



# TECHNICAL BULLETIN

## Cold Weather Recommendations for Built-Up Roofing

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### **Introduction**

The application of any type of bituminous roofing system in cold weather poses special challenges. Specific to built-up roofing systems, these challenges can include maintaining the proper asphalt temperature at the point of application, slower cure time of cold-applied adhesives, and increased stiffness of roofing materials. By following proper procedures and exercising recommended precautions, cold weather application can progress more efficiently and effectively, yielding a high-quality result. ARMA recommends the following procedures during cold weather. However, the product manufacturer's instructions should always be followed.

### **Material Selection**

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

### **Storage and Handling Recommendations**

#### ***Keep All Materials Dry and Clean***

Regardless of the season or the type of asphalt roofing system, all materials must be delivered dry and stored in a manner that assures they remain dry. Storage of any roofing materials without adequate protection against the elements can result in moisture being incorporated into the roofing system, which may lead to roof defects and/or roof failures. Whenever possible, deliver roofing materials to the job site just prior to their installation.

When materials must be stored outside, they should be placed on platforms that are raised off the ground or on a roof deck. Materials should be covered with breathable water-resistant coverings (such as canvas) that are properly secured. Protect mopping asphalt from the weather. Moisture, dirt, snow, and ice must be removed from mopping asphalt before it is heated.

#### ***Store Materials Properly***

During cold conditions, extra care must be taken to ensure roofing materials are warm enough at the time of application to undergo installation without damage. This may include keeping materials in heated storage as long as necessary prior to use.

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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. Never throw or drop rolls of material.

Store 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.

Roof insulation materials should be handled with care and stored in accordance with the manufacturer's instructions. Some insulation materials are extremely light and should be weighted and/or secured to avoid damage initiated by the wind.

Caution should be taken when loading and storing materials on the roof. Overloading the deck can cause deflection, ponding, and even roof collapse. Consider the potential for stockpiles of material to contribute to excessive snow buildup, adding to the load on the deck.

## **Application Recommendations**

### ***Plan Carefully***

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, humidity, dew point temperature, sun, cloud cover, shade, snow, sleet). 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.

### ***Prepare Materials for Application***

Roll goods must be warm enough at the time of application to permit unrolling and installation without damage due to inflexibility. All materials including base sheets, ply sheets, and cap sheets become less flexible in cold temperatures. Rolls should be stored on end in a warm (>50°F) and dry location in accordance with manufacturer instructions prior to application. Unroll and cut rolled materials to a maximum of 18' lengths and allow them to relax before application.

Use cements, adhesives, sealers, primers, and coatings at the temperature and conditions recommended by the manufacturer. Improper material preparation and excessive handling of roofing products may lead to material damage and other problems including poor system performance.



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## ***Complete Each Roof Section Daily***

Before beginning, ensure all surfaces to which the roofing system is to be applied are dry, firm, smooth, and free of dirt and loose material.

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 unless a proper watertight cut-off and tie-in are installed.

## ***Products Applied with Hot Asphalt***

Temperature control is a critical priority during application. In cold weather conditions, application procedures must anticipate the greater rate of heat loss from the elements. Use insulated supply lines and insulated rooftop equipment to minimize mopping asphalt temperature drop in cold weather. To avoid overheating the asphalt to compensate for cold weather, place the equipment as close to the work area as safely possible because a temperature drop from the kettle/tanker to point of application is expected.

In any climate, at the point of application to the roofing plies, the mopping asphalt should be within its equiviscous temperature (EVT) plus or minus 25°F. At no time should the temperature of asphalt in the kettle exceed asphalt manufacturer recommendations. Overheating the asphalt can change the physical properties (e.g., the softening point and the ability to perform as intended). Failure to keep the asphalt at the proper application temperature could result in incorrect amounts of asphalt or poor 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.

If the proper point of application temperatures cannot be maintained, the roofing system should be sealed and the roofing system application should be shut down until weather conditions improve.

**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 application range at the point of contact with the membrane. Consult ASTM D312 for maximum EVTs for Types III and IV.

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

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rooftop equipment for transporting asphalt (e.g., 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 agile, and their clothes can be easily snagged by ladders and equipment. Be sure crews are alert 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.
- Apply the asphalt in its EVT application range.
- 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.
- Always maintain “good housekeeping” on the roof deck.
- If the proper point of application temperatures cannot be maintained, the roofing system should be sealed and the roofing system application should be shut down until weather conditions improve.



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