



# TC-208

## Water Cleanable, Thermally Conductive Grease

### Description:

Thermoset TC-208 is a non-reactive, non-silicone, thermally conductive grease with a soft, nonflowable consistency. It is designed for applications where a silicone-free thermal interface material is required and where the device may later need to be easily removed from the heat sink. This formulation is ideally suited for use in thin cross-sectional thicknesses down to  $\leq 1$  mil. It can be used with a variety of emerging and standard devices in flip chip, PPGA, BGA, and microBGA packages. TC-208 is ideally suited for use on microprocessor, DSP, graphic accelerator and high speed memory devices. Due to its thixotropic nature, TC-208 exhibits low bleed on a wide variety of surfaces and has a successful history of use especially in flip applications.

Other typical device applications include power transistors, diodes, and silicon-controlled rectifiers. In these situations, a small amount of the thermally conductive grease, using either dispensing or screen printing/stenciling, is applied to either the device or the heatsink, FanSink or Heat Pipe Base. The thixotropic character of the TC-208 grease will usually hold the device in place until mechanical fastening or attachment occurs.

Thermoset TC-208 is easily cleaned with water or aqueous detergent cleaning solutions. This eliminates the need to use a solvent that may be flammable or contain CFCs that carry a federal tax burden. TC-208 does not contain any silicone resins/additives or abrasive fillers.

This proprietary formulation is protected under US Patent #5,167,851.

### Key Features and Benefits:

- + Superior Thermal Performance – 1.2 W/m<sup>2</sup>C
- + Rated for 85°C Continuous Operation
- + Silicone-Free
- + Thin Bondlines to  $\leq 1$  mil
- + Easy to Apply by Dispensing or Printing
- + Reworkable/Easy to Remove
- + Aqueous Cleanability
- + Good 85/85 and other Reliability Performance
- + Low Bleed
- + High Volume Resistivity

### Typical Properties:

<b>Viscosity:</b> (ASTM D 2393)	500,000 cps
<b>Specific Gravity:</b>	2.46
<b>Thermal Conductivity:</b>	1.2 (W/m <sup>2</sup> C)
	$28 \times 10^{-4}$ (cal x cm)/(sec x cm <sup>2</sup> x °C)
	(ASTM F-433)
<b>Bleed:</b> (24 Hours. @ 150°C)	Nil
<b>Color:</b>	White
<b>Maximum Continuous Service Temperature:</b>	85°C
<b>Weight Loss:</b>	0.5% Max – 24 hours @ 150°C 20.0% - 1 Hour @ 300°C
<b>Dielectric Constant @ 25°C:</b>	
1 kHz	3.46
10 kHz	3.35
100 kHz	3.31
1MHz	3.27
	(ASTM D 150)
<b>Dissipation Factor @ 25°C:</b>	
10 kHz	0.0201
100 kHz	0.0101
1MHz	0.0128
	(ASTM D 150)

### Shelf Life:

Thermoset TC-208 has a shelf life of six months at room temperature (25°C) in unopened containers. Slight settling of the filler may occur during long term storage. In this case, it is recommended to refrigerate material at 0-10°C to avoid any settling.

**Clean-Up:**

It is recommended that customers use disposable containers and utensils whenever possible to simplify clean-up. However, when disposable materials are impractical, TC-208 can be removed by cleaning equipment with water or aqueous detergent solutions. Observe appropriate precautions when using flammable solvents. Solvent and aqueous cleaned utensils should be thoroughly dried before reuse. Any remaining solvent can contaminate the next application of TC-208.

**Handling Precautions:**

The labels on containers of Thermoset materials contain current information on the hazards associated with each particular product. Most resins and hardeners are skin and eye irritants, and some may actually be corrosive to the skin and eyes. Other problems, such as skin sensitization or serious health hazards may exist. Further information on each product is contained in the Material Safety Data Sheet, which will be sent upon request.

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