

Description

The 8616 *Super Thermal Grease II* is a low thermal resistance grease with a synthetic oil base that is electrically insulating and non-corrosive. It is used to improve the thermal interface contact conductivity between heat sinks, LEDs, motors, and heat-generating electronic components such as CPUs, GPU chipsets, and power components. It improves the thermal interface between irregular and pitted surfaces.

Benefits & Features

- **High thermal conductivity**
- **Silicone free and non-bleeding**
- **Excellent corrosion resistance**—Passed ASTM B 117 1 000 hours
- **Lowers the contact resistance between irregular surfaces**
- **Extends the life of electronic components**
- **Electrically insulating**
- **Safe on plastics**

Usage Parameters

<i>Properties</i>	<i>Value</i>
Shelf Life	5 y
Theoretical Coverage for 3 mL syringe ^{a)}	<1 180 cm ² <0.64 ft ²

a) Idealized estimate based on 25 μm [1.0 mil] thickness and 100% transfer efficiency.

Temperature Ranges

<i>Properties</i>	<i>Value</i>
Constant Service Temperature	-68 to 165 °C [-90 to 329 °F]
Storage Temperature Limits	-10 to 40 °C [14 to 104 °F]

Principal Components

Name	CAS Number
Aluminum oxide	1344-28-1
Zinc oxide (thermally conductive filler)	1314-13-2

Properties

<i>Thermal Properties</i>	<i>Method</i>	<i>Value</i>
Thermal Conductivity @25 °C [77 °F]	ASTM E 1461	1.78 W/(m·K)
Contact Thermal Resistance ^{a)}	ASTM E 1225	0.24 x 10 ⁻³ (m ² K)/W

a) Tested with stainless steel plates

Super Thermal Grease II 8616 Technical Data Sheet

8616

<i>Electrical Properties</i>	<i>Method</i>	<i>Value</i>
Volume Resistivity (ρ_v)	ASTM D 257	$1.8 \times 10^{11} \Omega \cdot \text{cm}$
Volume Conductivity (σ_v)	"	$5.6 \times 10^{-12} \text{ S/cm}$
Dielectric Strength @50 mil gap	ASTM D 149	330 V/mil [13 kV/mm]
Breakdown Voltage	"	16 600 V [16.6 kV]
Dielectric Constant @1 000 cps	ASTM D 150	6.77
@10 000 cps	"	6.69
Dissipation Factor @1 000 cps	"	0.01
@10 000 cps	"	0.01

TBD=To be determined

<i>Grease Properties</i>	<i>Method</i>	<i>Value</i>
Evaporation Loss, 22 h @165 °C [329 °F]	ASTM D 2595	1.2%
Oil Separation, 30 h @165 °C [329 °F]	ASTM D 6184	0.02%
Dropping Point	ASTM D 2265	>300 °C [>572 °F]
Water Washout @38 °C [100 °F]	ASTM D 1264	0.9%
Worked Penetration, unworked	ASTM D 217	284
60 strokes	"	287
10 000 Strokes	"	313
Salt Spray Corrosion Resistance ^{a)}	ASTM B 117	Pass

<i>Physical Properties</i>	<i>Method</i>	<i>Value</i>
Color	ASTM D 1475	White, silvery
Odor		Odorless
Density @25 °C [77 °F]		2.69 g/mL
Viscosity		Thixotropic paste
Lubricant		No
Bleed		Yes
Corrosion Resistant		Yes
Filler		Aluminum oxide, zinc oxide

a) Aluminum 2024 coupons with 254 μm [10 mil] film thickness and 1 000 hours exposure to 5% salt spray

<i>Synthetic Oil Properties</i>	<i>Method</i>	<i>Value</i>
Oil Viscosity Index ^{c)}	ASTM D 2270	>110
Fire Point ^{d)}	ASTM D 92	321 °C [609.8 °F]
Flash Point	ASTM D 92	>290 °C [>554 °F]

Note: Values based on synthetic oil component only.

c) High oil viscosity index of more than a 100 indicate small oil viscosity change with temperature.

d) Temperature at which oil will continue to burn for at least 5 s after ignition with an open flame.

