

## TIMbber™ EXT Series High Performance TIM Preliminary Data Sheet

### Description

Arieica’s EXT series of Liquid Metal Embedded Elastomer (LMEE) Thermal Interface Materials (TIM) are specifically designed to provide thermal design engineers the performance benefits of liquid metal, with the manufacturing ease of thermal grease materials. As electronic systems simultaneously increase performance while shrinking their physical footprint, their thermal challenges become more difficult to manage. The EXT series provide an extremely low thermal resistance and reliable connection to the system’s heat exchange device, thereby optimizing the achievable thermal performance of the system, without the need for the sophisticated manufacturing processes required to apply liquid metal and contain its migration.

Through Arieica’s patented LMEE technology, highly thermally conductive liquid metal is embedded in a protective polymer matrix. The result is an easy to dispense, extremely conformable, high reliability thermal connection that is inherently protected from excessive oxidation and is resistant to leaking.

### Key Features

- High thermal conductivity
- Extremely low thermal resistance
- High reliability
- Room temperature storage
- Single component, non-curing
- Solvent free
- Easy clean up and re-work

### Nominal Properties<sup>1</sup>

|   |          |
|---|----------|
| Thermal Conductivity <sup>2</sup> (W/mK)                            | 10.7     |
| Thermal Resistance <sup>3</sup> (mm <sup>2</sup> K/W) @ BLT < 60 μm | < 4      |
| Complex Viscosity <sup>4</sup> (Pa.s) @ f=10 rad/sec, ε=5%          | 35       |
| Outgassing, 48 hours @ 125 °C <sup>5</sup>                          | 0.15 wt% |
| Operating Temperature Range (°C)                                    | 0 ↔ 125  |

<sup>1</sup> The EXT series are currently available in pre-production, and intended for evaluation and proof of concept (PoC) samples. All specifications are nominal and have not been statistically validated.

<sup>2</sup> Calculated following ASTM D5470 measurement technique at 3 thicknesses using TIMA test apparatus <https://nanotest.eu/tima>

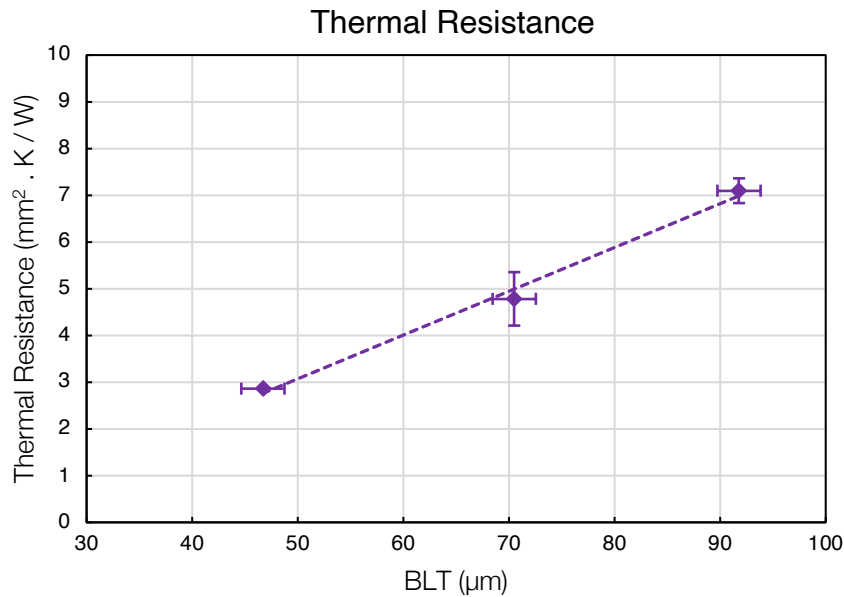
<sup>3</sup> Measured using TIMA test apparatus <https://nanotest.eu/tima>

<sup>4</sup> Measured using TA HR10 Rheometer @ 25 °C <https://www.tainstruments.com/hr-10/>

<sup>5</sup> Measured at 125 °C for 48 hours using TA TGA550 <https://www.tainstruments.com/tga-550/>

### Thermal Resistance Dependence on BLT

Thermal architects design systems to meet thermal resistance targets across expected manufacturing tolerances. Therefore, the thermal resistance as a function of bondline thickness (BLT) is an important parameter. Below is a plot of how thermal resistance varies as a function of BLT.



### Product Storage

To maximize product quality, this product should be stored in its original packaging in a dry environment. The product may be kept at room temperature (T ~25 °C).

Safety Data Sheets (SDS) and Application Note for the EXT series are available in multiple languages. Please contact Arieica at [partner@arieca.com](mailto:partner@arieca.com) to obtain a copy.

### Warranty

The information and data contained herein are believed to be accurate and reliable; however, this product is still under engineering validation. Quantities may be limited, and design specifications may change as the product is prepared for release to production. This product is currently provided for proof of concept (PoC) evaluation, and Arieica makes no warranties concerning the fitness or suitability of its products for a particular use or purpose.