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IS 11769-3 (1986): Guidelines for safe use of products containing asbestos, Part 3: Non-cement asbestos products other than friction materials [CED 53: Cement Matrix Products]



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Indian Standard

GUIDELINES FOR
SAFE USE OF PRODUCTS
CONTAINING ASBESTOS

PART 3 NON-CEMENT ASBESTOS PRODUCTS OTHER THAN
FRICTION MATERIALS

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INDIAN STANDARDS INSTITUTION
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

Indian Standard

GUIDELINES FOR SAFE USE OF PRODUCTS CONTAINING ASBESTOS

PART 3 NON-CEMENT ASBESTOS PRODUCTS OTHER THAN FRICTION MATERIALS

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Indian Standard

**GUIDELINES FOR
SAFE USE OF PRODUCTS
CONTAINING ASBESTOS**

**PART 3 NON-CEMENT ASBESTOS PRODUCTS OTHER THAN
FRICTION MATERIALS**

0. F O R E W O R D

0.1 This Indian Standard (Part 3) was adopted by the Indian Standards Institution on 28 November 1986, after the draft finalized by the Cement and Concrete Sectional Committee had been approved by the Civil Engineering Division Council.

0.2 In recent years, there has been a growing awareness that exposure to asbestos dust can have harmful effects on the health of workers. In order to give guidelines on how the risk of exposure to asbestos dust can be prevented, controlled or minimized, it was felt necessary to lay down some standards regarding safe use of different products containing asbestos, improving conditions in work places, preventive measures, protection and supervision of the health of workers, packaging, transport and disposal of asbestos waste, etc. This standard laying down guidelines for safe use of products containing asbestos has been prepared in three parts. This part of the standard lays down guidelines for safe use of non-cement asbestos products other than friction materials. Guidelines for safe use of asbestos cement products and friction materials containing asbestos are covered in Parts 1 and 2 respectively.

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 deriving assistance from 'ILO Codes of Practice: Safety in the use of asbestos', 1984 published by International Labour Office, Geneva and Schedule XIV on 'Handling and processing of asbestos', framed under Section 87 of *Factories Act*.

1. SCOPE

1.1 This standard (Part 3) lays down the guidelines for safe use of non-cement asbestos products other than friction materials.

2. OBJECT

2.1 The object of this standard is to recommend procedures that shall be adopted to ensure that products containing asbestos, other than friction materials and asbestos cement products, are used safely and without harmful emission of asbestos dust.

3. APPLICATIONS

3.1 The provisions of this standard shall apply to any operation involving a risk of exposure to airborne asbestos dust arising during use of the following asbestos products:

- a) Asbestos cloth,
- b) Asbestos rope lagging,
- c) Asbestos millboard, and
- d) Compressed asbestos fibres/beater addition jointings.

4. GENERAL RECOMMENDATIONS

4.1 In the use of asbestos containing products that are bonded (for example, with rubber) or treated with grease or other preparation (for example, jointing material) it is unlikely that significant dust emissions will occur. The handling and processing of other asbestos containing products, however, requires the adoption of suitable working procedures so as to control the emission of asbestos dust. Recommendations given in **4.1.1** to **4.1.10** shall be followed as general guidelines for these products.

4.1.1 As far as possible, materials which have been specially treated or processed to minimize dust emission should be used.

4.1.2 Handling should be reduced to a minimum.

4.1.3 Material in transit or when not in use, shall be kept in dustproof packing.

4.1.4 Dust should be suppressed by wetting the material, whenever possible.

4.1.5 Any mechanical process likely to create dust (for example, plaiting) shall be enclosed as completely as possible and fitted with dust extraction equipment.

4.1.6 Arrangements shall be made to prevent asbestos dust discharged from exhaust apparatus/extraction system being drawn into the air of any workroom.

4.1.7 In selecting mechanical equipment for cutting asbestos containing products, preference should be given to low-speed shears, guillotine-type cutters, clipper dies or 'nibblers' instead of high-speed rotary cutters, sabre saws or abrasive cutting devices unless they are fitted with effective dust extraction equipment. Shears shall be used for handcutting. Under no circumstances, materials shall be severed by fraying or tearing.

4.1.8 Waste material shall not be allowed to accumulate.

4.1.9 Working areas shall be kept clean by regular use of vacuum cleaning equipment suitable for use with asbestos dust or by wet sweeping.

4.1.10 Finished products shall be packed in impermeable wrapping and suitably labelled for guidance of the subsequent users.

