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STANDARD ON GLOSSARY OF TERMS FOR TEXTILE FIBRES

BUREAU OF CEYLON STANDARDS

GLOSSARY OF TERMS FOR TEXTILE FIBRES

SLS 370 : 1975

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[redacted]

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SRI LANKA STANDARD

ON GLOSSARY OF TERMS FOR TEXTILE FIBRES

FOREWORD

This Sri Lanka Standard was prepared by the Drafting Committee on Classification and Terminology under the authority of the Textiles Divisional Committee of the Bureau of Ceylon Standards. It was authorized for publication by the Council of the Bureau on 1975-12-03.

In view of the diverse numbers and types of fibres and of other modifications now available to the textile industry it was felt that a common terminology in this is of imperative importance as in other fields.

Wherever possible every attempt has been made to maintain the definitions given in the publications of the Textile Institute.

SCOPE

This standard defines, natural and man made fibres that are being used presently in the manufacture of fabrics for technical and commercial use.

DEFINITIONS

abaca: Fibre obtained from the leaf stems forming the trunk of the abaca plant, *Musa textilis* also known as manila hemp.

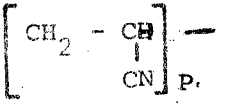
acetate fibre: Generic name for cellulose acetate fibres in which less than 92 per cent, but at least 74 per cent of the hydroxyl groups are acetylated. These fibres were formerly referred to as diacetate.

diacetate fibre: A term used albeit erroneously to describe fibre made from acetone soluble, cellulose acetate.

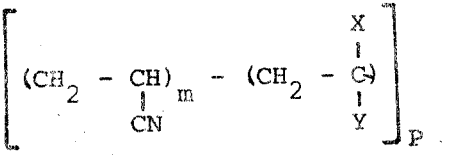
triacatate fibre: Generic name for cellulose acetate fibres in which at least 92 per cent of the hydroxyl groups are acetylated.

acrylic: Generic name for fibres made from a synthetic linear polymer that consists of not less than 85 per cent (by mass) of acrylonitrile units or acrylonitrile copolymers (see poly acrylonitrile).

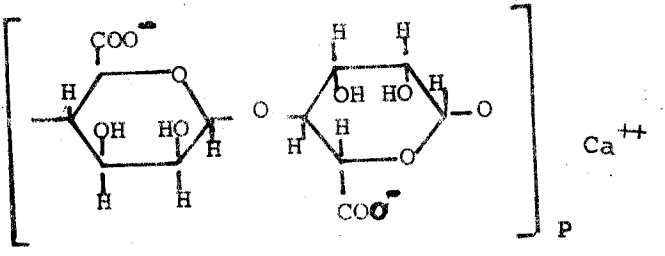
Poly acrylonitrile



acrylic copolymers



alginate fibre: Fibre formed from a metallic salt (normally calcium) of alginic acid, which is a natural polymer occurring in seaweeds.



Calcium alginate

alpaca fibre (hair): Fibre from the fleece of the alpaca or the llama, both, members of the camel family.

anidex fibre: A fibre made from a synthetic linear polymer that consists of at least 50 per cent (by mass) of one or more esters of a monohydric alcohol and acrylic acid.

angora: The hair of the angora rabbit.

aramid fibre (U.S.A.): A fibre, in which the fibre forming substance is a long chain synthetic polyamide, in which at least 85 per cent of the amide linkages are attached directly to two aromatic rings.

asbestos: A naturally occurring mineral of fibrous texture.

bast fibre: Fibre obtained from the inner bark (the phloem, pericycle or cortex) of dicotyledonous plants, usually by retting. The fibres are usually long, sometimes several feet.

bicomponent fibre: A fibre formed by the conjunction of two fibre-forming polymers of different properties at a spinning jet.

NOTES:

1. The two components may be caused to merge approximately side by side (bilaterally), concentrically, or as fibrils of one component in a matrix of the other. An example is the production of crimped fibre by combination of polymers of different contractive properties.

