



Technical Data Sheet

HTSP Silicone Heat Transfer Compound Plus

Product Description

HTSP provides the ultimate in thermal conductivity together with the very wide temperature range obtained by using silicone base oils. The exceptional properties obtained from HTSP are due to the novel use of various metal oxide (ceramic) powders. These materials are electrically insulative to ensure that leakage currents can not be formed if the paste should come into contact with other parts of the assembly.

HTSP should be used where a large amount of heat needs to be dissipated quickly and effectively. The heat dissipation from the source (e.g. semiconductor barrier layer) is achieved through many layers of different material before the heat is dissipated through free or forced convection. It should be noted that the use of a thermally conductive paste will only aid the dissipation of heat if the interface where it is used has the lowest thermal conductivity within the system, i.e. is the rate determining step. This is usually the case.

HTSP is a non-setting compound which allows easy rework of the components should this be necessary.

A full range of heat transfer products are available from Electrolube: non-silicone based pastes for very applications sensitive to silicone (HTC, HTCP, HTCX, HTCPX, HTCPX_LV), RTV rubbers (TCOR, TCER), adhesive epoxy (TBS) and an epoxy based potting resin (ER2074).

Features

- Superior thermal conductivity even at high temperatures.
- Wide operating temperature range.
- Low evaporation weight loss.
- Economic in use.
- Low in toxicity.

Approvals:	RoHS Compliant	Yes
Typical Properties:	Colour:	White
	Base	Silicone Oil
	Thermo-conductive Component:	Powdered metal oxides
	Thermal Conductivity (Guarded Hot Plate):	3.0 W/m•K (calculated)
	Thermal Conductivity (Heat Flow):	2.0 W/m•K
	Density @ 20°C:	3 g/cm ³
	Temperature Range:	-50°C to +200°C
	Weight Loss after 96 hours @ 100°C:	<0.8%
	Permittivity @ 106Hz:	4.9
	Specific Resistance:	1 x 10 ¹⁵ Ohms/cm
	Dielectric Strength:	18 kV/mm
	Viscosity (Pa•s):	42-48 at 1 rpm

<u>Packing</u>	<u>Order Code</u>	<u>Shelf Life</u>
35ml Syringe	HTSP35SL	48 months
50 ml Tube (150g)	HTSP50T	48 months
1 Kg Bulk	HTSP01K	72 months
10 Kg Bulk	HTSP10K	72 months
25 Kg Bulk	HTSP25K	72 months

Directions for Use

When contact surfaces are placed together, a firm metal-to-metal contact will only be achieved on 40 – 60% of the interface, depending on the smoothness of the surfaces. This means that air, which has relatively poor thermal conductivity, will account for the balance of the interface. Only a small amount of compound is required to fill these spaces.

Apply a thin layer of compound to one of the contact surfaces using brush, spatula, roller, automated systems or screen printing techniques. Ensure that the entire interface is covered otherwise hot-spots can form and place the surfaces together. Any excess paste squeezed out during the mounting process should be removed.

Best results are achieved when a uniform, thin coat is applied between the mating surfaces.

Additional Information

There are many methods of measuring thermal conductivity, resulting in large variances in results. Electrolube utilise a heat flow method which takes into account the surface resistance of the test substrate, thus offering highly accurate results of true thermal conductivity. Some alternative methods do not account for such surface resistance and can create the illusion of higher thermal conductivity. When comparing thermal conductivity measurements it is therefore important to know what test method has been utilised. For more information please contact the Electrolube Technical Department.

The rate at which heat flows is dependant on the temperature differential, the thickness of the layer, and the thermal conductivity of the material.

Some useful conversion factors are as follows:

1 cal	=	0.003968 BTU (British Thermal Unit)
1 cal/cm x sec x K	=	0.04964 BTU/in x h x °F
	=	416.8 W/m x K
1 BTU/h x ft x °F	=	12 BTU x in/h x sq ft x °F
	=	0.04134 cal/sec x cm x K
1 BTU x in/h x sq ft x F°	=	0.0003445 cal/sec x cm x K
	=	0.1437 W/m x K
1 BTU/h x ft x °F	=	1.724 W/m x K
1 W/in x K	=	22.75 BTU/h x ft x °F
1 cal/sec x cm	=	10.6 W/in x K

The Electrolube Heat Transfer Compound Range in Brief

	2ml Syringe	10ml Syringe	20ml Syringe	30ml Syringe	35ml Syringe (Luer Lock)	50ml Tube	700g Cartridge	1Kg Bulk	10kg Bulk	12.5Kg Bulk	25Kg Bulk	200ml Aerosol
HTC	✓	✓	✓		✓		✓	✓		✓	✓	✓
HTCP			✓				✓	✓				✓
HTCPX							✓			✓		✓
HTCPX_LV										✓		
HTCX					✓		✓	✓				
HTS	✓	✓		✓	✓		✓	✓			✓	
HTSP					✓	✓		✓	✓		✓	

Bulk Packaging Specifications

Package Size	Diameter	Height
700ml Cartridge	49.6mm	260mm + 15mm for Nozzle
1Kg Bulk Container	92mm	100mm
25Kg Bulk Container	254mm	330mm

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