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मानक

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IS 11770-2 (2006): Recommendations for control of emission of asbestos dust in premises manufacturing products containing asbestos, Part 2: Friction materials [CED 53: Cement Matrix Products]



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भाग 2 घर्षण सामग्री
(पहला पुनरीक्षण)

Indian Standard

RECOMMENDATIONS FOR CONTROL OF EMISSION
OF ASBESTOS DUST IN PREMISES MANUFACTURING
PRODUCTS CONTAINING ASBESTOS

PART 2 FRICTION MATERIALS

(First Revision)

ICS 13.040.40

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BUREAU OF INDIAN STANDARDS
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NEW DELHI 110002

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Price Group 2

FOREWORD

This Indian Standard (Part 2) (First Revision) was adopted by the Bureau of Indian Standards, after the draft finalized by the Cement Matrix Products Sectional Committee had been approved by the Civil Engineering Division Council

This standard was first published in 1986 considering 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, preventing measures, protection of health of workers, packaging and transport of asbestos, disposal of asbestos waste, etc.

This standard laying down the recommendation for control of emission of asbestos dust in premises manufacturing products containing asbestos was prepared in three parts. This Part 2 of the standard lays down the recommendations for control of emission of asbestos dust in premises manufacturing friction materials, so as to ensure a safe working environment. Recommendations for control of emission of asbestos dust in premises manufacturing asbestos cement products and non-cement asbestos products other than friction materials are covered in Parts 1 and 3 respectively of this standard. In this revision, engineering control measures for dust control have been elaborated. Storage, transportation, mixing practice have also been enhanced to further minimize the hazard.

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 Code of practice: Safety in the use of asbestos', 1984 published by International Labour Organization, Geneva.

Indian Standard

RECOMMENDATIONS FOR CONTROL OF EMISSION OF ASBESTOS DUST IN PREMISES MANUFACTURING PRODUCTS CONTAINING ASBESTOS

PART 2 FRICTION MATERIALS

(First Revision)

1 SCOPE

This standard (Part 2) lays down the recommendations for control of emission of asbestos dust in premises used for manufacturing friction materials using asbestos.

2 REFERENCES

The following standards contain provisions which through reference in this text, constitute provisions of this standard. At the time of publication, the editions indicated were valid. All standards are subject to revision and parties to agreements based on this standard are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below :

<i>IS No.</i>	<i>Title</i>
11767 : 1986	Recommendations for cleaning of premises and plants using asbestos fibres
11768 : 1986	Recommendations for disposal of asbestos waste material
12078 : 1987	Recommendations for personal protection of workers engaged in handling asbestos
12079 : 1987	Recommendations for packing, transport and storage of asbestos
12080 : 1987	Recommendations for local exhaust ventilation systems in premises manufacturing products containing asbestos

3 OBJECT

The object of this standard is to recommend procedures that shall be adopted in premises used for manufacturing of asbestos containing friction materials so as to minimize and control the emission of asbestos dust in the working environment for the safety of workers.

4 GENERAL REQUIREMENTS

4.1 All appropriate and practicable measures of engineering control, work practice and administrative

control shall be adopted to eliminate or to minimize the asbestos dust concentration in the working environment to the lowest possible level.

4.2 Control Measures

In any process of use of asbestos fibres or in the use of any materials containing asbestos where dust may be given off, engineering control measures should be devised to prevent the emission of asbestos dust in to the work place.

4.2.1 Control at the Source

Control of dust shall be achieved as near the source as possible. This increases the efficiency of the control process, minimizes costs and prevents the spread of dust into adjacent areas. This will prevent the environmental hazard and hazard is limited only to the work place. Therefore, if enclosure of the source is possible, this shall be the first step to be taken.

4.2.2 Local Exhaust Ventilation System

4.2.2.1 Local exhaust ventilation system shall include the following (see Fig.1):

- Hood/Enclosure* — Optimum enclosure and collection of airborne dust.
- Duct work* — Connects the hoods and enclosures to a common duct. The duct in turn connects to a dust collector.
- Dust collector* — This effects separation of dust particles from the air.
- Fan* — Moves the dust laden air to the dust collector.

4.2.2.2 To control the dust effectively, the exhaust ventilation shall be located as close to the source of dust emission by the use of hoods, booths or enclosures.

4.2.2.2.1 Hoods

Capture-type of hood is commonly used to collect the dust from a localized dust source into the system through which it is finally collected.

