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GLOSSARY OF TERMS RELATING TO ASBESTOS

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Indian Standard

GLOSSARY OF TERMS RELATING TO ASBESTOS

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Indian Standard

GLOSSARY OF TERMS RELATING TO ASBESTOS

0. FOREWORD

0.1 This Indian Standard was adopted by the Indian Standards Institution on 30 April 1986, after the draft finalized by the Cement and Concrete Sectional Committee had been approved by the Civil Engineering Division Council.

0.2 Asbestos finds extensive application in this country in the manufacture of various asbestos based products like asbestos cement sheets, asbestos cement pipes, asbestos cloth, friction materials, etc. This has necessitated formulation of a number of Indian Standards on asbestos based products, their use and methods of tests for different properties of asbestos fibre with a view to assisting the industry. In order to clarify the various technical terms relating to asbestos which is very often required to give precise meaning, this glossary of terms relating to asbestos has been prepared.

0.3 In the formulation of this standard, due weightage has been given to international co-ordination among the standards and practices prevailing in different countries in addition to relating it to the practices in the field in this country. This has been met by basing the standard on:

Chrysotile asbestos test manual 1974 (*revised* 1978). Asbestos Textile Institute, Inc. and Quebec Asbestos Mining Association.

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1. SCOPE

1.1 This standard covers definitions of words and terms relating to asbestos.

2. TERMINOLOGY

2.1 Asbestos Mineral — Acicular silicate mineral with a structure based upon silicon-oxygen tetrahedra. The different varieties are as given below:

a) *Asbestos Actinolite* — Asbestos mineral corresponding to the formula $Ca_2(MgFe)_5 [(OH) Si_4O_{11}]_2$.

b) *Asbestos Amosite* — Asbestos mineral corresponding to the formula $MgFe_6 [(OH) Si_4O_{11}]_2$.

c) *Asbestos Anthophyllite* — Asbestos mineral corresponding to the formula $(MgFe)_7 [(OH) Si_4O_{11}]_2$.

d) *Asbestos Chrysotile* — Asbestos mineral corresponding to the formula $Mg_3 [(OH)_4 Si_2O_5]$.

e) *Asbestos Crocidolite* — Asbestos mineral corresponding to the formula $Na_2MgFe_5 [(OH) Si_4O_{11}]_2$.

f) *Asbestos Tremolite* — Asbestos mineral corresponding to the formula $Ca_2Mg_5 [(OH) Si_4O_{11}]_2$.

NOTE — It is generally observed that the following colour variation takes place for the varieties indicated above:

i) Actinolite — white to brown,
ii) Amosite — silver grey to bluish light shades,
iii) Anthophyllite — various shades of white brown colour,
iv) Chrysotile — white to bluish white,
v) Crocidolite — deep blue to various shades of blue,
vi) Tremolite — various shades of white to brown.

However, these colours are only indicative because colour variation in each variety is possible.

2.2 Brittle — The tendency to break readily when flexed manually or subjected to mechanical processing.

2.3 Bundle — A heavy assemblage of asbestos fibres having a transverse dimension exceeding 8 mm in close-packed parallel orientation, that may be partially crushed.

2.4 Crenulations — A multiplicity of kinks *in situ* that may, because of the interlocking effect of the kinks, affect both the fibre strength and the fibre cohesion. Fibre may be described as free from crenulations, or as slightly to highly crenulated.

2.5 Cross-Fibre — Asbestos fibre that originates from veins or seams in which fibres (*see* **2.10**) are oriented predominantly at right angles to the plane of the vein or seam.

2.6 Crude Asbestos — Hand cobbed (released from its ore by manual hammer impact) cross-vein asbestos in its natural or unfiberized form.

2.7 Crudiness — The degree to which an asbestos fibre approaches the crude state.

2.8 Crudy — The quality of processed asbestos fibre with relatively low specific surface area and degree of fiberization, containing an appreciable portion of unfiberized agglomerates (derived from the term ' crude asbestos ').

