in dyeing: See Carrier.

Swelling agent in printing: The absorbency of print pastes is frequently limited in regenerated cellulose fibres, and for this reason swelling agents are added to the print paste.

Swelling shrinkage: Results from the swelling and de-swelling of the constituent fibres of a fabric due to the absorption and desorption of water.

Swift: is an expandable cage that turns on a center rod to hold a skein of yarn so that it can be wound into a ball or directly onto the warping board.
**Swim wear**: Textile garments intended for wear in fresh, chlorinated or fresh water.

**Swimming roller**: (S roller), roller construction where the roller floats on a hydraulic cushion. The operation of the hydraulic chamber and the bearing pressure can deflect every S roller positively or negatively, or allow the flexible line of a conventional roller to be followed whilst applying even pressure. For many processes it is sufficient to operate using only one S roller in the padder or drying system. The situation is different in processes with a rapid reaction, such as before a hot flue or steamer, and during drying. Here the most important factor, as before, is that articles are smooth and identical on both sides. These requirements apply to a dye padder with two S rollers arranged horizontally.

**Swiss applique**: A very light, sheer cotton fabric, having small, separate (not continuous) patterns printed in only one colour. These patterns are raised and consist of finely ground cotton fibres which are stuck to the cloth with glue.

**Swiss**: Brussels Curtains with patterns outlined in chainstitch by the tambour machine.

**Swiss Embroidery**: Washable machine and hand embroidery made, mostly white over white, in Switzerland.

**Swivel Weave**: The Swivel weave differs from lappet in that designs are produced by extra filling yarns. Separate shuttles are placed at each point where the design has to be made. The shed is formed by the pattern, where the shuttle carries the yarn through the shed, the distance of the pattern. The extra filling floats on the back of the fabric, the long floats is cut away after weaving is completed. Example: Silk sarees.

**Swiss mull**: Very thin, bleached and dressed cotton dress goods.

**Swiss muslin**: Fine, thin cotton muslin, made in Switzerland; it is plain or dotted.

**Swissing**: Process of calendering bleached muslins between hot rollers.

**Swivel Fabrics**: Trade term for a variety of silk or cotton fabrics, having relatively heavy Jacquard figures or spots on a very light ground. They are used for dresses, waists, overdreslses, etc. The dots or figures are either woven into the cloth with an extra filling, floating on the back of the cloth between the different patterns, and shorn away in the finishing process, or made as lappet work the extra thread forming a trailing design.

**Swivel weaving**: Consists of introducing a number of small shuttles besides the fly shuttle, which produce small designs on the foundation. There is one
shuttle for each figure, and they do not leave long floats. The result is similar to embroidery.

**Swizzling calendars**: Swizzling is a British term used to denote that the fabric runs through all of the nips at the same surface speed as the rolls. Swizzling calendars usually consist of seven to ten bowls and are run at ambient temperatures. The fabric effect is closed interstices, a smooth appearance and gloss without the high glaze characteristic of a friction calendar.

**Syddo**: A fairly stiff but flexible woollen; used for coat fronts in lieu of haircloth.

**Symmetrical straight herringbone**: See *Herringbone, symmetrical or pointed straight*.

**Symmetrical 2/2 vertical herringbone**: When the twill is turned 90 degrees to become a symmetrical 2/2 vertical herringbone, three ends floats appear every fourth pick. This twill can be woven on this straight threading; it cannot be woven on a straight threading because a straight threading allows the twill rib to move only in one direction across the weft as a regular 2/2 twill cannot be woven on a point threading.

**Synchronisation**: (Gk.: synchroinos = at the same time), making two processes or machines operate simultaneously.

**Syndiotactic polymer**: A polymer structure in which the atoms that are not part of the backbone chain are distributed in a symmetrical and recurring manner above and below the backbone chain when the latter is in a single plane. Also see Atactic polymer, Isotactic polymer, Tactic polymer.

**Syneresis**: (Gk.), contraction; term applying to selfdrying in foaming; Foam performance evaluation.

**Synergistic**: (Gk.), concurrent influence causing increased interaction, i.e. more than the additive effect of a combination at a specific ratio, e.g. in the case of well-proportioned mixtures of surface-active substances. See Synergistic effect.

**Synergistic effect**: Effect that causes a combination of two surfactants for example (or other substances) to achieve a specific effect even at a low concentration within certain interactively defined concentration limits in a solution. The concentration is lower than the mix-ratio concentration that corresponds with the linear dependency for this effect. Any substances involved in this effect can also be compounds/mixes.

