



## Technical Data Sheet

### DOWSIL™ EA-6060 Adhesive

#### FEATURES & BENEFITS

- Durable adhesion to typical substrates used in automotive applications (i.e., PBT 30GF, PA 66, steel, aluminum)
- Cure and develop adhesion at 80°C within maximum of 30 minutes
- Heat accelerated

#### COMPOSITION

- Two part material
- Optimized adhesion package to allow a lower temperature activity
- Use of a scavenger to reduce voids during cure
- UV dye for inspection

DOWSIL™ EA-6060 Adhesive is a two-part, non-flowing silicone adhesive enabling assembly production savings due to a fast cure at moderate temperature

#### APPLICATIONS

- This material fits a variety of control units or sensors modules applications in automotive where lid seal, base plate attaching, gasketing or connector sealing is required and where reliable adhesion is necessary

#### TYPICAL PROPERTIES

Specification Writers: These values are not intended for use in preparing specifications.

Test <sup>1</sup>	Property	Unit	Result
CTM 0176B	One or Two-part	-	Two
CTM 0176B	Mix ratio (weight or volume)	-	1:1
CTM 0176B	Color A/B	-	Black/White
CTM 1094R	Viscosity <sup>2</sup>		
	Part A	Pa.s	190
	Part B	Pa.s	90
	Mixed	Pa.s	115
CTM 1094N	Thixotropic Index Mixed <sup>3</sup>	-	3.7
CTM 0097G	Specific Gravity Part A/Part B	-	1.3 / 1.2
	Cure Time to build adhesion on typical substrates		
	at 80°C	minutes	30
	at 90°C	minutes	15
	at 100°C	minutes	10
ASTMD 7750	Working Time at 25°C	hour	1
CTM 0243	Open Time at 25°C	hour	< 2
CTM 022B	Specific Gravity (Cured)	-	1.25
CTM 0137	Tensile Strength	MPa	3.1
CTM 0137	Elongation	%	290

<sup>1</sup>CTM: Corporate Test Method, copies of CTM's are available on request

ASTM: American Society for Testing and Materials

<sup>2</sup>10s<sup>-1</sup>/PP25/200μ

<sup>3</sup>Steady shear: 1s<sup>-1</sup>/10s<sup>-1</sup>

## TYPICAL PROPERTIES (continued)

Test	Property	Unit	Result
CTM 0099	Durometer Shore A	-	42
ASTM E831	Linear CTE -45 to 200°C (by TMA)	ppm/°C	214
CTM 0243	Unprimed Adhesion Lap Shear <sup>4</sup>		
	Aluminum AlSi <sub>10</sub> Mg		2.8
	Aluminum AlMg <sub>1</sub>		2.3
	PBT Ultradur® B4300 G6 Q16		2.3
	PA 66 Ultramid® A3		2.3
CTM 0114	Dielectric Strength	kV/mm	18

<sup>4</sup>Cure: 30 minutes at 80°C

### DESCRIPTION

DOWSIL™ EA-6060 Adhesive is a two-part, low temperature cure adhesive enabling assembly production savings due to a fast cure at moderate temperature (80°C). It contains a scavenger to reduce voids. Addition-cure silicones are formulated with all necessary ingredients for cure and there are no by-products generated during the cure process. Deep-section or confined cures are possible as cure reactions progress evenly throughout the material. These adhesives generally have long working times so users can enjoy the greatest manufacturing flexibility and reduce waste. Dow 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 devices.

### MIXING AND DE-AIRING

The high viscosity of these materials allows for use as supplied without mixing the part A or the part B. Although both are designed to not exhibit filler settlement upon standing and therefore not require mixing, should filler settlement occur, the material in the containers should be thoroughly mixed prior to use to ensure a uniform product mix. Automated airless dispense equipment can be used to reduce or avoid the

need to de-air. If de-airing is required to reduce voids in the cured elastomer, consider a vacuum de-air schedule of > 28 inches Hg for 10 minutes or until bubbling subsides.

### ADHESION

Dow 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. Dow 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.

### COMPATIBILITY

Certain materials, chemicals, curing agents and plasticizers can inhibit the cure of addition cure adhesives. Most notable of these include: organotin and

other organometallic compounds, silicone rubber containing organotin catalyst, sulfur, polysulfides, polysulfones or other sulfur containing materials, unsaturated hydrocarbon plasticizers, and some solder flux residues. If a substrate or material is questionable with respect to potentially causing inhibition of cure, it is recommended that a small scale compatibility test be run to ascertain suitability in a given application. The presence of liquid or uncured product at the interface between the questionable substrate and the cured gel indicates incompatibility and inhibition of cure.

### PREPARING SURFACES

All surfaces should be thoroughly cleaned and/or degreased with Dow 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.

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## **SUBSTRATE TESTING**

Due to the wide variety of substrate types and differences in substrate surface conditions, general statements on adhesion and bond strength are impossible. To ensure maximum bond strength on a particular substrate, cohesive failure of the product in a lap shear or similar test is needed to ensure compatibility of the adhesive with the substrate being considered. Also, this test can be used to determine minimum cure time or to detect the presence of surface contaminants such as mold release agents, oils, greases and oxide films.

## **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.

## **SOLVENT EXPOSURE**

The silicone adhesive discussed in this literature is intended only to survive splash or intermittent exposures. It is not suited for continuous solvent or fuel exposure. Testing should be done to confirm performance of the adhesives under these conditions.

## **HANDLING**

### **PRECAUTIONS**

**PRODUCT SAFETY INFORMATION REQUIRED FOR SAFE USE IS NOT INCLUDED IN THIS DOCUMENT. BEFORE HANDLING, READ PRODUCT AND SAFETY DATA SHEETS AND CONTAINER LABELS FOR SAFE USE, PHYSICAL AND HEALTH HAZARD INFORMATION. THE SAFETY DATA SHEET IS AVAILABLE ON THE DOW WEBSITE AT WWW.CONSUMER.DOW.COM, OR FROM YOUR DOW SALES APPLICATION ENGINEER, OR DISTRIBUTOR, OR BY CALLING DOW CUSTOMER SERVICE.**

### **USABLE LIFE AND STORAGE**

Refer to product label for storage temperature conditions. Containers should be kept tightly closed and kept in cold storage at all times to extend shelf life. 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**

Multiple packaging sizes are available for this product.

### **LIMITATIONS**

This product is neither tested nor represented as suitable for medical or pharmaceutical uses.

## **HEALTH AND ENVIRONMENTAL INFORMATION**

To support customers in their product safety needs, Dow has an extensive Product Stewardship organization and a team of product safety and regulatory compliance specialists available in each area.

For further information, please see our website, [www.consumer.dow.com](http://www.consumer.dow.com) or consult your local Dow representative.

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