2. Although formed by a natural process, wool and related animal fibres may exhibit a comparable dual structure of the cortical cells.

carbon fibre: A fibre composed of at least 90 per cent carbon, commonly produced by carbonizing organic polymers in filamentary form.

casein fibre: Regenerated fibre from casein obtained from the acid treatment of skimmed milk.

cashmere: Hair of cashmere goat.

Fine undercoat fibres of other Asiatic goats, for example: Iranian, also currently referred to as cashmere.

ceramic fibre: Fibres obtained from aluminium silicate and used for a variety of high temperature applications.

chloro fibre: Generic name for fibres formed from a synthetic linear polymer having in the chain more than 50 per cent (by mass) of chlorinated vinyl monomeric units.

coir: A reddish-brown to buff, coarse fibre obtained from the fruit of the palm *Cocos nucifera L.* (S. 'Pol' T. 'Tennai').

NOTES

1 Coir fibre is obtained from the fibrous region of the husk surrounding the nut of the palm. The fibre is up to 300 mm long and is remarkable for its extensibility, but it has only moderate strength.

2 There are three types of coir fibre: the longest and finest, which is usually obtained from the green husk, which is spun into yarn for making mats and ropes; a coarser fibre, known as bristle fibre, used for filling brushes; and a shorter fibre used for filling mattresses, and for upholstery, the latter is obtained from the brown husk.

cotton: The seed hair of a wide variety of plants of the Genus *Gossypium* (family - *Malvaceae*).

cupro fibre: Generic name for cuprammonium rayon, fibre which is a fibre filament regenerated from a solution of cellulose in cuprammonium hydroxide.

deacetylated acetate fibre: Generic name for regenerated cellulose fibres obtained by virtually complete deacetylation of a cellulose acetate.

diacetate: See acetate fibre.

epitropic fibre: A fibre whose surface contains partially or wholly embedded particles which modify one or more of the fibre's properties.

elastane fibre: Generic name for elastomeric fibres composed of at least 85 per cent (by mass) of a segmented polyurethane. Such fibres when stretched to three times their original length and released, recover rapidly and substantially to their original length.

elastodiene fibre: Generic name for fibres composed of natural or synthetic polyisoprene, or composed of one or more dienes polymerized with or without one or more vinyl monomers. Such fibres when stretched to three times their original length and released, recover rapidly and substantially to their initial length.

elastomeric fibre: Refer elastane and elastodiene fibre.

fibre: A unit of matter characterized by flexibility, fineness, and high ratio of length to thickness.

fibre ultimate: One of the unit botanical cells into which leaf and bast fibres can be disintegrated.

flax: Bast fibre obtained from the plant *Linum usitatissimum* (fabrics made of flax are known as linen).

fluoro fibre: Generic name for fibres composed of a synthetic linear polymer made from fluoro-carbon aliphatic monomers.

fur: A term applied to the fine, soft, dense hair covering of certain mammals; it generally consists of a double coating of hair, a layer of comparatively short, soft curly barbed hairs (underfur) protected by longer, smoother, stiff hairs (guard hairs) which grow through the under fur. Fur is distinguished from hair which is longer, thinner and coarser.

glass fibre: A fibre made by extruding molten glass to sufficient fineness to have the flexibility necessary for use as a textile fibre. Individual filaments are of the order of 1 µm to 12 µm, as above this diameter they are too brittle for this end-use.

hair: Animal fibre other than sheep's wool or silk.

NOTE - *It is recognized that this definition implies a distinction between sheep's wool and the covering of other animals, not withstanding similarity in their fibre characteristics. Thus the crimped form and the scaly surface are not confined to sheep's wool. It seems desirable in the textile industry, however, to avoid ambiguity by confining the term wool to the covering of sheep and to have available a general term for other fibres of animal origin. Normally the less widely used fibres are known by name, for example: alpaca, mohair, etc. but collectively they should be classed as hair. A difficulty arises when it is desired to distinguish between the fibres of the undercoat and the remainder of the fleece, for instance, between the soft short camel hair used for blankets and the coarse long camel hair used for belting. The term wool is sometimes used for the shorter fibre, but it should always be qualified by the name of the animal, for example: cashmere wool*

hemp true: A fine light-coloured, lustrous and strong bast fibre, obtained from the hemp plant, *Cannabis sativa L. (S. 'Kansa' T. 'Kanja')*

henequen: The fibre obtained from the leaf of *Agave fourcroydes* Lemaire.

