

THERMORPHOUSTM
S201



Product Description

Thermorphous S201 is a water-based, zero-VOC, adaptive thermal material that intelligently responds to temperature. Compared with oil-based systems, it offers significantly lower viscosity, enabling easy spray application and uniform coating on a wide range of material surfaces with excellent adhesion.

It efficiently dissipates heat during normal operation and automatically reduces thermal conductivity near 150 °C to form a protective thermal barrier. This self-regulating performance integrates cooling, protection, and sustainability into a single advanced material solution.

Key Features



DUAL-MODE THERMAL MANAGEMENT

- High thermal conductivity (2w/mK) at 20-150°C
- Low thermal conductivity (0.1 to 0.3W/mK) at above 150°C



ENGINEERED FOR PRECISION

- Pre-potting viscosity: <600mPaS
- Cured at 70°C for 2h or ambient for 24h to 48h



WATER BASED & SUSTAINABLE

- Zero VOC
- Easy to clean, more convenient and safer for workers



EXCEPTIONAL STABILITY

- Withstands 300°C intermittent exposure
- UL 94 V0 flammability rating

Applications

- EV battery potting agent prevents thermal run-away
- Critical electronics: heat dissipation during operation, isolates current during overload
- Industrial sensor: protect sensors during exposure to high-temperature

Specifications

Product Properties	Unit	Measurement
Density	[g/cm ³]	2.5 - 3.5
Viscosity	[mPa · s]	600
Phase Transformation Temperature	[°C]	150
Thermal Conductivity (20 - 80°C)	[W/m·K]	1.9 - 2.0
Thermal Conductivity (> 150°C)	[W/m·K]	0.10 - 0.30
Functional Thickness	[mm]	> 2 mm
Electrical Resistivity	[Ω]	>10 ⁶
Full Strength Curing @ 25°C	[h]	24 - 48
Full Strength Curing @ 70°C	[h]	3 - 4

ABOUT MATWERKZ TECHNOLOGIES

Founded as an A*STAR spin-off in 2020, Matwerkz Technologies is a Singapore-based deep-tech organization specialized in developing unique **thermal management solutions** catered to emerging and rapidly expanding industries such as transport, logistics, telecommunications and construction.

Our goal is to create materials that would **enhance safety, reliability and sustainability** of products and structures through effective temperature regulation. Hence, we offer a wide range of **thermal regulation, thermal resistant and fire retardant materials** for various industrial applications.

As materials designers, we are committed to ensure that all our materials are not just designed to be highly durable during the product lifetime but also that our customers understand ways to deal with such materials at the end-of-life of their products.

MATWERKZ TECHNOLOGIES PTE. LTD.

994 Bendemeer Road, #01-03 B Central,
Singapore 339943