**Syntan**: Synthetic tanning agent There are many syntans, and many are proprietary mixtures of chemicals. They are sometimes used as postdyeing treatments for wool or nylon to increase washfastness.
**Synthetic dyes**: This term can be used to mean man-made dyes (also covers the old-fashioned aniline and tar dyes). They are manufactured using chemical synthesis. As opposed to Natural dyes, which are obtained from plants or animals, synthetic Dyestuff is manufactured on the basis of a chemical reaction involving basic material that was originally obtained from mineral oil (formerly coal).

**Synthetic felt**: This is a nonwoven fabric, fairly thin but with an interesting texture. It dyes well and is available in a range of bright clear colours. It has no grain but does not stretch. Used for decorations, appliqué etc.

**Synthetic fibre**: (synthetics) Fibres spun using various different processes from high-molecule, chainstructured substances manufactured synthetically, composed of low-molecule modules of the following main synthetic fibre groups: (a) Polymer fibres, e.g. polyacrylonitrile, polyethylene, polyvinyl chloride. (b) Polycondensation fibres, e.g. polyester, polyamide. (c) Addition polymer fibres, e.g. polyurethane.

**Synthetic filaments**: Dated term for Elementary filament made from synthetic fibres, Filament; Capillaries; Fibrils, single end threads; but also for Filament yarn.

**Synthetic filament yarn**: Filament yarn made from synthetic fibres.

**Synthetic finishing Agents**: Synthetic colloids.

**Synthetic leather**: (synthetic suede), term for Imitation suede; Artificial leather banned on the grounds that the term is anti-competitive.

**Synthetic monofilament**: Monofilament made of synthetic fibre with Ø > 0.1 mm.

**Synthetic resins**: synthetic resins are substances and preparations that can react primarily with themselves in coating and impregnation, or steeping, such as

- melamine resins,
- urea/formaldehyde resins,
- phenol resins,
- polyester resins.

Monomers that are not able to react with themselves are not categorized as synthetic resins. Use: auxiliaries in all aspects of textile finishing, for resin finishing, wet crease-resistant, hydrophobic, slip-resistant and antisingagging finishes. Permanent handle, stiffening, weighting, backcoating finishes; hat stiffening; permanent embossing, Schreiner, chintz effects; sizing; coating; laminating; permanent impregnation; nonwoven fleece impregnation; flocking adhesive; binding agents for pigment printing, etc.
Synthetic rubber: Typical examples are butadiene polymers, chloroprene polymers or mixed polymers (Polyblends), e.g. made from ethylene-propylene diene, isobutene-isoprene, butadiene-acrylonitrile, butadiene-styrene or sulphochlorinated polyethylene. : Butadiene-acrylonitrile-rubber; Styrene-butadiene rubber; Epichlorhydrine rubber; Isoprene; Polyester elastomers; Polyurethane rubber; Silicone rubber.

Synthetic suede: Synthetic velours.

Synthetic thickener: Weakly crosslinked copolymers of olefinic monomers containing carboxyl groups with a high molecular weight, which act as polyanionic bodies in the range of pH 7–10 as thickeners with similar rheological properties to an Emulsion thickener.

Synthetic velour: A term covering the following: synthetic leather knit (synthetic leather), imitation suede, imitation leather, microfibre whirled pile, synthetic leather, synthetic suede, suede imitation. “Leather imitations and synthetic leather” is the only generic term considered by certain standards.

Synthetic washing agents: Syndets, i.e. washing agents manufactured from synthetic detergents.

Synthetic waxes: (artificial wax, man-made wax), used as additives in sizing, finishing, waterproofing, etc. Polyethylene glycols (solid), Montan wax or paraffin oxidation products ( Fatty acids, synthesis of) in the form of esterized (and natural) fatty acids and alcohols, with or without further additives, also as soft and hard waxes with widely varying melting points (approx. 70–100°C) are used as synthetic waxes.

Synthetics: This applies to (1) Synthetic fibres. (2) Synthetic detergents.

Synthetic detergents: See Detergents.

Synthetic weighting: The monomer used for synthetic weighting is often derived from acrylic or methacrylic acid. The silk weighting with acrylonitrile and methacrylate has been studied and described thoroughly; in this process, starters are formed by a redox system based on iron salts (Fe++) and hydrogen peroxide, persulphates and other substances.