

HEAT SINK COMPOUND **Silicone versus Non-Silicone**



Poor distribution. Grease dried out.

Silicone Grease (Dow 340)

Test: IGBTs are mounted on heat sinks using 6 mil grease and 24 in-lbf mounting torque, 500 Thermal cycles, 25°C-150°C

Note: Dow 340 silicone grease shows worm tracks which indicate oil separation, less amount of grease left on copper heat sink. Indicate drying effect. Blue Ice 411 picture shows full coverage of grease and no oil separation.



Excellent distribution. No Drying effect

Non-Silicone Grease (Blue Ice 411)



Silicone Compounds:

- Silicone-based thermal grease compounds have tendency for the oil to physically migrate and separate from the solids.
- This phenomenon is intensified when the grease is under high pressure.(see picture above)
- After several thermal cycles silicone thermal grease can dry out. This phenomena causes worm tracks that introduce air gaps between two surfaces and increases thermal resistance.

Non-Silicone Compounds:

- Timtronics Non-Silicone compounds are formulated with unique binding agents to bond the oil with solid powder fillers.
- Non-Silicone compounds shows **50 to 80% less oil separations** compared to silicone compounds.
- Non-silicone heat sink compounds stay- in- place for full operational life of your hardware.

SILICONE	NON-SILICONE
Low Surface Tension cause oil separation and bleed, leads to contaminations and premature failure.	Synthetic fluids, High surface tension keeps oil and fillers together.
Several thermal cycles causing dry out, interface film cracking, resulting in a loss of thermal conduction.	Formulated with special binding agents, no oil separation, stay put, dissipate the heat efficiently.
High temperature volatilizes silicone fluids and forms silicone dioxide an electrical insulator which cause defective contacts in motor, relays and switches.	Synthetic fluids volatilizes clean.
Silicone fluid will contaminate solder bath in reflow process.	No contaminations, Compatible with solder bath chemicals.