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Technical Data Sheet

DOWSIL™ ME-1070 Adhesive Black

Microelectronics adhesive

Features & Benefits

- Low levels of ionic impurities
- Addition cure chemistry
- Low modulus
- No byproducts during cure
- Absorbs stress from CTE mismatch for improved reliability performance
- Suitable for dispensing

Composition

- Polydimethylsiloxane
- Silica

Applications

- Die attach adhesive for microelectronics packaging

Typical Properties

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

Property	Unit	Result
One or Two-part		One
Color		Black
Viscosity	cP	20,000
	mPa-sec	20,000
	Pa-sec	20
Thixotropy	NA	2.9
Time for 20% Rise in Viscosity at 25°C	hours	> 24
Heat Cure Time @ 150°C	minutes	30
Durometer Shore A		72
Specific Gravity (Cured)		1.2
Unprimed Adhesion - Lap Shear (Al)	psi	1,000
	MPa	6.9
	N/cm^2	690
Tensile Strength	psi	500
	MPa	3.4
	kg/cm^2	34

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Typical Properties (Cont.)

Property	Unit	Result
Elongation	%	25
Dielectric Strength	volts/mil	475
	kV/mm	19
Dielectric Constant at 100 Hz		2.82
Dielectric Constant at 100 kHz		2.81
Volume Resistivity	ohm*cm	2.10E+15
Dissipation Factor at 100 Hz		0.0011
Dissipation Factor at 100 kHz		< 0.0002
Linear CTE (by TMA)	ppm/°C	250
Impurity (Na+)	ppm	0.5
Impurity (K+)	ppm	0.75
Impurity (Cl-)	ppm	2.2

Description

DOWSIL™ ME-1070 Adhesive Black is a one-part, black, flowable, high strength adhesive with self priming adhesion. Dow microelectronics adhesives are designed to meet key criteria in the micro- and optoelectronic packaging industry, including high purity, moisture resistance and thermal and electrical stability. The products deliver outstanding stress relief and high-temperature stability, with excellent primerless adhesion to a wide range of substrate materials and components. These products are ideally suited for micro-electronic devices requiring low-modulus materials, for lead-free solder reflow temperatures (260°C), or other high-reliability applications. Dow microelectronics adhesives are supplied as convenient, one-part materials, with specific formulations developed for electrical conductivity, electrical insulation or thermal conductivity, all of which cure via heat without byproducts.

Preparing Surfaces

All surfaces should be thoroughly cleaned and/or degreased with solvents such as Dow OS fluids, naphtha, mineral spirits, or methyl ethyl ketone (MEK). Light surface abrasion is recommended whenever possible, because it promotes good cleaning and increases the surface area for bonding. A final surface wipe with IPA is also useful to remove residues that may be left behind by other cleaning methods. On some surfaces, different cleaning techniques will give better results than others. Users should determine the best techniques for their applications.

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.

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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 product indicates incompatibility and inhibition of cure.

Repairability

Removal of Dow PCB system assemblies materials to allow for failure analysis can be assisted with Dow OS fluids. Additional information regarding these products is available from Dow.

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

Shelf life is indicated by the “Use By” date found on the product label. For best results, Dow adhesives should be stored at or below the maximum specified storage temperature. Special precautions must be taken to prevent moisture from contacting these materials. Containers should be kept tightly closed and head or air space minimized. Partially filled containers should be purged with dry air or other gases, such as nitrogen. Any special storage and handling instructions will be printed on the product containers.

Packaging Information

Storage and Handling of Syringes
Ship time is variable based on destination but is targeted to be within 7 days on blue ice. Material should be stored at -10 to -25°C immediately upon arrival. Repeated freezing and thawing should be avoided. To prepare a syringe of material for use, please follow the directions in order. Allow the syringe to sit at least one hour at room temperature on its side and without opening the plastic bag. Upon opening the bag, remove the syringe dust cap right away. The tip plug should be removed just prior to placing the syringe in the dispenser. Air pressure from 10–30 psi should be used or augur dispense systems.

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 or consult your local Dow representative.

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