2.9 Crudy Bundle — A heavy assemblage of asbestos fibres of transverse dimension not less than 8 mm in close-packed parallel orientation, that may be partially crushed.

2.10 Fibre — Any material in a form such that it has a minimum length to average maximum transverse dimension of 10 to 1, a maximum cross-sectional area of $5{\cdot}06 \times 10^{-2}$ mm^2 (corresponding to circular cross-section of 0·254 mm in diameter) and a maximum transverse dimension of 0·254 mm.

2.11 Fibre Adhesion — The resistance met when fibres are separated from the seam wall (from the host rock). Fibres may be described as having from low to high adhesion.

2.12 Fibre Cohesion — The resistance met when fibres are separated from each other. Fibres may be described as having from low to high cohesion. This characteristic is related to the ease with which the fibres may be opened.

2.13 Fibre Spicules — Rod-like pieces composed of asbestos fibres not exceeding 10 mm in length and 1 mm in transverse dimension in close-packed parallel orientation, with undisturbed natural relative positions of sufficient number to impart rigidity.

2.14 Fibril — A single crystal in the form of a fibre and having a transverse dimension of 0·01 μm to 0·1 μm.

2.15 Fines — The finest class of material produced by particle size classification of asbestos fibre by any accepted test method. Common usage in the asbestos industry has defined fines as that material which passes through the 75 μm IS Sieve used in Bauer McNett wet classification.

2.16 Floats — Air-floated fibrous fraction recovered from the air filtration system of an asbestos mill.

2.17 Fracture — A clearly defined break in the fibre *in situ*.

2.18 Harsh — The inherent property of a particular type of asbestos fibre implying a degree of stiffness or rigidity

2.19 Kinks — Definite and well defined small changes in direction of the fibre *in situ* that could lead to points of weakness in the fibres when separated. Fibres may be described as kinked or straight.

2.20 Loftiness — The measure of the loose specific volume of asbestos fibre. This is inversely related to dry bulk density.

2.21 Mass Fibre — Asbestos fibres that do not occur in seams or veins and are randomly arranged in the host rock.

2.22 Milled Asbestos — It is the primary consumer derivative of asbestos ore which has been treated by operations like beating and washing (whether graded to length or not by sieving). This is also known as raw asbestos.

NOTE — Milled asbestos may be further well opened into fibres free from all unfiberized agglomerates for use in the manufacture of a specific end product.

2.23 Milling — It is a process by which asbestos ore is mechanically treated by operations like beating and washing (whether graded to length or not by sieving) producing a primary consumer derivative.

2.24 Non-Fibrous Spicule — Acicular particles having a minimum transverse dimension of 0·1 mm resembling assemblages of asbestos fibre composed of non-fibrous or semi-fibrous minerals such as picrolite.

2.25 Open — The quality of asbestos fibre with relatively high specific surface area and degree of fiberization, and free from a significant portion of unfiberized agglomerates.

2.26 Pencil — Rod-like assemblage of asbestos fibres in close-packed parallel orientation, of generally uniform diameter, that may be fibrized readily. If the dimensions are less than 10 mm in longitudinal direction and 1 mm in transverse direction, the term fibre spicule may be used (*see* **2.13**).

2.27 Silky — It is the description of fibres that have low fibre cohesion, soft feeling on touching, and have a high degree of flexibility.

2.28 Slip-Fibre — Asbestos fibre that originates from veins or seams in which fibres are oriented predominantly parallel to each other and to the plane of the vein or seam.

2.29 Soft — The inherent property of a particular type of asbestos fibre implying a high degree of flexibility and low fibre cohesion.

2.30 Spelk — Rod-like assemblage of asbestos fibres having transverse dimension from 1 to 8 mm in close-packed parallel orientation and of generally uniform diameter, that may be fiberized readily.

2.31 Spicules — Two types of agglomerates called spicules are found in milled asbestos. They are rod-like pieces of unopened asbestos and lath-like particules resembling assemblages of asbestos fibres but composed of non-fibrous minerals.

2.32 Whisker — Any material that fits the definition of fibre and is a single crystal.

NOTE — The term fibril is a preferred designation.

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