Graphene powder products are new graphene materials developed by Qingdao DT Nanotechnology Co., Ltd. Our Company’s unique green manufacturing process ensures graphene’s perfect crystal structure and excellent electrical and thermal properties. The product has good reduction characteristics, uniform particle size distribution, and stable performance.
Applications

- Increase energy density of supercapacitors and lithium batteries, contributing to shorter charging time!
- Conductive heat radiation performance and non-transmission performance of composite materials are greatly improved!
- RFID, LED, flexible electrode, solar cell, printed circuit board, high sensitivity biosensor, etc. can be widely applied!

Customizable to meet customer needs! We manufacture graphene products to meet your needs!

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Graphene slurry products are new graphene materials developed by Qingdao DT Nanotechnology Co., Ltd.
It possesses the physical properties of graphene that are "thinnest" and is excellent in electrical conductivity, thermal conductivity, lubricity, antiseptic properties, airtightness, and high and low temperature physical properties.
Because of the superior performance of Our Company graphene slurry products, they are widely used in a variety of fields including storage batteries, power batteries, new energy sources, photovoltaic power generation, electronic components, electronic processes, printing, anti-static, electromagnetic wave shielding, special function paints, and composite materials.

**Product Features**

- It has excellent storage stability without shrinkage at the micro level and forms accurate layer and grain size control.
- Available in high-purity lithium batteries, rechargeable batteries, super capacitors, and the electronics industry.
- The crystal structure of graphene retains excellent physical properties such as conductivity and thermal conductivity.
- Powerful adsorption capacity enables use in water purification processes.
- Conductive agent coating.
- Heat radiation Coating.
- Exothermic reaction Coating.
- Graphene heavy Anticorrosion Coatings.

**Technical Data Sheet**

<table>
<thead>
<tr>
<th>Product Characteristics</th>
<th>Unit</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Product Numbers</td>
<td>-</td>
<td>SGS-H2O-5G</td>
</tr>
<tr>
<td></td>
<td></td>
<td>SGS-NMP-5G</td>
</tr>
<tr>
<td>Solid content</td>
<td>wt%</td>
<td>5.00 ± 0.20</td>
</tr>
<tr>
<td></td>
<td></td>
<td>4.00 ± 0.10</td>
</tr>
<tr>
<td>Viscosity</td>
<td>mPa.s</td>
<td>≤ 2500</td>
</tr>
<tr>
<td>Flake diameter D50</td>
<td>μm</td>
<td>5 ± 1</td>
</tr>
<tr>
<td>Acidity and alkalinity</td>
<td>pH</td>
<td>6.5 ~ 8.5</td>
</tr>
<tr>
<td></td>
<td></td>
<td>6.0 ~ 8.0</td>
</tr>
<tr>
<td>Stability at normal temperature</td>
<td>wt%</td>
<td>≤ 0.10</td>
</tr>
<tr>
<td>High temperature stability</td>
<td>wt%</td>
<td>≤ 0.20</td>
</tr>
<tr>
<td>Strength of extension</td>
<td>ppm</td>
<td>Fe≤20 , Co≤5 , Ni≤5 , Mn≤5 , Cu≤5 , Zn≤5</td>
</tr>
</tbody>
</table>

For greater efficiency: For effective dispersion, use dedicated dispersion based on Our Company slurry.

**Applications**

Because of the superior performance of Our Company graphene slurry products, they are widely used in a variety of fields including storage batteries, power batteries, new energy sources, photovoltaic power generation, electronic components, electronic processes, printing, anti-static, electromagnetic wave shielding, special function paints, and composite materials.

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Graphene Composite High Thermal Conductivity Silicone Gly (Also known as heat dissipation silicon grease/heat dissipation paste/heat conduction paste.) is a paste-like graphene product made by adding graphene mixed conductive filler. It is an ideal and excellent heat transfer medium for electronic components. It is applied to fill the space between the electrical and electronic devices and the heat sink contact surface to maximize heat radiation performance. By lowering the operating temperature of low-efficiency electronic components, this system greatly contributes to the improvement of service life, which leads to product reliability.

<table>
<thead>
<tr>
<th>Thermal Conductivity Graphene Silicone Grease</th>
<th>Unit</th>
<th>product number</th>
<th>thermal conductivity</th>
</tr>
</thead>
<tbody>
<tr>
<td>W/m·k</td>
<td>DS-30</td>
<td>&gt; 3.0</td>
<td></td>
</tr>
<tr>
<td>W/m·k</td>
<td>DS-40</td>
<td>&gt; 4.0</td>
<td></td>
</tr>
<tr>
<td>W/m·k</td>
<td>DS-50</td>
<td>4.5 / 5.5</td>
<td></td>
</tr>
<tr>
<td>W/m·k</td>
<td>DS-70</td>
<td>&gt; 7.0</td>
<td></td>
</tr>
<tr>
<td>W/m·k</td>
<td>DS-90</td>
<td>&gt; 9.0</td>
<td></td>
</tr>
</tbody>
</table>

This product serves as an efficient heat transfer medium by connecting contact surfaces between heat generating elements (Heat radiator, SCR, and electric heating equipment) and heat dissipating devices (heat sink, radiator, housing, etc.) in various electronic products and electrical equipment.

