# NBE nanoTach® Nano-Silver Paste, Lead-Free Solder Alternative

**Category :** Metal , Nonferrous Metal , Precious Metal , Silver Alloy , Solder/Braze Alloy

**Material Notes:**

NanoTach® is a thick paste of nano-sized silver powder in an organic binder that can be used as an alternative to solder or epoxy in semiconductor devices in the state-of-the-art individual packages or multi-chip power modules. NBE's lead-free nanomaterial attachment possesses better thermal, mechanical and electrical properties than soldered or epoxied alternatives. The attachment process is completely compatible with existing equipment and facilities that use solders or epoxies. Using NBE's material and process, high power-density semiconductor electronic or optoelectronic devices can be operated at high temperatures in excess of 250° C, not attainable with any existing solder-based or epoxy-based materials. Specific applications can include bonding to large chips for power devices/modules, high-power and high-brightness LED lamps, power diode lasers, and RF power devices.Compared to the current die-attach materials, nanoTach® offers:5x higher thermal and electrical properties> 250° C capability< 275° C ambient or low pressure (5 MPa) processingImproved reliability from low elastic modulusOne-to-one RoHS compliant replacements.

Order this product through the following link:
http://www.lookpolymers.com/polymer_NBE-nanoTach-Nano-Silver-Paste-Lead-Free-Solder-Alternative.php

| Physical Properties | Metric | English | Comments |
|---|---|---|---|
| Density | >= 3.50 g/cc | >= 0.126 lb/in³ | Before Sintering |
| | >= 7.90 g/cc | >= 0.285 lb/in³ | After Sintering |
| Solids Content | >= 78.5 % | >= 78.5 % | Before Sintering |
| Porosity | <= 25 % | <= 25 % | After Sintering |
| Viscosity | 750000 cP | 750000 cP | Before Sintering |

| Mechanical Properties | Metric | English | Comments |
|---|---|---|---|
| Modulus of Elasticity | 10.0 - 30.0 GPa | 1450 - 4350 ksi | After Sintering |
| Adhesive Bond Strength | >= 20.0 MPa | >= 2900 psi | Chip Bonding |

| Thermal Properties | Metric | English | Comments |
|---|---|---|---|
| CTE, linear | 19.6 µm/m-°C | 10.9 µin/in-°F | After Sintering |
| Thermal Conductivity | >= 2.00 W/m-K | >= 13.9 BTU-in/hr-ft²-°F | |
| Melting Point | 961 °C | 1760 °F | After Sintering |
| Maximum Service Temperature, Air | <= 961 °C | <= 1760 °F | mp of silver |

| Electrical Properties | Metric | English | Comments |
|---|---|---|---|
| Electrical Resistivity | | | |

| Electrical Properties | Metric | English | Comments |
|---|---|---|---|
| | 0.00000260 ohm-cm | 0.00000260 ohm-cm | |

| Processing Properties | Metric | English | Comments |
|---|---|---|---|
| Sintering Temperature | <= 275 °C | <= 527 °F | |
| Shelf Life | 12.0 Month | 12.0 Month | |

| Descriptive Properties | Value | Comments |
|---|---|---|
| Color | Dark Gray | Before Sintering |
| RoHS Compliancy | Compliant | |

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