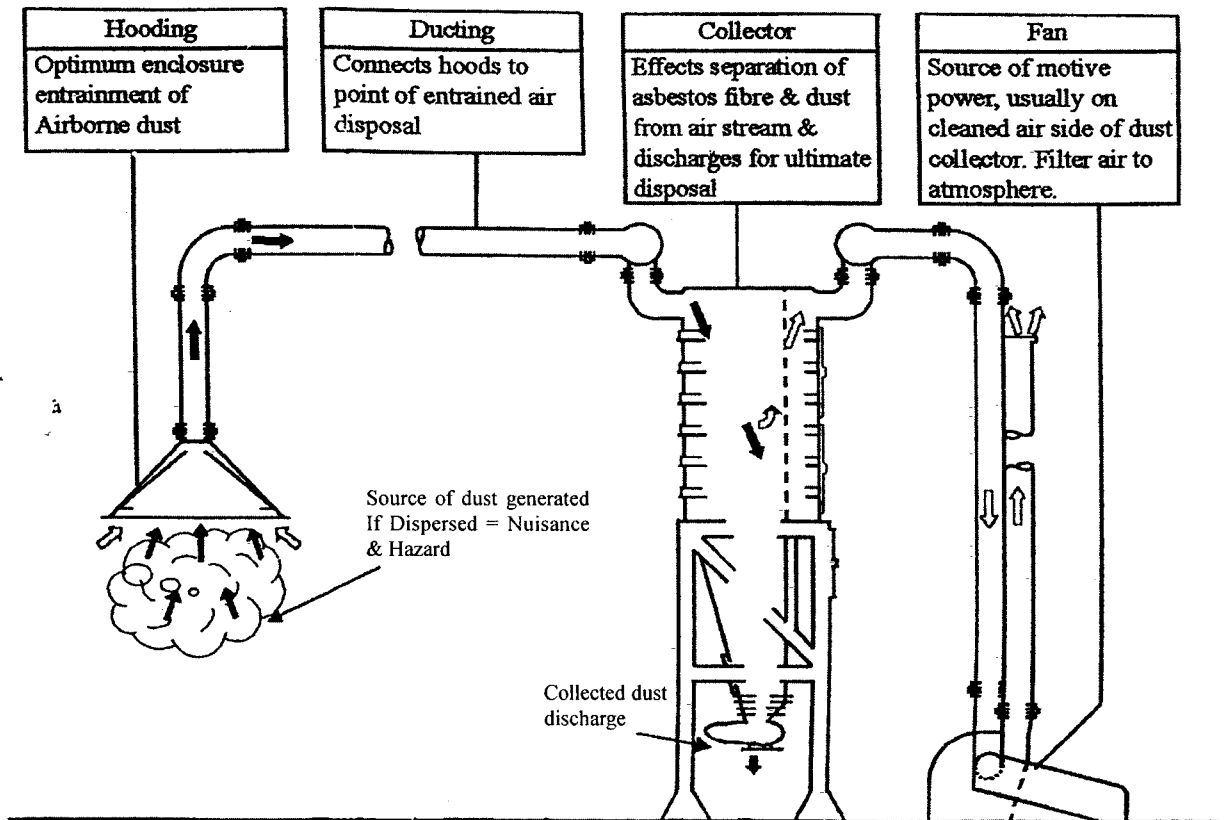


FIG. 1 TYPICAL ELEMENTS OF A LOCAL VENTILATING SYSTEM

4.2.2.2.2 Enclosure of booth type

Inside which the dust produced is contained as it is generated and so designed to prevent the dust escaping into work place.

4.2.2.3 The local exhaust systems shall be designed through proper duct work to remove all dust laden air (see IS 12080).

4.2.2.4 Openings in the enclosures shall be as small as possible while still allowing access to necessary work operations.

4.3 Work Practices

Appropriate work practices shall be identified, standardized and followed for all work places, operations, processes where asbestos dust is likely to escape into the atmosphere.

4.3.1 Work practices include:

- Requirements to use and maintain proper process machinery, installations, equipment, tools, local exhausts and ventilation systems.
- Wetting where such process is applicable.
- Regular clean up of any waste generated during manufacturing by appropriate method.

- Proper use of personal protective equipment, wherever required (see IS 12078).

