ELECTRICALLY & THERMALLY CONDUCTIVE GREASES

Technical Bulletin A8-S2

Aremco's Heat-Away™ greases are ceramic and metal-filled systems that offer exceptional electrical and thermal properties up to 680 °F (360 °C). These materials are used in high power electronics, heat pipes, high vacuum systems, and other heat management applications.

Heat-Away™ 639 coats process heater to improve thermal contact.

PRODUCT HIGHLIGHTS

Part Number	Filler	Conductivity		Vacuum Compatible	Temp. Range °F (°C)
		Electrical	Thermal		
637	Alumina		✓		550 (288)
638	Aluminum Nitride		✓		550 (288)
639	Aluminum		✓		550 (288)
640	Copper		✓		550 (288)
641	Silver	✓	✓		550 (288)
641-EV	Silver	✓	✓	✓	550 (288)
641-HT-EV	Silver	✓	✓	✓	680 (360)

HEAT-AWAY™ THERMALLY CONDUCTIVE GREASES

Product Number	637	638	639 [2]	640 [2]	641	641-EV [1]	641-HT-EV [1]
Filler	Alumina	Aluminum Nitride	Aluminum	Copper	Silver	Silver	Silver
Temperature Resistance, °F	−60 / +550	−60 / +550	−60 / +550	−60 / +550	−60 / +550	−60 / +550	−23 / +680
Temperature Resistance, °C	−51 / +288	−51 / +288	−51 / +288	−51 / +288	−51 / +288	−51 / +288	−5 / +360
Thermal Conductivity, W/m-K	0.475	2.23	3.04	4.68	5.58	5.58	5.58
Dielectric Strength, volts/mil	300	300	40	4	4	—	—
Volume Resistivity, ohm-cm [3]	10^{14}	10^{14}	10^{4}	10^{3}	< 0.0002	< 0.0002	< 0.0006
Chemical Resistance	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent
Water Absorption	Nil	Nil	Nil	Nil	Nil	Nil	Nil
Solids, %	100	100	100	100	100	100	100
Specific Gravity, g/cc	2.42	2.27	1.35	1.33	3.90	4.30	4.20
Color	White	Gray	Aluminum	Copper	Silver	Silver	Silver

Reference Notes

[1] Heat-Away 641-EV and 641-HT-EV are electrically and thermally conductive greases rated for high vacuum systems.

Temperature, °C (°F)	Vapor Pressure (Torr)	
	641-EV	641-HT-EV
20 (68)	3×10^{-14}	$\leq 4 \times 10^{-15}$
50 (122)	2×10^{-12}	Not Measured
100 (212)	1×10^{-9}	$\leq 2 \times 10^{-10}$
200 (392)	2×10^{-6}	$\leq 3 \times 10^{-7}$

[2] Caution: Exposure to voltages in excess of rated maximum may cause a permanent electrical leak path.

[3] Volume resistivity is measured < 0.002" thick after exposure to 500 °F.