



technical bulletin

Asphalt Roofing
Manufacturers Association

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Cold Weather Application Recommendations for Modified Bitumen Roofing

Introduction

The application of all roofing systems during cold weather poses special concerns. Specific to modified bitumen materials, these concerns may include: maintaining proper asphalt, adhesive, and sheet material temperatures at the point of application. Cold weather may reduce the curing rate of solvent-based adhesives, cause mopping asphalts to harden prematurely, stiffen sheet materials, and reduce the effectiveness of self-adhesive materials. By following proper procedures and exercising recommended precautions, cold weather application can progress more efficiently and effectively, so that a higher quality result can be attained.

The Low-Slope Committee of the Asphalt Roofing Manufacturers Association (ARMA), recognizing the difficulties associated with cold weather modified bitumen roofing application, has prepared this technical bulletin.

Storage and Handling Recommendations

Keep All Materials Dry and Clean:

Materials shall be delivered dry and stored in such a manner as to keep them that way. Wet or damp roofing materials should never be used in the construction of a roof assembly. It is recommended that, whenever possible, roofing materials are delivered to the job-site just prior to roof installation.

Roofing materials, including insulation, shall be kept dry and handled with care. When materials are stored outside, they shall be placed on pallets that are raised off the ground or roof deck, and they shall be covered with breathable waterproof coverings (such as canvas) that have been properly secured over the roofing material, or in accordance with the manufacturer's storage guidelines. Some insulation materials are extremely light and must be anchored during storage to prevent damage by the wind.

Do not store materials in concentrated loads on the roof. Heavy concentrated loads can cause deck deflection and/or overload the structure. All roll materials shall be stored on end to prevent deformation or damage. Roll material should never be double-stacked on the roof.

Roofing asphalts should be protected from the weather. Remove moisture, dirt, snow, and ice from roofing asphalts before they are heated. Failure to do so can lead to dangerous frothing within the hot kettles.

Storage of roofing materials without adequate protection against the elements can result in moisture being incorporated into the roof system. This moisture content could eventually lead to roof defects or roof system failures. All surfaces to which the hot asphalt or roof membrane will be applied must be dry, firm, smooth, and free of dirt and loose material.

Note: This document was prepared by the Asphalt Roofing Manufacturers Association and is disseminated for informational purposes only. Nothing contained herein is intended to revoke or change the requirements or specifications of the individual roofing material manufacturers or local, state and federal building officials that have jurisdiction in your area. Any question, or inquiry, as to the requirements or specifications of a manufacturer, should be directed to the roofing manufacturer concerned. THE USER IS RESPONSIBLE FOR ASSURING COMPLIANCE WITH ALL APPLICABLE LAWS AND REGULATIONS.

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Protect Materials From Cold Temperatures:

Modified bitumen rolls, base sheets, and asphalts become less flexible at low temperatures. Therefore, it is essential to use the proper techniques when handling these roofing materials in cold weather. Unsound procedures can lead to material damage and other serious problems.

When roof systems are installed at temperatures below 50°F, store all materials in a dry, heated area for a minimum of 24 hours prior to installation. All rolls should be maintained at a minimum temperature of 50°F up to the time of application. This allows the modified bitumen to remain flexible during roll out.

Acceptable weather conditions are based not only on the actual ambient temperature, but also on the total combination of nature's elements (e.g., wind-chill-factor, humidity, etc.). Careful planning during cold weather can greatly improve the quality of the installation. Reviewing the lay out of the roof area and then placing materials where they are needed, just in time for application, will minimize problems associated with cold weather application.

During cold weather:

- Store rolls on end in a warm (>50F) and dry location for a minimum of 24 hours prior to application.
- Unroll and cut roll materials to a maximum of 18 foot lengths and allow to relax before application.
- Remove and discard any damaged areas of sheet roofing prior to using.
- Never throw or drop rolls of material.
- All adhesives and primers should be stored in accordance with the manufacturer's guidelines until just prior to use.
- Water based cements and/or coating materials must be protected to prevent freezing.
- For self-adhesive sheet materials, follow the manufacturers' guidelines.

Following these procedures will minimize the potential for wrinkles and buckles in the finished system.

Application Recommendations

Use The Right Materials

Where different grades of materials are available for summer or winter use, the grade specified for cold (or winter) weather should be used.

Complete Each Roof Section Daily

Application should be scheduled so that there are no partially completed portions of the roof left exposed. As the work progresses on a day-to-day basis, it is essential that each section of the roof be completed as specified. Additionally, "water cutoffs" should be provided at exposed edges at the close of each day. Water cutoffs shall be removed prior to resuming construction of the roof assembly.

Torch Application

During membrane application, both the membrane and the substrate should be heated in accordance with industry torch application safety guidelines. By warming the substrate before the molten asphalt is rolled into place, the adhesion of the membrane to the substrate is enhanced. This is especially important for the lap area, which should be given special attention.

Hot Asphalt Applied Products

At the point of contact with the modified bitumen sheet material, the mopping asphalt should be applied at its equiviscous temperature ("EVT") or a minimum of 400°F - whichever is higher. A sufficiently high asphalt temperature is essential for adequate adhesion of SBS modified membranes. It is important for the applicator to be aware that liquid asphalt cools very quickly* once applied to a roofing substrate. Components of the roofing system must be installed rapidly and "close to the mop." Be sure that all components are well embedded. Mop-leads, typically no more than five feet in front of the roll, should not exceed the manufacturer's recommended instructions. Failure to follow proper application techniques will result in poor membrane adhesion. (*Refer to NBS 167 for Guidelines on the Cooling of Hot Asphalt.)

Warning: To compensate for the rapid cooling caused by cold weather, it is extremely important to keep the asphalt within the EVT range specified by its rating, but never less than 400°F and never greater than 25°F below its stated flash point!!

Proper insulation of all asphalt handling equipment is required to keep asphalt hot in cold weather. Equipment insulation is also vital for fuel conservation and reducing make-ready time. Use of insulated tank trucks and rooftop equipment for transporting asphalt, such as hot luggers and mop buckets, is recommended. Asphalt lines from the kettle to the roof should also be insulated, particularly when asphalt is being piped over long distances.