NOTE - *This closely resembles sisal (q.v.).*

jute: The bast fibre obtained from the plants *Corchorus capsularis* and *Corchorus olitorius*.

NOTE - *Commercially, jute is divided into two main classes, white jute generally being associated with Corchorus capsularis, and dark jute with Corchorus olitorius.*

kapok: A unicellular seed hair obtained from the seed of the kapok tree, *Ceiba pentandra* D.C. *(Eriodendron anfractuosum* (L) Gaertn). (S. Imbul).

kenaf: Bast fibre obtained from the plant *Hibiscus cannabinus* similar to jute in many of its properties.

manila: Refer abaca.

man made fibres: All fibres manufactured by man as distinct from those that occur naturally (See classification table - appendix A).

merino: Wool from pure-bred merino sheep, normally having a mean fibre diameter of 24 µm or less.

mesta: See kenaf.

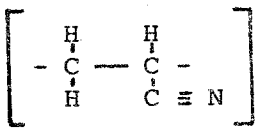
modacrylic fibre: Generic name for fibres made from a synthetic linear polymer that consists of less than 85 per cent but at least 50 per cent (by mass) of acrylonitrile units (See polyacrylonitrile).

modal fibre: Generic name for regenerated cellulose fibres obtained by processes giving a high tenacity and a high wet modulus.

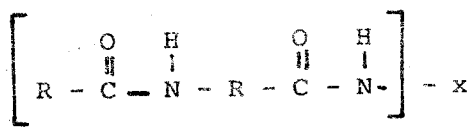
mohair: The hair of the angora goat.

pigmented fibre: Any man-made fibre that contains finely divided particles of colouring matter or other inert material incorporated before extrusion for the purpose of changing the colour or the lustre, or both, of the resultant fibre.

polyacrylonitrile: A synthetic linear polymer, and the fibres obtained from it, in which the chief repeating unit is:



polyamide: A linear condensation polymer, and the fibres obtained from it, in which the linkage of the simple chemical compound, or compounds, used in its production takes place through the formation of amide groups, for example:



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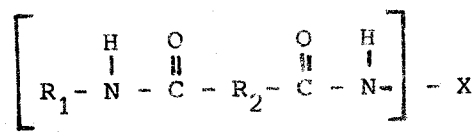
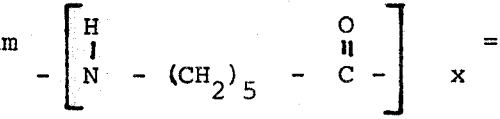
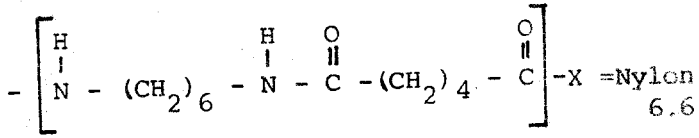
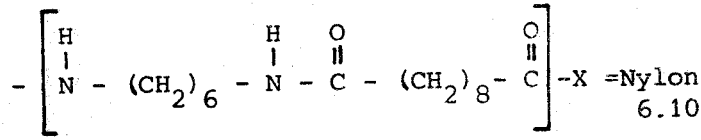


where, R, and R_1, and R_2 are generally linear hydrocarbon chains $(CH_2)_n$.

