DOWSIL™ TC-6032 Thermally Conductive Encapsulant

DOWSIL™ TC-6032 Thermally Conductive Encapsulant delivers high thermal conductivity, controlled volatility and reliable performance in automotive power and electronics applications.

Key benefits:

- Lower viscosity for impregnation and flowability
- Less filler caking and easy re-homogenization
- Thermal conductivity at **3.2 W/m·K**
- Excellent high temperature stability at **150°C**
- UL 94 V-0 Flammability
- Low volatile content (D4-D10) **<100ppm (0.01%)**

DOWSIL™ TC-6032 Thermally Conductive Encapsulant is dispensed, demonstrating its flowability.

Applications:

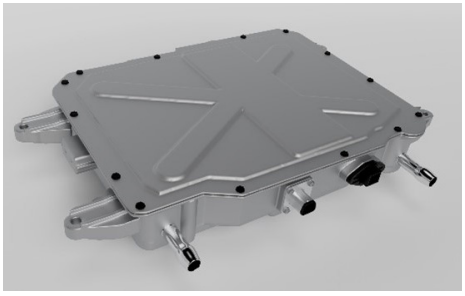
- On-board charger (OBC) for EV
- DC/DC converter for EV and FCEVI
- Inductor and transformer for solar power electronics
- Switched Mode Power Supply (SMPS) for LED
- Other electronic and electric parts for thermal management

Key property		Reference standard method[1]	Result
Mixing ratio			1 to 1
Mixed viscosity		CTM 0050 (ASTM D1084)	6,500 mPa·s
Specific gravity (Cured)		CTM 0022 (ASTM D792)	2.73
Thermal conductivity (MTPS)		ASTM D7984	3.2 W/m·K
Thermal conductivity (Steady-state)		ASTM D5470	2.7 W/m·K
Working time (Pot life[2])		CTM 0055 (ASTM D1824)	4 hour
Cure time at	80°C 100°C 120°C	CTM 0099 (ASTM D2240)	60 minutes 30 minutes 20 minutes
Hardness,[3] Shore A		CTM 0099 (ASTM D2240)	33
Lap shear on Al		CTM 0243 (ASTM D1002)	0.44 MPa
Shear modulus		CTM 1098 (ASTM D4065)	1.55 MPa
Volatile siloxane content (D4-D10)[5]		CTM 0839 (ASTM E831)	< 100 ppm
Flame retardant		UL 94	V-0

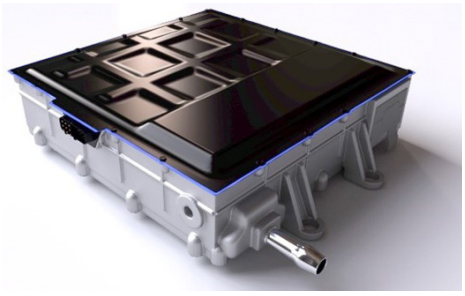
1. CTM: Corporate Test Method, copies of CTM's are available on request. 2. ASTM: American Society of Testing and Materials 3. ISO: International Organization for Standardization 4. Pot Life is described as the time necessary for a system to double in viscosity after catalyzation. This is considered to be the normal useable working time 5. Cure condition needs to be tested and optimized with customer's application and curing environment. 6. Property is in accordance with standard cure condition of 60 minutes at 120°C unless specified.

Applications

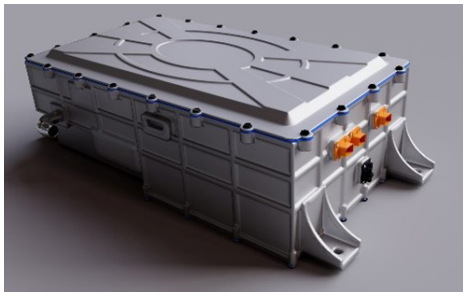
DC-DC Converter



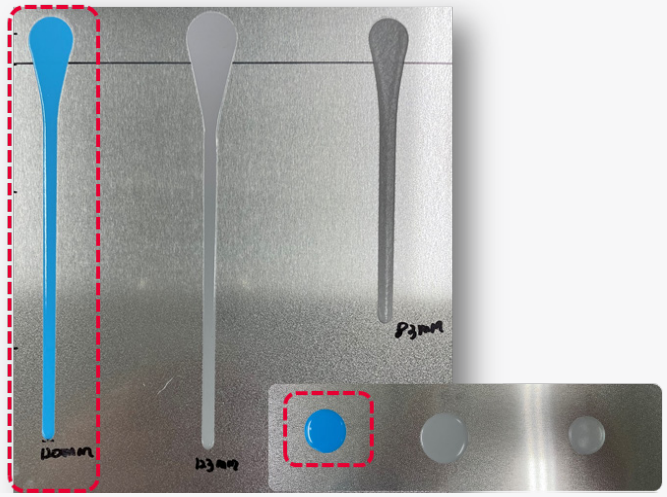
On-Boarding Charger (OBC)



