



technical bulletin

**Asphalt Roofing
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Cold Weather Recommendations for Built-Up Roofing

Introduction

Application of any type of bituminous roofing system in cold weather can be achieved successfully if precautions are taken. When roof systems are installed in outdoor temperatures below 50°F, the installer can expect difficulties including but not limited to: maintaining the proper asphalt temperature at the point of application, slower cure time of cold-applied adhesives, and increased stiffness of roofing materials.

The Low Slope Roofing Committee of the Asphalt Roofing Manufacturers Association (ARMA), in conjunction with the National Roofing Contractors Association (NRCA), recommends the following procedures in cold weather situations. However, product manufacturer's instructions should always be followed.

Storage and Handling Recommendations:

Keep All Materials Dry and Clean

Regardless of the season or the type of asphalt roofing system, it is very important that all materials are delivered dry and stored in a manner that assures they remain dry. It is recommended that, whenever possible, roofing materials be delivered to the job site just prior to their installation.

- When materials are stored outside, they should be placed on platforms that are raised off the ground or roof deck, and they should be covered with breathable water-resistant coverings (such as canvas) that are properly secured.
- All roll materials should be stored on end. Rolls with a selvage edge should be stored with the selvage edge facing up to prevent damage. Single stacking of roll materials is recommended.
- Caution should be taken when loading and storing materials on the roof. Overloading the deck can cause deflection, ponding, and even roof collapse. Stockpiles of materials can also allow for excessive snow build-up, including snowdrifts, adding to the load on the deck.
- Roofing asphalt should always be protected from the weather. Moisture, dirt, snow, and ice must be removed from roofing asphalt before it is heated. Store and use cements, adhesives, sealers, primers, and coatings at the temperature and conditions recommended by the manufacturer; make sure products are stored with tight-fitting lids to prevent drying out, moisture intrusion, or other contamination.
- Store water-based products at an appropriate temperature to prevent freezing.
- Never throw or drop rolls of material.
- Roof insulation materials should be handled with care and stored in accordance with the manufacturer's instructions.

- Some insulation materials are extremely light and must be weighted and/or secured to avoid damage initiated by the wind.
- Storage without adequate protection against the elements can result in moisture being incorporated into the roofing system. Eventually, this could lead to roof defects and/or roof failures. All surfaces to which the roof membrane is to be applied must be dry, firm, smooth, and free of dirt and loose material.

Application Recommendations:

Plan Carefully

Acceptable weather conditions are based not only on the actual ambient temperature, but also the total combination of nature's elements (e.g., wind, humidity, dew point temperature, sun, cloud cover, shade, snow, sleet, etc.). Careful planning of work during cold weather can greatly improve the quality of the installation. Laying out the roof area and placing materials where they will be needed prior to application will minimize problems associated with cold weather application.

Use the Right Materials

When different grades of materials are specified for summer or winter use, select the appropriate grade in accordance with the manufacturer's recommendations.

Prepare Materials for Application

All materials including base sheets, plies, and cap sheets become less flexible in cold temperatures. Rolls should be stored on end in a warm (>50°F) and dry location for a minimum of 24 hours prior to application. Unroll and cut rolled materials to a maximum of 18' lengths and allow them to relax before application. Always follow manufacturer's recommendations for material preparation and handling. Disregarding proper material preparation and excessive handling of roofing products may lead to material damage and other problems including poor system performance.

Complete Each Roof Section Daily

Schedule applications so that no partially completed sections of the roof will be left exposed at the end of a workday. As the work progresses on a day-to-day basis, it is essential that each section of the roof be completed as specified. "Phasing in" or partially completing a section of the roof is not recommended. If a section of the roof is left with only part of the BUR system applied, that section will be prone to water entrapment.

Products Applied with Hot Bitumen

Temperature control is a critical priority during application. In cold weather settings, application procedures must anticipate the greater rate of heat loss from the elements. Use insulated supply lines and insulated roof top equipment to minimize asphalt temperature drop in cold weather. Do not overheat the asphalt to compensate for cold weather, and place the equipment as close to the work area as safely possible. (Given good operating equipment, a maximum of 50°F temperature drop from the kettle/tanker to point of application should be anticipated).

In any climate, at the point of application to the roofing plies, the mopping asphalt should be within its equiviscous temperature (EVT) range plus or minus 25°F. Failure to keep the asphalt at the proper application temperature could result in incorrect amounts of bitumen or poor ply adhesion. Components of the roofing system must be installed rapidly into the asphalt mopping to avoid fishmouthing and other forms of inadequate embedment. To guard against premature cooling of the asphalt, applicators or asphalt mopping should not precede the roofing plies by more than five feet.

Warning: While compensating for the rapid cooling of mopping asphalt in cold weather, it is extremely important to keep the asphalt within its specified EVT range at the point when the membrane makes contact with the asphalt. (Consult ASTM D312-15 for maximum EVTs.)

Proper insulation of all asphalt handling equipment is required to keep asphalt at an appropriate application temperature in cold weather. Insulation of the equipment is equally vital for fuel conservation and reducing make-ready time. The 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. It is especially important to keep asphalt transportation to short distances by placing equipment close to the work area.

Safety Tips:

Follow Good Housekeeping Practices

“Good housekeeping” is always an important safety factor and is an especially critical factor in the winter. Applicators wearing heavy clothes and bulky jackets are less nimble and agile, and their clothes can be easily snagged by ladders and equipment. Be sure crews are alerted to the dangers presented by snow, ice, and wind.

Debris may become hidden by snow if daily cleanups are neglected. Falls caused by these hidden objects may result in serious injuries. Additionally, it may be necessary for crews to return to the job site after the winter season to clean up what would already have been removed had proper housekeeping procedures been followed.

Summary:

- Ensure materials and substrates are dry and at the temperature and conditions recommended by the manufacturer during the application of built-up roofing.
- Do not overload the roof deck with roofing materials as this could cause snow accumulation, water ponding, and deck fatigue or failure.
- Finish roof sections daily, and apply proper watertight cut-offs and tie-ins.
- Insulate pipes, luggers, asphalt dispensers, and mop buckets.
- Maintain the kettle as full as safely possible and at the appropriate temperature to minimize heat loss.
- Keep the kettle as close as possible to the point of application of the roofing system.
- Do not overheat asphalt in the kettle. Overheating the asphalt can change the physical properties (e.g., the softening point and the ability to perform as intended).
- At no time should the kettle temperature exceed 550°F.
- Apply the asphalt at its EVT range plus or minus 25 °F.
- Roll the plies as close as possible behind the asphalt mopping to ensure the asphalt is within the EVT range at the point of contact with the ply felt.
- Broom or squeegee plies into asphalt immediately.
- Alert roofing applicators to possible safety hazards due to bulky clothing and/or slippery surfaces.
- Maintain “good housekeeping” on roof deck at all times.
- If proper point of application temperatures cannot be maintained, the roofing system should be sealed and roofing system application should be shut down until weather conditions improve.

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