Product Information
Electronics

DOW CORNING

Dow Corning® SE 4430 A & B

FEATURES & BENEFITS

- Low viscosity for good flowability
- Soft, stress relieving gel provides shock dampening
- Thermally conductive for heat transfer away from electronic devices
- UL V-0 recognized

COMPOSITION

- Polydimethylsiloxane matrix
- Thermally conductive fillers

Two part, 1 to 1 mix ratio, thermally conductive gel

APPLICATIONS

- *Dow Corning*® SE 4430 A & B is designed to provide efficient thermal transfer for the cooling of electronic modules, including applications in power supply.

TYPICAL PROPERTIES

Specification Writers: These values are not intended for use in preparing specifications. Please contact your local Dow Corning sales office or your Global Dow Corning Connection before writing specifications on this product.

Property	Unit	Result
One part or Two part	-	Two
Color	-	Gray
Mix Ratio	-	1:1
Viscosity (Part A)	cP mPa-sec Pa-sec	9500 9500 9.5
Viscosity (Part B)	cP mPa-sec Pa-sec	4200 4200 4.2
Viscosity (Mixed)	cP mPa-sec Pa-sec	6700 6700 6.7
Specific Gravity (Cured)	-	2.23
Working Time at 25ºC	Hours	2
Heat Cure at 120ºC	Minutes	30
Durometer	Shore OO	70
Penetration	1/10 mm	32
Elongation	%	400
Tensile Strength	psi mPa Kg/cm^2	620 4.3 44
Dielectric Strength	Volt/mil kV/mm	454 18
Dielectric Constant	100 Hz 100 kHz	4.6 4.6
Dissipation Factor	100 Hz 100 kHz	0.002 0.0002

TYPICAL PROPERTIES (Continued)

Property	Unit	Result
Volume Resistivity	Ohm-cm	1.9E+14
Coefficient Of Thermal Expansion (Linear CTE)	ppm/ºC	175
Thermal Conductivity	btu/hr-ft-ºF W/mK NA	0.555 0.96
UL Flammability Classification		UL 94 V-0

DESCRIPTION

Electronic devices are continually designed to deliver higher performance. Especially in the area of consumer electronics, there is also a continual trend towards smaller, more compact designs. In combination these factors typically mean that more heat is generated in the device. Thermal management of electronic devices is a primary concern of design engineers. A cooler device allows for more efficient operation and better reliability over the life of the device. As such, thermally conductive compounds play an integral role here. Thermally conductive materials act as a thermal “bridge” to remove heat from a heat source (device) to the ambient via a heat transfer media (i.e. heat sink). These materials have properties such as low thermal resistance, high thermal conductivity, and can achieve thin Bond Line Thicknesses (BLTs) which can help to improve the transfer of heat away from the device.

SUBSTRATE TESTING

To ensure maximum bond strength for adhesives on a particular substrate, 100 percent cohesive failure of the gel in a lap shear or similar adhesive strength test is needed. This ensures compatibility of the gel 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.

MIXING AND DE-AIRING

Upon standing, some filler may settle to the bottom of the liquid after several weeks. To ensure a uniform product mix, the material in each container should be thoroughly mixed prior to use. Two-part materials should be mixed in the proper ratio either by weight or volume. The presence of light-colored streaks or marbling indicates inadequate mixing. 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 > 8 inches Hg (or a residual pressure of 10- 0 mm of Hg) for 10 minutes or until bubbling subsides.

PROCESSING/CURING

Cure rates are rapidly accelerated with heat (see heat-cure times in Typical Properties table). Addition-curing materials contain all the ingredients needed for cure with no by-products from the cure mechanism. Deep-section or confined cures are possible. Cure progresses evenly throughout the material. These materials generally have long working times.

POT LIFE AND CURE RATE

Cure reaction begins with the mixing process. Initially, cure is evidenced by a gradual increase in viscosity, followed by gelation and conversion to its final state. Pot life is defined as the time required for viscosity to double after Parts A and B (base and curing agent) are mixed.

USEFUL TEMPERATURE RANGES

For most uses, silicone gels should be operational over a temperature range of -45 to 150ºC (-49 to 302ºF) 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 -55ºC (-67ºF) may be possible for most products, 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 silicones is time and temperature dependent. As expected, the higher the temperature, the shorter the time the material will remain useable.

REPAIRABILITY

A gel can simply be poured into the cleaned repaired area and cured.

SOLVENT EXPOSURE

In general, the product is resistance to minimal or intermittent solvent exposure, however best practice is to avoid solvent exposure altogether.

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2014; February 7
Form No. 11-3063-01

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USABLE LIFE AND STORAGE

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 the indicated "Exp. Date" found on the label.

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 Corning has an extensive Product Stewardship organization and a team of Product Safety and Regulatory Compliance (PS&RC) specialists available in each area.

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