Storage

Store between -10 and 40 °C [14 and 104 °F] in dry area.

Health, Safety, and Environmental Awareness

Please see the 8616 **Safety Data Sheet** (SDS) for greater details on transportation, storage, handling and other security guidelines.

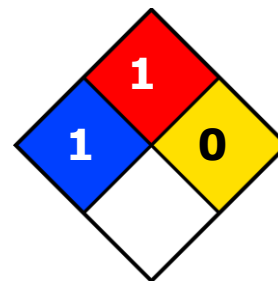
Environmental Impact: The VOC (volatile organic compound) content is 18% by WHMIS and European standards. Not regulated as a dangerous good for transport.

Health and Safety: Wear safety glasses and disposable gloves to avoid exposures.

HMIS® RATING

HEALTH:	1
FLAMMABILITY:	1
PHYSICAL HAZARD:	0
PERSONAL PROTECTION:	

NFPA® 704 CODES



Approximate HMIS and NFPA Risk Ratings Legend:

0 (Low or none); 1 (Slight); 2 (Moderate); 3 (Serious); 4 (Severe)

Application Instructions

The conductive grease performance depends on mainly on surface preparation. Improperly prepared contact surfaces can degrade the paste's stability, conductivity, and lubrication characteristics. While the thickness and coverage are also important, the application method itself can easily be adjusted according to performance and application needs.

Prerequisites

- Wear gloves and protective clothing.
- Clean and dry the surface of the substrate to remove other oils and greases, as well as dust, water, solvents, or any other contaminants.
- *Recommendations:* Use MG 824 Isopropyl Alcohol or MG 4351 Thinner

Equipment

- Lint free cloth (for cleaning contact and for wiping excess residue)
- Spatula or stick application tools (sized appropriately for your application)
- Isopropyl alcohol or other residue-free organic solvents

To apply the grease

1. Wipe the contact with a lint-free cloth.
2. Clean the contacts with isopropyl alcohol or other non-oil based cleaner.
3. Once dry, spread grease in a thin layer onto the surface.

Packaging and Supporting Products

<i>Cat. No.</i>	<i>Packaging</i>	<i>Net Volume</i>		<i>Net Weight</i>		<i>Packaging Weights</i>	
8616-3ML	Syringe	3 mL	0.1 fl oz	8.07 g	0.28 oz	0.02 kg	0.04 lb
8616-25ML	Jar	25 mL	0.84 fl oz	67.2 g	2.37 oz	0.63 kg ^{a)}	1.4 lb ^{a)}
8616-85ML	Tube	86 mL	2.93 fl oz	228 g	8.21 oz	TBD	TBD
8616-1P	Jar	483 mL	1.0 pint	1.3 kg	2.86 lb	1.34 kg	2.95 lb
8616-1G	Pail	3.78 L	1.0 gal	10.1 kg	22.4 lb	10.6 kg	23.3 lb

Contact MG Chemicals if custom packaging or sizes are required

TBD=To be determined

a) Case pack of five

Supporting Products

- *Thinner*: Cat. No. 4351-1L
- *Isopropyl Alcohol*: Cat. No. 824-1L

Technical Support

Contact us regarding any questions, improvement suggestions, or problems with this product. Application notes, instructions, and FAQs are located at www.mgchemicals.com.

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Warranty

M.G. Chemicals Ltd. warranties this product for 12 months from the date of purchase by the end user. *M.G. Chemicals Ltd.* makes no claims as to shelf life of this product for the warranty. The liability of *M.G. Chemicals Ltd.* whether based on its warranty, contracts, or otherwise shall in no case include incidental or consequential damage.

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