Power electronics combination module

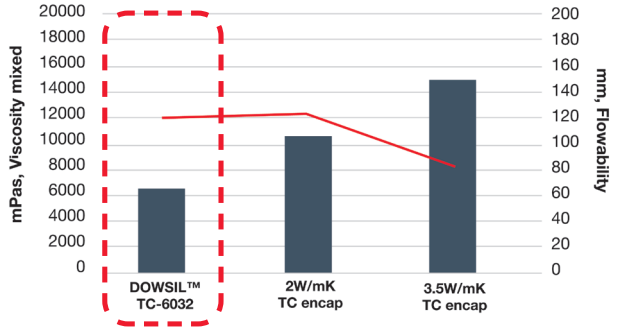


Flowability comparison



Viscosity vs. flowability

Excellent flowability with high thermal conductivity around 3.0 W/mK.

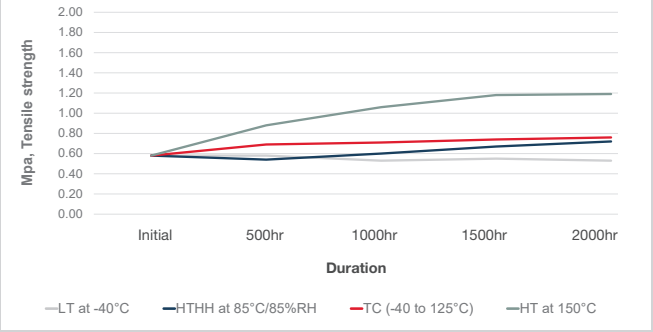


	DOWSIL™ TC-6032	2W/mK TC encap	3.5W/mK TC encap
Viscosity, mixed	6500	10640	15000
Flowability, vertical	120	123	83

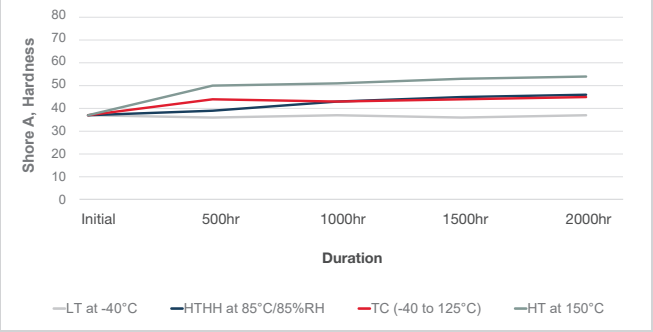
Performance in service

A key feature of DOWSIL™ TC-6032 Thermally Conductive Encapsulant is stable elongation even in expsosure to temperatures as high as 150°C. This product has demonstrated thermal stability for 2000 hours amid various environmental aging conditions.

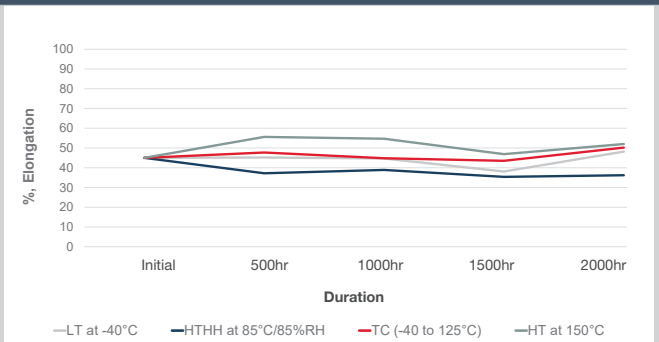
Tensile strength



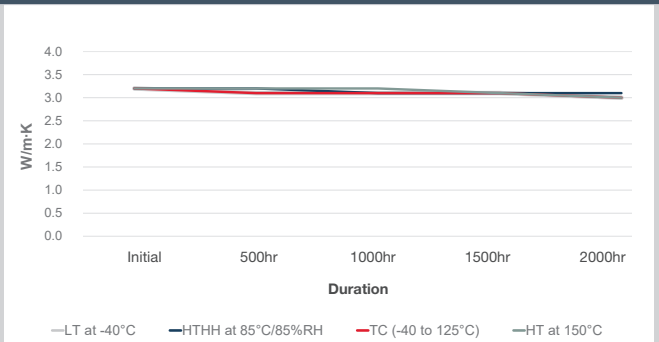
Hardness, Shore A



Elongation



Thermal conductivity



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