Polyamides are distinguished from one another by quoting the number of carbon atoms in the repeating unit, or units of polyamide made from two reactions.. In the latter case, the number of carbon atoms in the diamine is given first, this being followed by the number in the dicarboxylic acid, for example:

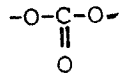
.caprolactam  = Nylon 6

Hexamethylene diamine + adipic acid  =Nylon 6.6

Hexamethylene diamine + sebacic acid  =Nylon 6.10

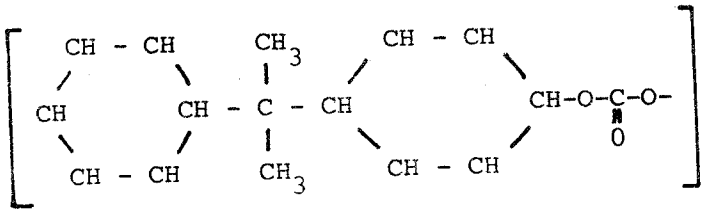
polycaproamide: See nylon 6 (under polyamide)

polycarbonate: A synthetic linear polymer containing the characteristic grouping:

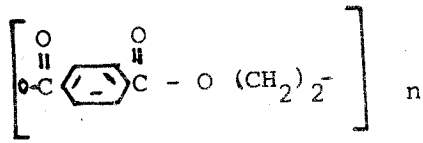


as part of the repeating unit. The remainder of the repeating unit generally consists of an aliphatic, alicylic, or aromatic hydrocarbon.

An example of such a repeating unit is:



polyester fibre: A fibre formed from a linear polyester comprising at least 85 per cent (by mass) in the chain of an ester of a dihydric alcohol and terephthalic acid, for example: polyethylene terephthalate, the formula of which is:



polynosic: Descriptive of a class of regenerated cellulose fibres that are characterized by a high initial wet modulus of elasticity and a relatively low degree of swelling in sodium hydroxide solution.

polyethylene fibre, polythene fibre: Generic name for fibres made from a synthetic linear polymer of ethylene.

NOTE - *There are two types of commercial products that are referred to as high (0.96 g/ml) and low density (0.92 g/ml) polyethylene.*

polyolefin: An addition polymer obtained by polymerizing an unsaturated hydrocarbon to give a linear saturated hydrocarbon for example: polyethylene, $(- CH_2 - CH_2 - CH_2 - CH_2 -)_n$ and polypropylene, $(-CH_2 - CHCH_3 -CHCH_3-)_n$. (Refer polyethylene and polypropylene).

polypropylene fibre: Generic name for fibres made from a synthetic linear polymer of propylene.

NOTE - *Polypropylene fibres consist essentially of isotactic polymer (q.v.).*

polytetrafluoroethylene: A linear addition polymer obtained from tetrafluoroethylene and consisting of fluoro carbon chains, that is: $(-CF_2-CF_2-CF_2-CF_2-)_n$.

polyurethane:

a) Synthetic linear polymer that contains the urethane group

-NH.COO-

in the chain, for example:

$-O(CH_2)_4O.OCNH(CH_2)_6NHCO-$

b) Complex rubbery product consisting of a block copolymer (urethane-linked and isocyanate-ended polyester or polyether), further reacted (for example: with O diamine) to give a complex network.

$$- B_1 - \underset{\underset{(B)_3}{|}}{X} = (B)_2 - X,$$

where B is a complex block copolymer of polyester or polyether segments linked by urethane groups and X is a trifunctional group, extending and cross-linking the structure, for example: a biuret linkage,

$$\begin{array}{l} - N.CO.NH - \\ \quad -CONH- \end{array}$$

polyvinyl acetate: A synthetic linear polymer in which the chief repeating unit is:

$$- \underset{\underset{H}{|}}{\overset{\overset{H}{|}}{C}} - \underset{\underset{H}{|}}{\overset{\overset{OOCCH_3}{|}}{C}} -$$

It is formed by the polymerization of vinyl acetate.

polyvinyl alcohol: A linear addition polymer and the fibres obtained from it, in which the chief repeating unit is $-CH_2-CHOH-$. This polymer is usually made by the deacetylation of polyvinyl acetate.

polyvinyl chloride: A linear addition polymer, and the fibres obtained from it, in which the chief repeating unit is $-CH_2-CHCl-$. It is made by the polymerization of vinyl chloride.

polyvinylidene chloride: A synthetic polymer obtained from vinylidene chloride, $CH_2 = CCl_2$. Fibres are usually produced from a copolymer of vinylidene chloride and a small amount of vinyl derivative.

ramie: A bast fibre obtained from the stems of *Boehmeria nivea* Gaud. especially the variety *tenacissima,* (Family *Urticaceae*).

rayon: See regenerated cellulose.

regenerated cellulose fibre: A fibre produced by precipitation from a solution of cellulose which is extruded through a spinneret into a coagulating medium, formerly known as rayon.