4.1.11 For specific products like asbestos cloth, asbestos rope lagging and asbestos millboard, the additional recommendations given for each shall be followed in addition to the general recommendations.

5. ASBESTOS TEXTILE

5.1 Manufacture of Protective Clothing and Fire Protection Material — Procedures described in 5.1.1 to 5.1.9 shall be followed while manufacturing protective clothing and fire protection materials from asbestos cloth.

5.1.1 Asbestos cloth that are specially treated to reduce dust emission should be used, where practicable.

5.1.2 In all cases, handling of cloth and cut or sewn pieces shall be reduced to a minimum. All rolls of cloth, when not in use, shall be stored in impermeable wrapping.

5.1.2.1 Partly used rolls shall be replaced in their wrapping.

5.1.3 After unwrapping for use, the roll shall be handled by mandrels inserted through the centre of the rolls.

5.1.4 On the cutting table, the mandrel shall be mounted on brackets at the end, clear of the table surface, and the cloth shall be unrolled from top of the roll. Cloth shall not be pulled from a free-standing roll across the surface of the table.

5.1.5 All cloth shall be unrolled from top of the roll. Backed cloth shall be unrolled with the asbestos face downwards.

5.1.6 Working surfaces on which cloth is cut, sewn or otherwise handled shall be smooth to minimize abrasion.

5.1.7 Asbestos cloth shall be cut with shears, a guillotine or a mechanical cutter. It shall not be torn or frayed. Rotary cutters shall not be used.

5.1.8 When cutting and sewing untreated asbestos cloth, the top surface of the cloth shall be well damped.

5.1.9 When off-cuts are retained for re-use, they shall be stored in suitably closed receptacles and with the minimum of handling.

5.2 Mattress Making — In addition to the recommendations given in **5.1.1** to **5.1.9**, the procedures described in **5.2.1** to **5.2.6** shall be followed while making mattress from asbestos cloth.

5.2.1 After marking out the mattress pattern, the cloth shall be thoroughly damped in the areas to be cut.

5.2.2 Electrically operated rotary knives fitted with dust extraction equipment are recommended for cutting. Tearing shall not be practised.

5.2.3 Both cloth and yarn shall be damped before stitching.

5.2.4 The stitched mattress covers shall be carefully housed in suitably closed receptacles for transfer to the filling area.

5.2.5 Asbestos fibre used for mattress filling shall be dispensed within enclosures under exhaust ventilation.

5.2.6 Workers engaged in filling mattresses with asbestos fibre shall be equipped with protective clothing and respiratory equipment unless dust measurements indicate that the enclosure and extraction control the dust within permissible exposure limit.

5.2.6.1 A transparent window in the exhaust hood will facilitate handling the fibre from outside the enclosure.

5.3 Use on Thermal Insulation — In addition to the recommendations given in **5.1.1** to **5.1.9**, the procedure described in **5.3.1** shall be followed while using asbestos cloth in thermal insulation.

5.3.1 Dust suppression by thorough damping before cutting and stitching should be employed, wherever practicable.

5.3.2 When asbestos cloth is used extensively for lagging, protective clothing and respiratory equipment shall be worn.

6. ASBESTOS ROPE LAGGING

6.1 The procedures described in **6.1.1** to **6.1.7** shall be followed while using asbestos rope lagging for thermal insulation.

6.1.1 As far as possible asbestos rope lagging that are specially treated to reduce dust emission should be used.

6.1.2 Asbestos rope lagging shall be supplied, stored and transported in impermeable bags.

6.1.3 Bags damaged in transit or at the job site shall be repaired by applying adhesive tape to areas of minor damage or enclosing more severely damaged bags in slip-over bags.

6.1.4 Handling of rope lagging should be minimized, where possible, by planning in advance the number and length of pieces required for the work in hand.

6.1.4.1 Where lengths have been cut from a coil, the rope ends shall be sealed.

6.1.5 Partly used coils of asbestos rope lagging shall be put back into the bags and the bags shall be securely sealed between working periods.

6.1.6 When cutting and pipe-wrapping, the ladders shall wear protective clothing and respiratory equipment.

6.1.7 When extensive rope-lagging is being carried out, the work area shall be separated from other areas, or the work shall be carried out at times when workers without respiratory protection are absent.

7. ASBESTOS MILLBOARD

7.1 The procedures described in **7.1.1** to **7.1.6** shall be followed while using asbestos millboard.

7.1.1 As far as possible, asbestos millboard that are specially treated to reduce dust emission should be used.

7.1.2 In all cases, handling of loose millboard sheets or loose cut-pieces shall be reduced to a minimum.

7.1.3 Where any form of processing, such as machining, cutting, shaping, moulding, etc, of asbestos millboard is undertaken, the sheets shall be damped or wetted first. Scribing and breaking is an easy and safe way of cutting thinner sheets after wetting.

