RECOMMENDED CODE
OF PRACTICES
for

APPLICATION OF SPRAYED FIREPROOFING MATERIALS

SMFMA

SPRAYED MINERAL FIBER
MANUFACTURERS ASSOCIATION
P.O. Box 427
Westfield, N.J. 07090

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BE SMART!

Follow these major points when handling spray fireproofing products:

- Take every precaution to keep dust to an absolute minimum
- Always wear approved U.S. Bureau of Mines respirators in the work area
- Always wear coveralls and leave them on the job at the end of the work day
- Maintain good housekeeping and clean-up at all times

INTRODUCTION

The use of contemporary materials in construction often generates unwanted dusts which may result in problems to health, in property damage and in unfavorable working conditions. Sprayed fireproofing materials generally contain some asbestos. Respirable dusts generated during application of such products may constitute a health hazard to the applicator and workmen in the immediate vicinity of the spraying operation. Emission of these dusts into the atmosphere surrounding the job site may cause undesirable air pollution.

Therefore, measures to prevent or control the creation or spread of such dusts are mandatory for workmanlike and safe application.

The Sprayed Mineral Fiber Manufacturers Association has long recommended work rules and practices designed to minimize on-the-job dust. Consultation and study with municipal authorities, public health officials and others have indicated the problems can be further minimized by adequate attention to, and careful control of, all factors in the application of fireproofing materials.

We recognize the immediacy of the problem and accept the responsibility for presenting to the construction industry the recommendations in this "Code" for safe and sound work practices.

General contractors, fireproofing subcontractors and other supervisory personnel are urged to study this "Code" so as to assure that its recommendations are fully adhered to by workers in the application of sprayed fireproofing materials.

This updated "Code" booklet is being given the widest possible distribution in the hope that its contents will be of use to all elements of the construction industry, municipal authorities, public health officials, governmental agencies, and other interested groups.

Prepared by the Technical Committee of the Sprayed Mineral Fiber Manufacturers Association.

CONTROL OF DUST

The basic problem is three-fold:

... to keep to the lowest possible minimum dust generated in the handling and spraying of fireproofing materials.

... to reduce exposure of workmen to such dust.

... to prevent the dust from spreading into the air surrounding the job site.

The solution has these specific aspects:

1. Minimizing the amount of overspray or fall-out during actual spraying.
2. Containment of overspray or dust fall-out within a controlled area.
3. Proper housekeeping and clean-up in a controlled area before and after spraying.
4. Protection of workers in the work area.
5. Maintaining the spray equipment in proper working order.

KEEP THESE IN MIND

Before the start of spraying operations in any locality, the spray fireproofing contractor should contact appropriate municipal officials to familiarize himself thoroughly with local regulations for application of fireproofing materials. He should also make sure his crews are familiar with the regulations and follow them completely.

One person should be assigned full-time supervisory authority for all aspects of the spraying operations and should be aware at all times of what is going on at the job site.

In the event that some particulate matter is emitted into the air at a job site through some unexpected occurrence, such as the breakdown or damage of equipment or enclosure material, or some other unforeseen event, immediate steps should be taken to stop the emission. This can be done by stopping work or instituting quick control measures. At any rate, whatever material may have escaped should be cleaned up at once.

REDUCING DUST, OVERSPRAY AND FALL-OUT DURING SPRAYING

I. Material
- A. All material shall be factory-treated with a dust preventive.
- B. Broken bags shall not be shipped to the job site.
- C. Bags damaged in transit or on the job site shall be properly secured as follows:
  1. Bags with minor damage should be repaired with gummed or masking tape.
  2. Bags more severely damaged should be enclosed in a slip-over bag to prevent dust spread.
- D. While filling the machine hopper, care shall be exercised in emptying the bag to minimize the possibility of dust.

  Here is a suggested method for opening and emptying the bag: Place the bag horizontally at the hopper opening. Slit it in the form of a figure H, fold the flaps back and then empty the contents carefully into the hopper.
- E. During operation of the machine, the augers should be covered with the material.
- F. When the machine is not in use, it should be covered to prevent material from being blown about and also to prevent foreign matter from entering the machine.
- G. Empty bags should be carefully stacked in neat piles and bundled to facilitate disposal.

II. Equipment
- A. Before delivery to the job site, the spraying machine and auxiliary equipment shall be clean and free of any loose material.
- B. The equipment should be tested to make sure it is in good working order. All seals should be checked to make sure they are working properly and will therefore prevent blow-out of material.
- C. After the equipment is assembled at the job, all hoses and connections should be tightened so that there will be no leaks.
- D. All air and water orifices of the spray nozzle should be free of obstructions that interfere with the free flow of air and water.

III. Application
- A. A major cause of overspray and fall-out is the use of a water-to-material ratio that is too low. It is important that the recommendations of the sprayed fireproofing material manufacturer concerning water requirements be strictly observed. A controllable supply of water providing the required volume and pressure peculiar to the equipment and material being used should be maintained throughout the spray application. If volume or pressure proves insufficient, auxiliary equipment — such as pumps, surge tanks, etc. — should be provided. Water flow tests should be made periodically to permit determination of water-to-material ratio.
- B. The spray nozzle orifices as well as the material discharge should be kept clean and free of obstruction at all times to assure proper flow and atomization.
- C. Not less than one pound of water per pound of fiber should be used. A simple field test to determine adequate wetting can be performed by squeezing some of the wetted fiber between the fingers. Some water should ooze.
- D. Atomized water should be turned on before any fiber emerges from the hose and should not be shut off until the fiber has fully cleared the hose. This will prevent generation of dust and insure adequate wetting of the fiber.
- E. The spray crew should be thoroughly trained and adequately supervised by persons fully familiar with the application procedure prescribed by the manufacturer.
- F. Care should be taken to insure that the spray nozzle is kept sufficiently close to the surface being sprayed to minimize fall-out or overspray during application of the material. The nozzle should be directed at all times to the surface being sprayed and held at the proper distance from the surface.
- G. After the spray fiber has been applied, all surfaces should be sprayed with water to press down firmly any loose oversprayed fibers.

