



# Elevated Storage Temperatures – with MuleHide SPF



## Storage Guidelines

MuleHide's Spray Polyurethane Foam (SPF) should be kept within a temperature range of 50°F to 80°F for optimal performance.

## Effects of High Temperatures

With increasing heat, humidity, and dew points across North America, SPF products may encounter conditions beyond their ideal storage range—especially in non-climate-controlled environments like warehouses, during shipping, or on job sites. This is particularly important for HFO-based SPF formulations, which are more heat-sensitive than older HFC-based systems.

## Why HFO Chemistry is More Affected

HFO blowing agents are designed to break down before reaching the ozone layer, which contributes to their low global warming potential. However, this same property makes them more prone to degradation when stored above 85°F. At elevated temperatures, the chemical structure of the HFO agent can destabilize, leading to issues such as:

- Lower foam yield.
- Slower reaction and curing times.
- Irregular cell formation or pinholes.
- Wet or sticky tie-in lines between foam passes, increasing the risk of blistering.

## Tips for Preserving Foam Quality

To ensure consistent performance:

- Use an infrared thermometer to confirm drum temperatures are below 85°F before application.
- Keep track of environmental conditions during spraying.
- After each foam pass, inspect the tie-in line for tackiness before continuing. Applying foam over uncured layers can cause poor adhesion, cell rupture, and off-ratio defects.

If you notice signs of delayed curing or suspect the material has degraded, stop the application and investigate before proceeding.

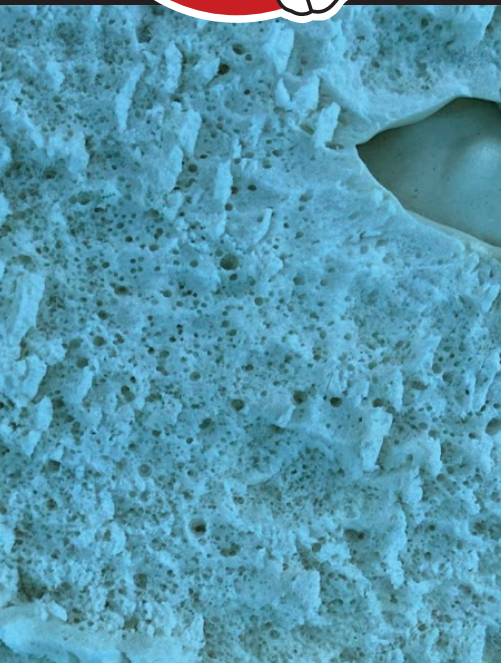
## Additional Preventive Measures

- Rotate inventory regularly to reduce prolonged exposure of any batch to unfavorable conditions.
- Whenever possible, store SPF in climate-controlled areas—especially during hot summer months or when storing for extended periods.
- Train all personnel on the specific handling requirements of HFO-based systems to minimize risks.

Maintaining detailed records of storage conditions and ambient temperatures throughout the product's lifecycle can help identify the source of any performance issues and support warranty claims. By actively managing these factors, contractors can protect both the integrity of the SPF material and the long-term durability of the finished roofing system.



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*Photo credit: BASF, Skytite® C3 Tech Tip*

## Visual Inspection and Key Findings

### Left Image:

The presence of open cells within a foam blister typically indicates contamination or moisture in the substrate. When reactivity is reduced, it can result in sticky tie-in lines and a slower rise during the second foam pass. This occurs as isocyanate interacts with moisture or contaminants, generating gas that leads to blistering and elongated cell formation.

### Center Image:

This image shows the standard cell structure found in the core of well-applied and properly processed foam, representing ideal application conditions.

### Right Image:

Pinholes visible on the foam's surface are a result of storing resin at excessively high temperatures. Prolonged exposure to heat disrupts the chemical stability of the formulation, particularly affecting the surfactant responsible for maintaining fine cell structure. This degradation allows the blowing agent to escape more readily through the surface, compromising foam quality.



The information herein should not be considered all-inclusive and should always be accompanied by a review of the MuleHide specifications and guidelines and good application practices.

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