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Textiles — Man-made fibres — Generic names

Textiles — Fibres chimiques — Noms génériques



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Foreword

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Draft International Standards adopted by the technical committees are circulated to the member bodies for approval before their acceptance as International Standards by the ISO Council. They are approved in accordance with ISO procedures requiring at least 75 % approval by the member bodies voting.

International Standard ISO 2076 was prepared by Technical Committee ISO/TC 38, *Textiles*.

This third edition cancels and replaces the second edition (ISO 2076 : 1977), of which it constitutes a technical revision.

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Textiles -- Man-made fibres — Generic names

1 Scope

This International Standard lists the generic names¹⁾ used to designate the different categories of man-made fibres at present manufactured on an industrial scale for textile and other purposes, together with the distinguishing attributes which differentiate them.

Chemical difference, which often results in distinctive property differences, is the main basis for the classification in this International Standard; other attributes are used where necessary. The distinguishing attributes are not necessarily those by which the fibres might be identified or the same as those used for naming chemical molecules, nor are they necessarily suitable for the analysis of fibre mixtures.

The generic names are also used to describe textile products (yarns, fabrics, etc.) made from man-made fibres, but it is then accepted that the manufacturing process may have modified the distinguishing attribute.

2 General definitions

For the purposes of this International Standard, the following definitions apply.

2.1 generic name: The name given in the first column of table 1, which shall be used to denominate the fibres described in the second column and also fibres which contain not more than 15 % by mass of additives that are fibre-forming. No limit is placed upon the proportion of additives which are not fibre-forming.

2.2 man-made fibres: Fibres obtained by a manufacturing process, as distinct from materials which occur naturally in fibrous form.

NOTE — The use of the terms "group", "linkage" and "unit" has been standardized throughout the text.

The term "group" is used to denote, for example, hydroxyl groups on acetate.

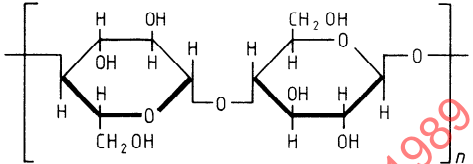
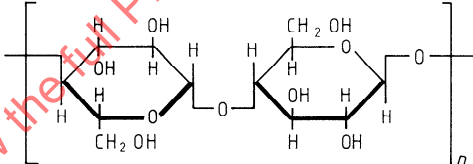
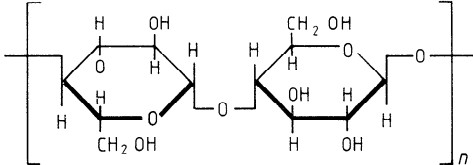
The term "linkage" is used to denote a chemical bond.

The term "unit" is used to denote a repeating unit.

1) In both the English and French languages, the generic names need not be written with initial capital letters.

3 Generic names

Table 1

	Generic name	Distinguishing attribute	Examples of chemical formulae
3.1	cupro ¹⁾	Cellulose fibre obtained by the cuprammonium process.	Cellulose II:  The diagram shows the repeating unit of Cellulose II in its cyclic form. It consists of two glucose rings linked by a beta-1,4-glycosidic bond. The left ring is in the chair conformation with hydroxyl groups at C2 and C3 in the equatorial position, and a hydroxymethyl group at C6. The right ring is also in the chair conformation with hydroxyl groups at C2 and C3 in the equatorial position, and a hydroxymethyl group at C6. The units are enclosed in brackets with a subscript 'n'.
3.2	modal ¹⁾	Cellulose fibre having a high breaking strength and a high wet modulus. The breaking strength B_C in the conditioned state and the force B_M required to produce an elongation of 5 % in its wet state are $B_C \geq 1,3 \sqrt{Tt} + 2 Tt$ $B_M \geq 0,5 \sqrt{Tt}$ where Tt is the linear density (mass per unit length) in decitex. B_C and B_M are expressed in centinewtons.	Cellulose II:  The diagram shows the repeating unit of Cellulose II in its cyclic form, identical to the one in row 3.1. It consists of two glucose rings linked by a beta-1,4-glycosidic bond, with hydroxyl groups at C2 and C3, and a hydroxymethyl group at C6. The units are enclosed in brackets with a subscript 'n'.
3.3	viscose ¹⁾	Cellulose fibre obtained by the viscose process.	Cellulose II:  The diagram shows the repeating unit of Cellulose II in its cyclic form, identical to the ones in rows 3.1 and 3.2. It consists of two glucose rings linked by a beta-1,4-glycosidic bond, with hydroxyl groups at C2 and C3, and a hydroxymethyl group at C6. The units are enclosed in brackets with a subscript 'n'.
3.4	acetate	Cellulose acetate fibre in which less than 92 %, but at least 74 %, of the hydroxyl groups are acetylated.	Secondary cellulose acetate: $\left[C_6 H_7 O_2 (O X)_3 \right]_n$ where $X = H$ or CH_3CO and the degree of esterification is at least 2,22 but less than 2,76.

1) The name "rayon", in French "rayonne", has not been used by ISO in this International Standard because this name, used generically for cellulose fibres in some countries, does not have the same meaning everywhere. Each Member Body must determine its own position on this question and, should it be deemed necessary, define that position in its national standards.