NOTE - *When the cellulose is first coagulated, it may be present as a derivative which subsequently has to be decomposed.*

regenerated protein fibre: A fibre prepared by extruding a dispersion of a protein, into a coagulant, and thereafter insolubilizing the regenerated protein by chemical means.

silk: Continuous protein filament (fibre) produced by the larvae of various insects, especially the caterpillar (silk worm), when constructing their cocoons. The species of caterpillar which produces by far the major portion of the fine, strong, lustrous fibre used in commerce is the larvae of the moth *Bombyx mori*.

sisal: A pale cream fibre obtained from the leaf of the sisal plant *(Agave sisalana* Perrine).

NOTE - *Sisal is, strictly, obtained from, the leaves of Agave sisalana Perrine a plant native to Central America, but now cultivated as a fibre source in East Africa and Brazil and several other countries. The fibre is 3 to 4 ft. in length and is intermediate in fineness between coir and true hemp. Its chief use is in the production of twines, cordage, and rope, but smaller quantities are employed in the production of sacking, carpeting, and other coarse fabrics. The fibre from other Agave plants, and particularly from henequen (Agave fourcroydes Lemaire), resembles sisal very closely and indeed is sometimes termed 'Sisal'.*

staple fibre: Same as fibre. Term used to indicate lengths of fibre that require spinning and twisting in the manufacture of yarn.

staple natural: Length of a natural fibre.

staple manmade: Fibres that have been stapled from filaments, usually by cutting to predetermined length, for processing in cotton or worsted systems.