7.1.4 Where asbestos millboard is being worked upon in enclosed spaces in a manner which might generate airborne asbestos dust, operator shall wear respiratory equipment and protective clothing unless portable air extraction equipment is used to control the dust effectively.

7.1.5 When it is necessary to break asbestos millboard by hand for moulded lining, etc, the sheets shall be thoroughly wetted before breaking.

7.1.6 Where off-cuts are retained for re-use, they shall be stored in suitably closed receptacles with the minimum of handling.

8. COMPRESSED ASBESTOS FIBRE JOINTINGS/BEATER ADDITION JOINTINGS

8.1 The procedures described in **8.1.1** to **8.1.5** shall be followed while using compressed asbestos fibre jointings/beater addition jointings.

8.1.1 These materials shall preferably be cut by shearing or slitting and not by sawing or grinding unless adequate dust extraction is provided.

8.1.2 Generally no special safety precautions are needed when a gasket is fitted.

8.1.3 When an old gasket is to be replaced, it shall be removed by methods which do not create dust, such as by the use of hand tools and preferably after the gasket has been soaked with water.

8.1.4 Powered mechanical grinding to remove old gaskets shall only be undertaken with suitable dust extraction device.

8.1.5 After exposure to flame or high temperature, if the asbestos packing or jointing becomes brittle and has to be removed, this operation shall be carried out in a manner which will minimize the emission of dust. Damping of material shall be done with such cases.

9. WASTE DISPOSAL

9.1 Waste material shall not be allowed to accumulate on floor. All working areas should be kept clean by regular use of vacuum cleaner. Where vacuum cleaning is not practicable, the waste material shall be thoroughly wetted before removal. Cleaning shall be done in accordance with the provisions laid down in IS : 11767-1986*.

9.2 All waste material shall be placed and sealed in impermeable bags and disposed of in accordance with the provisions laid down in IS : 11768-1986†.

10. WARNING

10.1 Asbestos cloth, asbestos rope lagging and asbestos millboard shall bear a pictorial warning sign and precautionary notice as given in Indian Standard 'Recommendations for pictorial warning signs and precautionary notices for asbestos and products containing asbestos: Part 2 Asbestos and its products (*under preparation*)' to caution the users

*Recommendations for cleaning of premises and plants using asbestos fibres.

†Recommendations for disposal of asbestos waste material.

that these products contain asbestos fibres and improper use of these materials may result in generation of asbestos dust, inhalation of which may cause serious damage to health.

NOTE — Till such time the standard under preparation is published, the matter shall be subject to agreement between the concerned parties.

11. SAFETY RULES SHEET

11.1 Asbestos cloth, asbestos rope lagging, asbestos millboard and compressed asbestos fibre jointings/beater addition jointings are required to be accompanied by a safety rules sheet containing the following information:

- a) Product designation;
- b) Name and address of the manufacturer of the product;
- c) Health hazards that might arise from inhalation of asbestos dust;
- d) Precautionary information regarding handling of the product;
- e) Procedures for cleaning and safe disposal of asbestos waste; and
- f) Use of personal protective equipment, such as respirators and protective clothing, wherever required.

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INTERNATIONAL SYSTEM OF UNITS (SI UNITS)

Base Units

QUANTITY	UNIT	SYMBOL
Length	metre	m
Mass	kilogram	kg
Time	second	s
Electric current	ampere	A
Thermodynamic temperature	kelvin	K
Luminous intensity	candela	cd
Amount of substance	mole	mol

Supplementary Units

QUANTITY	UNIT	SYMBOL
Plane angle	radian	rad
Solid angle	steradian	sr

Derived Units

QUANTITY	UNIT	SYMBOL	DEFINITION
Force	newton	N	1 N = 1 kg.m/s ²
Energy	joule	J	1 J = 1 N.m
Power	watt	W	1 W = 1 J/s
Flux	weber	Wb	1 Wb = 1 V.s
Flux density	tesla	T	1 T = 1 Wb/m ²
Frequency	hertz	Hz	1 Hz = 1 c/s (s ⁻¹).
Electric conductance	siemens	S	1 S = 1 A/V
Electromotive force	volt	V	1 V = 1 W/A
Pressure, stress	pascal	Pa	1 Pa = 1 N/m ²