CONTAINMENT OF DUST AND OVERSPRAY

Proper and adequate windbreaks must be used to contain dust and overspray in the immediate work area and to prevent spread into the surrounding air. Since gusts or high winds can interfere with proper spray application, every effort should be made to insure that windbreaks are well secured.

Care should be taken during the moving of windbreaks to prevent damage to applied fireproofing. This will eliminate a potential source of blow-off.

Another source of overspray from the building is the spraying of the exterior faces of spandrel beams and columns. It is desirable, wherever possible, to design alternate means of providing protection to these exterior surfaces.

These containment practices should be followed:

1. The entire floor, or that part where the spraying work is being done, should be enclosed with plastic or plastic-coated tarpaulins. Further, all interior open areas (elevator shafts, stairwells, etc.) should be enclosed so as to prevent the escape of dust from the working area. The "stack effect" of such open areas must be kept in mind in designing the enclosures.

2. The enclosures should not be dismantled until spraying and clean-up have been completed. They should be cleaned thoroughly, either by vacuum or other effective means.

3. Proper enclosures must be provided in areas used for opening bags containing insulating material and in areas where the hoppers are filled.

4. Signs must be posted outside areas in which spraying operations are being done, warning persons entering to wear appropriate face masks and other apparel.

CLEAN-UP AND HOUSEKEEPING

Poor clean-up and careless housekeeping are major causes of windblown material at a job site. To prevent this, the following are recommended:

1. Floor areas should be shoveled clean before spraying operations begin. All objects, materials and equipment not needed in spraying should be removed from the area or covered with plastic or plastic-coated tarpaulins.

2. Wet spray material that falls to the floor should be swept up immediately and placed in a strong container (the walls, bottom and tight cover able to resist tearing or breaking under normal handling conditions) clearly marked as containing asbestos waste. The contents should not be transferred to another container and should be taken to an approved site for disposal.

3. All floors should be thoroughly cleaned shortly after drying, either by broom or vacuum or other method that will remove dust and debris satisfactorily. If a vacuum cleaner is used, it should contain a strong, one-service disposable inner bag of durable material that should be placed in a container of the type described in No. 2 above and taken to an approved site for disposal.

4. When spraying has been completed in an area, the materials used to make the enclosure should be thoroughly cleaned by vacuum or other appropriate method. The entire work area — ledges, surfaces and tarpaulins on which dust and debris may have fallen — also must be cleaned, either by vacuum or other effective means, before the enclosures are dismantled.

5. Any plenum or other structure coated with asbestos-containing insulation and intended for circulation of air in the building must be thoroughly cleaned of debris and waste. Asbestos-containing insulation in a plenum or duct must be coated with a sealer to preclude the possible erosion of the insulation by the circulating air.

6. Equipment should be cleaned after spraying and not later than the end of each work day.

7. It is important that there be cooperation between the general contractor and the other trades to assure that the fireproofing subcontractor be provided with as clean a work area as is possible.

DIVISION OF RESPONSIBILITY BETWEEN GENERAL CONTRACTOR AND FIREPROOFING SUBCONTRACTOR

The purpose of this section is to outline recommended ground rules for cooperation between the spray fireproofing subcontractor and the general contractor with the aim of containing spray fireproofing material within the work area.

1. The general contractor shall provide and install tarpaulins for the spray fireproofing subcontractor.
2. Tarpaulins shall be of such size as to permit the subcontractor to "belly them out" so that he can spray the spandrels, beams and columns.
3. The general contractor shall provide sufficient tarpaulins to enclose an area equal at least to twice the area anticipated for any one day's work.
4. The general contractor shall clean an area that has been sprayed within one day after fireproofing of the area has been completed. He shall place the debris in containers.
5. The general contractor shall clean the tarpaulins and handle them and the clean-up as recommended elsewhere in this booklet.
6. The fireproofing subcontractor shall start spraying as soon as two floors are ready and should seek to maintain the same work pace as the concrete workers.
7. All fireproofing on one floor shall be done at the same time, including application of any cementitious material.

PROTECTIVE RESPIRATORY DEVICES AND CLOTHING

1. The wearing of respirators should be mandatory for all persons involved in the spraying operation.

Only U.S. Bureau of Mines-approved respirator equipment is recommended for use with asbestos, silica and other pneumoconiosis-producing dusts. Approved respiratory equipment must be used in all operations where dust control is not sufficient to maintain airborne concentrations within allowable limits for such dusts as established by governmental and professional agencies.

The efficiency of respiratory equipment depends on proper care, cleaning and maintenance. A systematic procedure should be established to see that these are done.

Lists of currently approved respiratory equipment are available from:

Bureau of Mines
U.S. Department of the Interior
Nineteenth and E Streets, N.W.
Washington, D.C. 20240

American Industrial Hygiene Association
14125 Prevost
Detroit, Michigan 48227

2. Suitable coveralls must be worn by all persons involved in the spraying operation. These coveralls should be left at the job at the end of the work day.

3. Facilities should be provided and procedures instituted to preclude the removal of asbestos-containing material from the job site on the clothing or other property of persons leaving the area.

For additional copies:

Executive Secretary
Sprayed Mineral Fiber Manufacturers Association
P.O. Box 427
Westfield, N.J. 07090

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