TREMCO

TECHNICAL BULLETIN

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EXTREME TEMPERATURE VULKEM MAX CAULKING RECOMMENDATIONS

The optimal temperature range for sealant application is 40 to 100 °F (4 to 38 °C), including ambient and substrate temperatures. In applications outside this temperature range, the viscosity, skin time, tack free time, and cure time may be impacted. The following outlines procedures and recommendations for using Vulkem Max at temperatures lower than 40 °F (4 °C) and greater than 100 °F (38 °C). At temperatures below 32 °F (0 °C), the cure rate of our sealants is diminished and the presence of ice and frost on bonding surfaces becomes more likely. Both of these conditions can affect the overall cure, adhesion, and ultimate performance of the sealants in application. At temperatures greater than 100 °F (38 °C) the viscosity can be reduced and the rate of skin formation will increase. Both of these can impact the tooling and increase the chances of green cracking.

THE FOLLOWING GUIDELINES SHOULD BE FOLLOWED IN ORDER TO OPTIMIZE THE PERFORMANCE OF VULKEM MAX IN COLD WEATHER

1. Vulkem Max is a single component, moisture cure hybrid sealant. Generally, one-part sealants which cure by reaction with moisture vapor are also temperature dependant. Therefore, they will cure at a slower rate as the temperature drops.
2. Warm the primer/sealant for 24 hrs prior to use. Warming to room temperature will help to ensure adequate flow of the primer/sealant during application
3. Clean any dew, frost or ice from the substrates with an approved solvent such as MEK (methyl ethyl ketone), toluene, or xylene. These solvents are more effective in lower temperatures than IPA (isopropyl alcohol).
4. When required, primers should be treated in a similar fashion to the sealant. At temperatures lower than 32 °F the primers in question will take longer to dry than at warmer temperatures. Care should be taken to ensure adequate primer dry time prior to sealant application. Tremco primers include TREMprime Silicone Metal Primer and TREMprime Silicone Porous Primer for silicone sealants.
5. Due to cold temperatures and the increased length of cure time, installed material should be protected to prevent the depositing of debris and the displacement of the uncured sealant.

At temperatures between 0 °F (-18 °C) and 40 °F (4 °C), the sealant should be applied as described above. High performance moisture curing sealants, like Vulkem Max, have been applied successfully at temperatures as low as -20 °F (-29 °C) using these techniques.

THE FOLLOWING ENVIRONMENTAL CONDITIONS CAN AFFECT THE CURE RATE OF THE SEALANTS IN GENERAL IN ADDITION TO TEMPERATURE

1. SUBSTRATES: Moisture curing substrates (i.e. mortar, EIFS, concrete) require additional cure time in colder climates. Adequate time should be allowed for these substrates to cure prior to application of cleaners and primers prior to sealant application.
2. DEW POINT: The dew point is the temperature at which condensation can develop. If the temperature is below the dew point, the affected substrates should be cleaned with solvent using the two-rag wipe method to remove the condensation prior to primer and sealant application.
3. WIND CHILL: The major effect of wind chill is the accelerated cooling affect on the substrates and sealants. This will directly affect the time available for surface preparation and sealant application. The application characteristics of cooler sealants (i.e. reduced flow rate) result in less efficient tooling or wet out of the sealant to the substrate.

THE FOLLOWING GUIDELINES SHOULD BE FOLLOWED IN ORDER TO OPTIMIZE THE PERFORMANCE OF VULKEM MAX IN HOT WEATHER

1. Vulkem Max is a single component, moisture cure hybrid sealant. Generally, one-part sealants which cure by reaction with moisture vapor are also temperature dependant. Therefore, they will form a skin at a faster rate as the temperature increases. This will reduce the time that the sealant will remain toolable.
2. Store the primer/sealant in a cool, dry, and covered location prior to use. Keeping the materials out of direct sunlight will help to ensure adequate flow of the primer/sealant during application. In hot applications in direct sunlight, cleaning solvents may flash

off substrates quickly, reducing the effectiveness of the solvent. Additional passes using the two-rag cleaning method may be required to adequately remove all debris.

3. When required, primers should be treated in a similar fashion to the sealants. At temperatures greater than 100 °F the primers in question will flash off quicker than at cooler temperatures. This may impact dry time and open time of the Tremco primers. Tremco primers include TREMprime Silicone Metal Primer and TREMprime Silicone Porous Primer for Vulkem Max.
4. Due to increased temperatures and the reduced length of skin time, the chances of green cracking increases. This is where the sealant forms a thin skin quickly, but remains uncured below the skin. In instances of accelerated temperature decrease, this skin may stretch and tear, as the temperatures cool and the substrates contract, exposing the uncured material below. This is generally considered an aesthetic issue and does not impact the performance of the sealant. As a remedy, a skim coat of the Vulem Max can be applied and tooled to fill the affected sealant. The existing sealant should be cleaned prior to skim coat application.
5. To reduce the chances of green cracking, it is recommended to apply the sealant at the midpoint of the temperature differentials. This will allow the material to experience an equal amount of expansion and contraction during the initial cure period.
6. When possible, it is recommended to apply the material out of direct sunlight. This will reduce the substrate temperatures and increase the tool time of the sealant. This can be accomplished by working on the shade side of a building or tenting the installation area.

At temperatures above 100 °F (38 °C), the sealant should be applied as described above. High performance moisture curing sealants, like Vulkem Max, have been applied successfully at temperatures as high as 140 °F (60 °C) using these techniques.

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