



DEVELOPMENTAL Technical Data Sheet

## DOWSIL™ CN 3180 RTV adhesive

One-part, clear, fast tacky-free, adhesive with medium viscosity and fluidity

### Features & Benefits

- Fast tack-free and room temperature cure, no ovens required
- Fast in-line processing at room temperature with option for heat acceleration
- Good flow, wetting, and self-leveling after dispensing
- No mixing required
- Solventless and VOC free
- Cures to soft, low stress elastomer/soft coating, improving reliability against stress
- Good adhesion to most substrates.

### Composition (Optional)

- One-part, clear
- Polydimethylsiloxane

### Applications

- Protective Coating for corrosion sensitive components
- Protection for rigid and flexible circuit board
- Adhesive and sealant for electronics devices

### Typical Properties

Specification Writers: The tests and values listed below are not intended for use in preparing specifications. Certain tests mentioned below may only be performed during development of the product and may no longer be provided if the product is commercialized.

Property	Unit	Result
One or Two Part	-	One
Color	-	clear
Viscosity at 100 rpm, 25°C	cP	23180
Specific Gravity (Cured)	g/ml	1.0
Tack-Free Time at 25°C	minutes	35
Tensile Strength	MPa	0.9
Elongation	%	167
Dielectric Strength	kV/mm	15
Durometer Shore A	Shore A	35
Volume Resistivity	Ohm*cm	1.5E+17
Dielectric Constant at 1 khz	-	2.6
Dissipation Factor at 1 Khz	-	0.00014
NVC (Non volatile content)	%	97.5%

## **Description**

DOWSIL™ one-part moisture cure adhesives are generally cured at room temperature and in an environment of 30 to 80 percent relative humidity eliminating the need for curing ovens and the associated costs of energy and capital. Greater than 90 percent of full physical properties should be attained within 24 to 72 hours and varies according to product. Faster manufacturing throughput can be achieved since the adhesive and component can be handled in much shorter times of about 10 to 120 minutes, depending on the adhesive selected and the amount applied. These adhesives are not typically used in highly confined spaces or where a deep section cure is required as they generally cure from the exposed surface inward at a rate of 0.25 inch per seven days. Cure progresses from the outer exposed surface and is dependent on the moisture in the air. Working time is generally a few minutes to an hour for these products until a surface skin begins to form. Mild heat below 60°C (140°F) may be used to increase throughput by accelerating the cure. DOWSIL™ silicone adhesives retain their original physical and electrical properties over a broad range of operating conditions which enhance the reliability of and service life of electronic devices. The stable chemistry and versatile processing options of these adhesives offer benefits for a variety of electronics needs from increasing component safety and reliability, reducing total cost or increasing the performance envelope of devices or modules.

## **Application methods**

- Automated or manual needle dispensing systems
- Brushing or dipping

## **Preparing Surfaces**

All surfaces should be thoroughly cleaned and/or degreased with DOWSIL™ OS Fluids, naphtha, mineral spirits, methyl ethyl ketone (MEK) or other suitable solvent. Solvents such as acetone or isopropyl alcohol (IPA) do not tend to remove oils well, and any oils remaining on the surface may interfere with adhesion. Light surface abrasion is recommended whenever possible, because it promotes good cleaning and increases the surface area for bonding. A final surface wipe with acetone or IPA is also useful. Some cleaning techniques may provide better results than others; users should determine the best techniques for their particular applications.

## **Adhesion**

DOWSIL™ silicone adhesives are specially formulated to provide unprimed adhesion to many reactive metals, ceramics and glass, as well as to selected laminates, resins and plastics. However, good adhesion cannot be expected on non-reactive metal substrates or non-reactive plastic surfaces such as Teflon, polyethylene or polypropylene. Special surface treatments such as chemical etching or plasma treatment can sometimes provide a reactive surface and promote adhesion to these types of substrates. DOWSIL™ primers can be used to increase the chemical activity on difficult substrates. Poor adhesion may be experienced on plastic or rubber substrates that are highly plasticized, because the mobile plasticizers act as release agents. Small-scale laboratory evaluation of all substrates is recommended before production trials are made.

## **Useful Temperature Ranges**

For most uses, silicone adhesives should be operational over a temperature range of -45 to 200°C (-49 to 392°F) for long periods of time. However, at both the low- and high temperature ends of the spectrum, behavior of the materials and performance in particular applications can become more complex and require additional considerations. For low temperature performance, thermal cycling to conditions such as -55°C (-67°F) may be possible, but performance should be verified for your parts or assemblies. Factors that may influence performance are configuration and stress sensitivity of components, cooling rates and hold times, and prior temperature history. At the high-temperature end, the durability of the cured silicone elastomer is time and temperature dependent. As expected, the higher the temperature, the shorter the time the material will remain useable.

**Usable Life and Storage**

For best results, DOWSIL™ RTV adhesives should be stored at or below the storage temperature listed on the product label. Special precautions must be taken to prevent moisture from contacting these materials. Containers should be kept tightly closed with head or air space minimized. Partially filled containers should be purged with dry air or other gases, such as nitrogen. The product should be stored in its original packaging with the cover tightly attached to avoid any contamination. Store in accordance with any special instructions listed on the product label. The product should be used by its Use Before date as indicated on the product label.

**Packaging Information**

Typical 330 ml cartridge packaging sizes are available for this product. Please contact your local distributor or Dow representative for information on packaging size and availability.

**Developmental Product Disclaimer**

DOWSIL™ CN 3180 RTV adhesive is a Dow developmental material. The composition, features, benefits and other properties are subject to change. The future availability of this product is not guaranteed. You are responsible to determine the suitability of the Product for your contemplated use. The Product is provided "AS IS" WITH ALL FAULTS, AND WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.