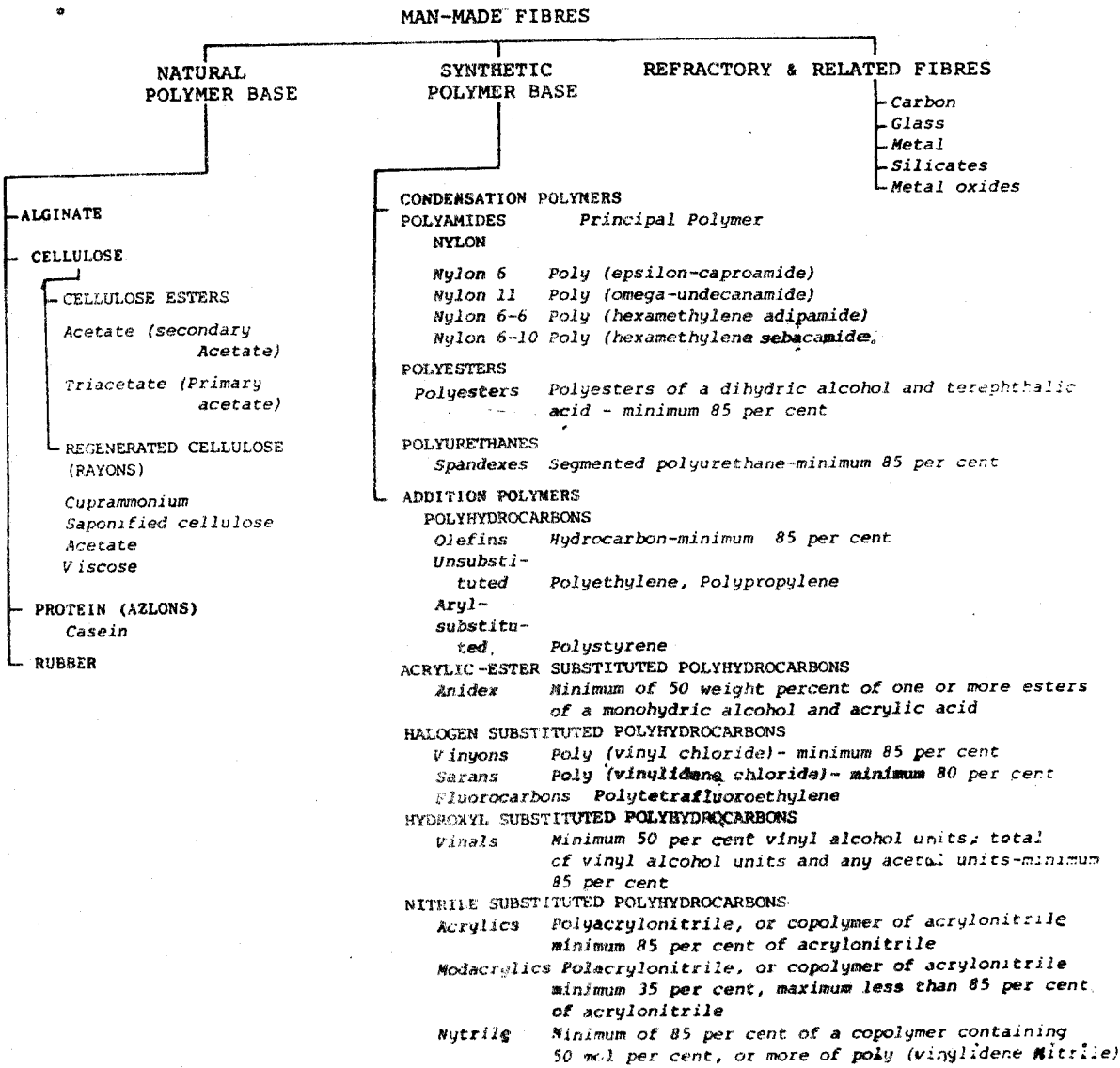
synthetic fibres: Fibres or filaments produced from polymers built up by man from chemical elements or compounds, in contrast to those made by man from naturally occurring fibre-forming polymers.

tussah silk: A coarse silk produced by the wild silk worm *Antherara mylitta.* It is brown in colour and is usually spun, since most cocoons cannot be reeled.

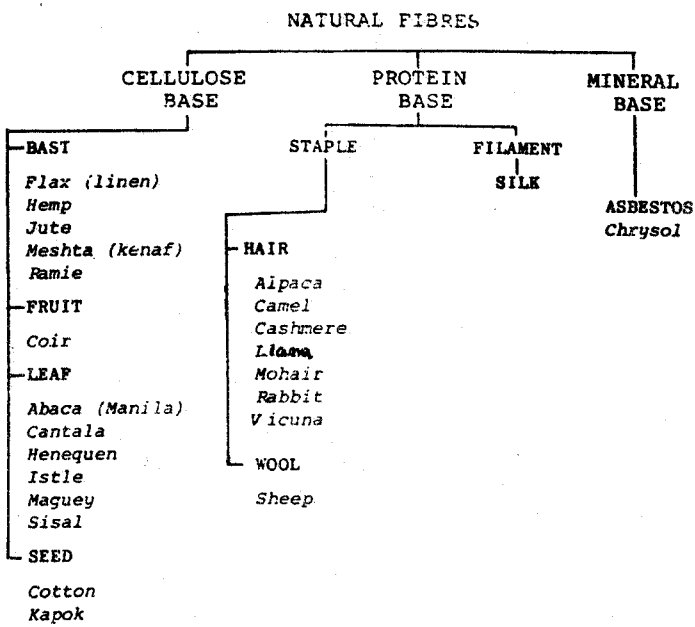
viscose fibre: The fibre formed by the regeneration of cellulose from a solution obtained by dissolving cellulose xanthate in a dilute solution of caustic soda.

wool: The fibrous covering of the sheep.

Classification of major fibres used for



extile purposes



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