4.3.2 Use of Wet Methods

- Application of fine spray directed at the source of dust, such as a cutting tool, saw, drilling, material deposited on the floor, etc.
- The spray shall not create any dust.
- Care shall be taken to collect and properly dispose the wet material (see IS 11768).
- Wetting in the presence of local exhaust ventilating systems is not recommended.

5 RECOMMENDED CONTROL FOR DIFFERENT OPERATIONS**5.1 Storage, Transportation and Handling of Asbestos****5.1.1 Fibre**

For packaging, transport and storage of asbestos recommendations as given in IS 12079 shall be adopted.

5.1.2 Type of Bag

Asbestos fibres shall be always packed in impermeable woven and coated or lined polythene or polypropylene bags.

5.1.3 Packing

Plastic material used for bags shall incorporate an ultra-violet inhibitor to protect the bags from sunlight and radiation.

5.1.4 Storage

- All units shall be carefully inspected for cleanliness and for damage.
- All damaged bags shall be repaired immediately.
- All units having loose asbestos or other debris on them shall be cleaned as soon as possible by vacuum or by some other means which causes no secondary dust generation.

5.2 Fibre Preparation and Mixing

5.2.1 Automatic debagging machine should be used for effective dust control, where practicable.

Debagging may also be carried out by hand with properly designed hood. This consists of a table and covered by a hood (see Fig.2). The hood shall cover all sides,

leaving only an adequate opening in the front. This front shall also have a removable cover. The cover shall remain closed during fibrization.

5.2.2 Mixing

- All the powder material shall be weighed under effective ventilation.
- Mixing operation shall be carried out with proper dust control systems to prevent any dust escaping into atmosphere.
- Mix shall be kept in closed containers. Mix shall be moved to other processes in closed containers.
- Dry mixing operations shall be undertaken only in enclosed systems under negative pressure.
- Where wet mix or plasticized materials are used in open systems, waste and dried out residues shall be cleared by vacuum cleaning equipment or by other dustless methods.

