



## Technical Data Sheet

### DOWSIL™ TC-3060 Thermal Gel

One-part, thermally conductive re-workable gel.

#### Features & Benefits

- One-part, blue, dispensable and curable thermal gel
- Re-workable after curing
- Room temperature curing or accelerated at 60°C or higher for shorter curing time
- Resists humidity and other harsh environments without cracking and slumping
- Low volatile content
- Potential application to replace fabricated thermal pad
- 60 g/min extrusion rate to support easy auto dispensing process
- 6.5 W/mk thermal conductivity to help power device thermal design

#### Composition

- One-part
- Silicone gel

#### Applications

- Thermal interface material used for smartphone CPU and memory chips
- Dispensed or screen printed to various thickness and shapes for general thermal
- Management of PCB system assemblies

#### Typical Properties

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

| Test <sup>1</sup> | Property                        | Unit              | Result |
|-------------------|---------------------------------|-------------------|--------|
|                   | One or Two-part                 |                   | One    |
| CTM 0176          | Color                           |                   | Blue   |
| CTM1094R          | Viscosity (10 s <sup>-1</sup> ) | Pa·s              | 200    |
| CTM 0364A         | Extrusion Rate                  | g/min             | 60     |
| CTM0436           | Curing Time at 100°C            | min               | 30     |
| CTM 0099B         | Durometer                       | Shore 00          | 60     |
| ASTM D412         | Tensile Strength                | MPa               | 0.2    |
| ASTM D412         | Elongation                      | %                 | 20     |
| CTM 0022          | Specific Gravity (Cured)        | g/cm <sup>3</sup> | 3.45   |
| ASTM D1824        | Working Time at 25°C            | days              | 7      |

1. CTM: Corporate Test Method, copies of CTM's are available on request.  
ASTM: American Society for Testing and Materials.

## Typical Properties (Cont.)

| Test      | Property                                       | Unit   | Result |
|-----------|------------------------------------------------|--------|--------|
| CTM 0114D | Dielectric Strength                            | kV/mm  | 10     |
| CTM 0249  | Volume Resistivity                             | ohm*cm | 7 E+13 |
| CTM1388B  | Thermal Conductivity (Hot Disk)                | W/mK   | 6.5    |
|           | Shelf Life from Date of Manufacturing at -10°C | months | 12     |
| CTM1107   | BLT (Bond Line Thickness)                      | micron | 150    |
| CTM0010   | NVC                                            | %      | 99.9   |

### Description

DOWSIL™ TC-3060 Thermal Gel is one-part, heat cure silicone based thermally conductive gel with good re-workability. It's supplied as non-flowable paste and can be pressed lower to 150 um thickness in thermal management application. It can be cured to elastic pad with certain tensile strength and elongation which can make sure the material can be peeled off easily and completely without residue in rework process.

### Application Methods

- Automated dispensing
- Stencil printing

### Processing/ Curing

DOWSIL™ TC-3060 Thermal Gel can be dispensed or screen printed to various thickness and shapes and cured within 30 min at 100°C, or 1 hour at 80°C. To accelerate the curing speed, higher curing temperature can be adopted, for example the material can be cured within 20 minutes at 120°C.

Before application, the suggested thawing time is 1 hour at room temperature (23°C).

### Working Time (Open Time)

DOWSIL™ TC-3060 Thermal Gel starts curing slowly after being dispensed on substrates at room temperature. The viscosity increases over time, which means higher pressure is needed when pressing the gel to a certain thickness. The working time depends on the highest pressure applied on the devices allowed by the application. Generally the working time is over 7 days at room temperature.

### Adhesion and Re-workability

In the manufacture of PCB system assemblies, it is often desirable to salvage or reclaim damaged or defective units. DOWSIL™ TC-3060 Thermal Gel has a good balance of adhesion and re-workability. On one hand, the adhesion strength to general substrates of thermal devices like heat sink (Aluminum, Al/Mg alloy) and encapsulated chip (epoxy surface) can resist the mechanical and climate reliability ageing test, on the other hand, the cured material can be peeled off completely without residue in rework process.

**Useful  
Temperature  
Ranges**

For most uses, silicone adhesives should be operational over a temperature range of -45 to 150°C 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 usable.

**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 DOW.COM, OR FROM YOUR DOW SALES APPLICATION ENGINEER, OR DISTRIBUTOR, OR BY CALLING DOW CUSTOMER SERVICE.

**Usable Life and  
Storage**

The product should be stored in its original packaging with the cap tightly fastened to avoid any contamination. Stored below -5°C during Transportation. Stored at -10°C or below in plant. DOWSIL™ TC-3060 Thermal Gel has a shelf life of 12 months after the manufacturing date.

**Packaging  
Information**

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

**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, [dow.com](http://dow.com) or consult your local Dow representative.

**Disposal  
Considerations**

Dispose in accordance with all local, state (provincial) and federal regulations. Empty containers may contain hazardous residues. This material and its container must be disposed in a safe and legal manner.

It is the user's responsibility to verify that treatment and disposal procedures comply with local, state (provincial) and federal regulations. Contact your Dow Technical Representative for more information.

## **Product Stewardship**

Dow has a fundamental concern for all who make, distribute, and use its products, and for the environment in which we live. This concern is the basis for our product stewardship philosophy by which we assess the safety, health, and environmental information on our products and then take appropriate steps to protect employee and public health and our environment. The success of our product stewardship program rests with each and every individual involved with Dow products - from the initial concept and research, to manufacture, use, sale, disposal, and recycle of each product.

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To discuss how we could work together to address your specific needs, go to **dow.com** for a contact close to your location. Dow has customer service teams, science and technology centers, application support teams, sales offices, and manufacturing sites around the globe.

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