

Cold Weather Sealing Guidelines

Relevant for use with GE silicone sealants: SCS2000, SCS9000, SCS2700, SCS2900, SCS9100, SCS2350, SCS2800, SCS1200, SWS

Installation Temperature:

As temperatures fall, frost can form on cold surfaces at or near freezing which may not be noticeable or recognized by the installer. Furthermore, it is usually the case that moisture/frost becomes increasingly challenging to remove (particularly on porous substrates) as temperatures drop. Frost or moisture on a surface to receive sealant can interfere with the adhesion of the sealant to the substrate. It is for this fundamental reason that it is more conducive to install sealants when the ambient temperature is at or above 40° F (4°C), however sealing can proceed on most substrates at temperatures lower than 40° F (4°C) after consultation with GE technical services and with the understanding that it is the installers responsibility to assure a clean, dry substrate by consistently removing moisture and/or frost. For additional in-depth discussion of this topic, reference the latest version of ASTM C1193 Standard Guide for Use of Joint Sealants, section 5.9.1; available at astm.org.

Frost Removal:

Complete removal of moisture/frost on surfaces that will receive sealant is critical for successful adhesion. IPA is a water-soluble solvent and may be more helpful in removing condensation than other solvents. Sealant should not be installed if it is snowing, raining, sleeting, etc.

Cure Time:

The lower the temperature, the longer it will take for the sealant to skin over, become tack-free, and cure through the full depth of the installed bead. Under extreme winter conditions it could take two or three days for silicone to become tack-free (depending on humidity and temp). Adhesion testing during winter climates should not proceed, and would not be indicative of bond strength, until sufficient cure has taken place. Contact a GE representative for cure time estimations in cold weather.

Movement During Cure (MDC):

Since the sealant takes longer to skin-over and cure, the chances for surface irregularities in the sealant increase due to substrate movement from normal building expansion/contraction during the sealant cure phase.

For additional discussion of MDC, the following references are helpful:

- ASTM C1193 – Standard Guide for Use of Joint Sealants (see section 12.5)
- ASTM C1472 – Standard Guide for Calculating Movement and Other Effects when Establishing Sealant Joint Width
- ASTM STP1286 – Movement During Cure of High Performance Building Joint Sealants (p.129)
- ASTM STP1168 – Deformation of Building Sealants Due to Movement During Cure (p. 5)

Sealant Rheology:

Silicone sealant can be readily dispensed at cold temperatures as the physical consistency and flow characteristics of the silicone in the uncured state (paste) remain virtually unchanged (to -20° F (-29°C) and cartridges do not require heating or other preparation. Temperatures colder than this begin to affect the installer's ability to extrude the uncured paste.