Table 1 (continued)

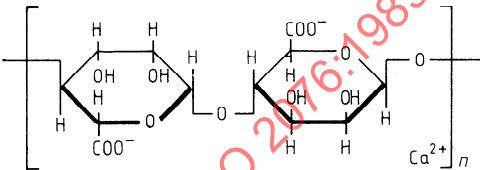
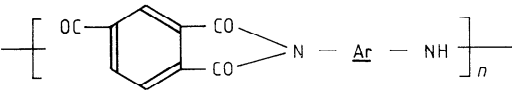
	Generic names	Distinguishing attribute	Examples of chemical formulae
3.5	triacetate	Cellulose acetate fibre in which at least 92 % of the hydroxyl groups are acetylated.	Cellulose triacetate: $\left[\text{C}_6\text{H}_7\text{O}_2 (\text{OX})_3 \right]_n$ where X = H or CH₃CO and the degree of esterification is between 2,76 and 3.
3.6	alginate	Fibre obtained from the metal salts of alginic acid.	Calcium alginate: 
3.7	acrylic	Fibre composed of linear macromolecules having in the chain at least 85 % by mass of acrylonitrile repeating units.	Polyacrylonitrile: $\left[\text{CH}_2 - \underset{\text{CN}}{\text{CH}} \right]_n$ and acrylic copolymers: $\left[(\text{CH}_2 - \underset{\text{CN}}{\text{CH}})_m - (\text{CH}_2 - \underset{\text{Y}}{\overset{\text{X}}{\text{C}}})_n \right]_p$
3.8	aramid	Fibre composed of linear macromolecules made up of aromatic groups joined by amide or imide linkages, at least 85 % of the amide or imide linkages being joined directly to two aromatic rings and the number of imide linkages, if the latter are present, not exceeding the number of amide linkages.	EXAMPLE 1: $\left[\text{OC} - \text{Ar} - \text{CO} - \text{NH} - \text{Ar} - \text{NH} \right]_n$ EXAMPLE 2:  NOTE — In example 1, the aromatic groups may be the same or different.
3.9	chlorofibre	Fibre composed of linear macromolecules having in the chain more than 50 % by mass of vinyl chloride or vinylidene chloride units (more than 65 % in the case in which the rest of the chain is made up of acrylonitrile, the modacrylic fibres being thus excluded).	Poly(vinyl chloride): $\left[\text{CH}_2 - \text{CHCl} \right]_n$ and poly(vinylidene chloride): $\left[\text{CH}_2 - \text{CCl}_2 \right]_n$

Table 1 (continued)

	Generic name	Distinguishing attribute	Examples of chemical formulae
3.10	elastane ¹⁾	Fibre composed of at least 85 % by mass of a segmented polyurethane and which, if stretched to three times its unstretched length, rapidly reverts substantially to the unstretched length when the tension is removed.	Macromolecules having alternate elastic and rigid segments with repetition of the group $-O-CO-NH-$
3.11	elastodiene ^{1), 2)}	Fibre composed of natural or synthetic polyisoprene, or of one or more dienes polymerized with or without one or more vinyl monomers, and which, if stretched to three times its unstretched length, rapidly reverts substantially to the unstretched length when the tension is removed.	Natural polyisoprene extracted from the latex of <i>Hevea brasiliensis</i> , vulcanized: $\begin{array}{ccccccc} & & & & & & \\ & & & & CH_3 & & \\ & & & & & & \\ -CH_2- & CH- & -C- & -CH_2- & & & \\ & & & & & & \\ & S_x & & & & & \\ & & & & & & \\ & CH- & -C- & -CH_2- & & & \\ & & & & & & \end{array}$
3.12	fluorofibre	Fibre composed of linear macromolecules made from aliphatic fluorocarbon monomers.	Polytetrafluoroethylene: $\left[-CF_2-CF_2- \right]_n$
3.13	modacrylic	Fibre composed of linear macromolecules having in the chain at least 35 % and less than 85 % by mass of acrylonitrile.	Acrylic copolymers: $\left[(CH_2-CH)_m - (CH_2-\overset{\overset{X}{ }}{\underset{\underset{Y}{ }}{C}})_n \right]_p$ If X = H and Y = Cl: poly(acrylonitrile <i>ir</i> vinyl chloride) If X = Y = Cl: poly(acrylonitrile <i>ir</i> vinylidene chloride)
3.14	polyamide ³⁾ or nylon	Fibre composed of linear macromolecules having in the chain recurring amide linkages, at least 85 % of which are joined to aliphatic or cycloaliphatic units.	Polyhexamethylene adipamide (polyamide 66): $\left[NH-(CH_2)_6-NH-CO-(CH_2)_4-CO \right]_n$ Polycapraamide (polyamide 6): $\left[NH-(CH_2)_5-CO \right]_n$

2) The term "rubber" is used in some cases.

3) The definition of the name "polyamide" given in this International Standard concerns only the technical and commercial uses of the man-made fibres to which it applies; it is not intended to cover all polyamide compounds (of which the products called "aramids" represent a special kind), but is merely the continuation of a fibre name established at a time when polyamide fibres other than aliphatic had not yet been developed.