

## TB3-COLD WEATHER MATERIAL HANDLING

# TECHNICAL BULLETIN

### Introduction

Polyurea joint fillers have the ability to cure in ambient air temperatures ranging from below freezing to over 120 degrees Fahrenheit. While this is not new information, the importance of conditioning the polyurea to a minimum of 60 degrees Fahrenheit before installation is often overlooked. "Ambient air" refers to the air temperature that surrounds the environment in which you are installing the material and does not encompass another crucial measurable, the materials temperature during installation. In this tech bulletin we will review the effects cold temperatures can have on polyurea as well as some ways to combat these challenges when filling joints in less than ideal ambient temperatures.

Ambient air temperature is also mistakenly the only temperature sometimes considered prior to beginning material installation, although the ambient temperature is important, it is often not the direct cause of challenges generated by filling in cold temperatures. The ambient temperature tolerance of polyurea is wide ranging, but the materials temperature tolerance is much more restrictive and can cause significant problems during the installation process when they are not met. Filling joints in cold temperatures can be successfully completed with only minor disruptions to the standard application process when the proper preventative steps are taken into consideration.

### Effects of Cold Material

Why does polyurea material have a recommended installation temperature of 70F or higher? Material temperature directly effects material viscosity. Higher material viscosity can prohibit a proper ratio from being dispensed from either a cartridge or pump. Polyurea, when installed cold, will typically run rich on resin because the thickened isocyanate becomes unable to properly blend in the static mixing wand with the thinner resin side. Increased material viscosity can cause damage to the pump seals and place strain on the pumps electrical system. At 50F the viscosity increase will begin causing motor strain and faster battery depletion for a cordless pump. The pressure created will also exceed the tolerance of many pumps' capabilities.

### Shipping

Shipping material during cold winter months will reduce its internal temperature and will need to be warmed up prior to use. Some things to consider when shipping or transporting material during colder months. Shipping material in the earlier part of the week will avoid material sitting in a cold shipping terminal over a weekend. For extreme cold situations or large orders, consider requesting a quote to have the material shipped with blankets or on a climate-controlled shipping trailer. When placing an order where cold or freezing temperatures are a concern speak with your Hi-Tech sales rep to discuss your shipping options.

### Storage

When storing buckets of polyurea material it is important to take steps to keep the material in a climatized area. If the installation facility is not heated, consider setting up a hot box to store material. Material should be stored at an ambient temperature above 60F. Direct ground contact should be avoided by storing the buckets on a pallet. Placing a bucket directly on a concrete slab will draw heat from the material and limit the effectiveness of a climatized space. If you have received cold material from an inbound shipment it is important to remember that it can take 24 hours or more for the cold material to acclimate to the ambient temperature. The ambient temperature of the storage location will directly correlate to the time needed for the material to reach the target temperature of 60-70F.

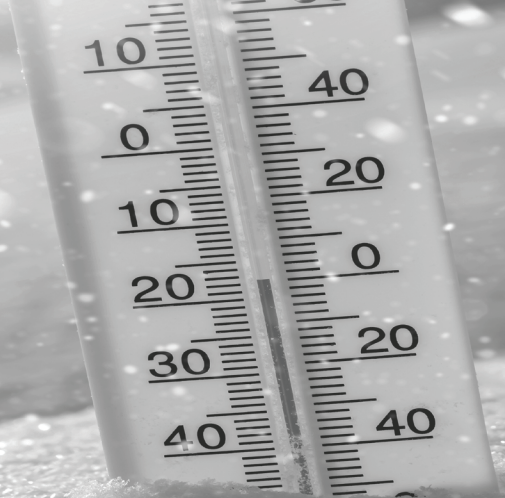
### Processing in Cold Temperatures

Only remove material from the hot box when you are ready to immediately process it through your pump. This will prevent material from rapidly cooling prior to use. When working in spaces with an ambient temperature that is at or below freezing, material set and shave time can be impacted. Contact your Hi-Tech Systems representative to request our freezer additive to improve the shave window of the material.

It is important to monitor your material temperature for the duration of the project. Hi-Tech Systems recommends using an infrared thermometer to monitor material temperatures both in and out of the pump hoppers.

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Readings should be taken while material is being poured into the pump hoppers. An infrared reading of the bucket or the material surface is often not indicative of the materials temperature in the middle of the bucket, and still may not be properly conditioned. When reading the material temperature in a pump hopper, be sure to take readings from the material surface and sides on the lower part of the hopper.

When ambient temperatures on a jobsite are below 50F, it is highly recommended to use Hi-Tech band heaters on your joint fill pump hoppers. Band heaters will prevent the material from cooling before being processed through your pump. Band heaters are also very helpful in heating up excess material from the previous shift that remains in the pump. It is important to remember that the band heaters will heat the material in the hoppers but will still leave cold material in the pump lines. Once the material has been heated in the hoppers you can recycle the material by directing each lines' flow to the correct hopper until warm material has entered the lines. If you do not wish to recycle the material run the pump into a bucket or piece of scrap material until warm material has moved into the lines. If the lines have been purged of the cold material it is safe to begin installing the joint material once you have verified proper ratio. For more information or for technical assistance contact your Hi-Tech Systems sales representative or call 1-800-454-5530.

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