5.3 Transfer of Mixed Compound to Moulding and Forming

5.3.1 Wherever practicable totally enclosed systems

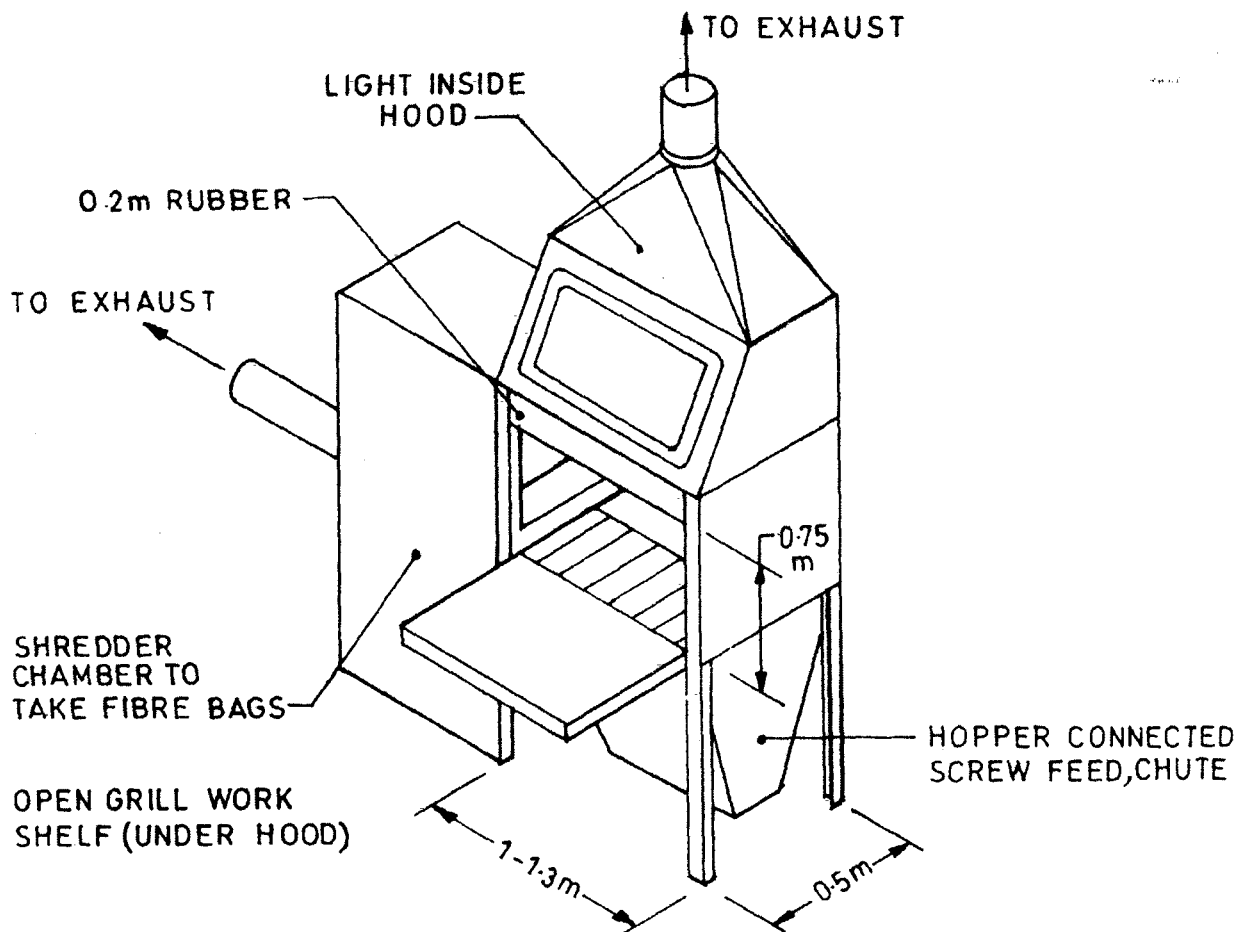


FIG. 2 TYPICAL DEBAGGING HOOD

shall be provided for transferring compounds from the mixing area to the processing machinery.

5.3.2 All mix and preform containers shall always be kept closed while moving within the processing area.

5.3.3 All transfer operation shall be carried out with proper enclosure and sufficient face velocity to be maintained (10 m/sec/m²) to prevent any dust escaping in to the atmosphere.

5.4 Preforming

5.4.1 Weighing and transferring operations shall be carried out under controlled conditions with negative pressure.

5.4.2 Vacuum provision shall be made to clean the spillage immediately.

5.4.3 Pressing operations shall be carried out with negative pressure. Properly designed hoods shall be in place to prevent dust escaping into atmosphere. The hood shall be directly connected to the press.

5.4.4 The space of the press that houses the piston and the base for mould shall be completely enclosed and connected to the hood.

5.4.5 When mix with potential to release airborne asbestos dust are in transit from one machine section to another during processing they shall be conveyed in closed systems or containers.

5.5 Hot Pressing and Curing

5.5.1 All preforms shall be moved in a closed container.

5.5.2 Preforms shall be handled carefully in to the hot press.

5.5.3 After hot press operation, the material is transferred to curing section.

5.5.4 Asbestos fibre is locked into the cured resin. Fibre will not be released during handling.

5.6 Finishing Operations

5.6.1 During finishing operations, the mould pieces are cut to proper dimensions, shaped and ground to required

thickness and drilled with holes for fastening to brake shoes.

5.6.2 In all the above operations, properly designed hoods with required capture velocity to be maintained, so that all the dust generated during the operations is captured.

5.6.3 Inspection of finished components for quality control purposes shall be carried out on tables equipped with a dust extraction system.

5.6.4 Finished products shall be suitably packed before despatch without any dust.

5.7 Reclamation of Materials

5.7.1 Disintegrators, milling machinery or grinding plant used to reclaim waste material shall operate in an enclosed booth under proper ventilation system.

5.7.2 Reclaimed material shall be transferred back in to the process either automatically with in an enclosed system.

5.7.3 Left out reclaimed material shall be disposed of in accordance with the provisions laid down in IS 11768.

6 GENERAL VENTILATION

6.1 Adequate fresh air shall be provided in addition to the exhaust ventilation requirements.

6.2 Necessary air pollution control equipments shall be installed to meet the regulatory requirements.

7 CLEANING OF PLANT AND PREMISES

7.1 The work premises shall be kept free from asbestos waste and dust. All plant, machinery, exhaust ventilation equipment and all internal surfaces of the building shall be kept free from dust. Vacuum cleaning equipment or other dustless methods, such as wetting, before and during sweeping, should be used for this purpose. Cleaning shall be done in accordance with the provisions laid down in IS 11767.

8 DISPOSAL OF WASTE

All waste material shall be disposed of in accordance with the provisions laid down in IS 11768.

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