High heat dissipation is achieved by using the product for heat-generating electronic components such as transistors, embedded CPUs, thermistors, temperature sensors, automotive electrical components, automotive coolers, power supply modules, printer heads, and other electronic and electrical components that generate heat.

It is suitable for microwave communications and microwave transmission equipment, microwave power supplies, voltage stabilizers, and coating materials on the surface of microwave devices.

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Graphene

Graphene Modified Thermal Conductive Pads

Graphene-modified heat-radiation sheet is highly flexible and resilient. By filling the gap between the heat-generating element and the heat-dissipating parts, it rapidly and efficiently dissipates heat, increasing the work efficiency of the element and providing insulation and shock absorption.

This product is suitable for use in thermal management technology products such as heat sink bottom, heat sink frame, high speed hard disk drive, RDRAM memory module, small heat pipe heat sink, automotive engine controller, communication portable electronics, microwave radiation base station, semiconductor automatic test equipment, power supply module, and central processing unit.

### Applications

- This product is suitable for use in thermal management technology products such as heat sink bottom, heat sink frame, high speed hard disk drive, RDRAM memory module, small heat pipe heat sink, automotive engine controller, communication portable electronics, microwave radiation base station, semiconductor automatic test equipment, power supply module, and central processing unit.

### Technical Data Sheet

<table>
<thead>
<tr>
<th>Product Numbers</th>
<th>Unit</th>
<th>Product technical data</th>
</tr>
</thead>
<tbody>
<tr>
<td>TGK-S1GB-15</td>
<td></td>
<td>GMP-L2G-9304-SSA</td>
</tr>
<tr>
<td>GMP-L2G-9304-SSB</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Thickness</td>
<td>mm</td>
<td>1</td>
</tr>
<tr>
<td>Density</td>
<td>g/cc</td>
<td>&lt; 2.0</td>
</tr>
<tr>
<td>Hardness</td>
<td>Shore</td>
<td>40 - 60 (Shore A)</td>
</tr>
<tr>
<td>Tensile strength</td>
<td>PSI</td>
<td>&gt; 100</td>
</tr>
<tr>
<td>Sustainable working temperature</td>
<td>°C</td>
<td>-45 – 200</td>
</tr>
<tr>
<td>Breakdown voltage</td>
<td>KV/mm</td>
<td>≥ 10</td>
</tr>
<tr>
<td>Volume resistivity</td>
<td>Ом·cm</td>
<td>≥ 1.0 × 10^13</td>
</tr>
<tr>
<td>Thermal conductivity</td>
<td>W/m·k</td>
<td>≥ 5.0</td>
</tr>
</tbody>
</table>

---

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Graphene
A/B-component Graphene Thermal Conductive Pouring Sealant

This product is a low-viscosity adhesive two-component heat radiation silicon adhesive. The higher the temperature, the more it solidifies. It can also solidify at room temperature. Once the product solidifies, it can be expected to be waterproof, moisture-proof, dust-proof, insulated, heat-radiating, confidential, corrosion-proof, heat-resistant and shock-resistant.

Product Features

+ Injection of silicon glue requires no special technique and is easy to introduce!
+ It is expected to protect electronic components from external erosion and destruction, enhance protection of the entire electronic component, improve shock resistance and stability of electronic components, and improve insulation between internal elements and circuits!
+ Thermal conductivity is improved by adding this product! Quickly dissipates heat from electronic components and contributes to extended service life!

Applications

+ This product can be used for high output electronic components, high frequency transformers, connectors, sensors, electric heating components, heat radiation, and protection by injection into module power supplies and circuit boards with relatively high heat resistance requirements.

Technical Data Sheet

<table>
<thead>
<tr>
<th>Test item</th>
<th>Unit</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Before the curing</td>
<td>Viscosity</td>
<td>cps &lt; 5000</td>
</tr>
<tr>
<td></td>
<td>Density</td>
<td>g/cm³ &lt; 1.5</td>
</tr>
<tr>
<td></td>
<td>Hardness</td>
<td>Shore A 45 ~ 55</td>
</tr>
<tr>
<td></td>
<td>Breakdown voltage</td>
<td>KV/mm ≥ 10</td>
</tr>
<tr>
<td></td>
<td>Mass resistivity</td>
<td>Ω-cm &gt; 10¹⁰</td>
</tr>
<tr>
<td></td>
<td>Dielectric constant</td>
<td>1MHz ≤ 5</td>
</tr>
<tr>
<td></td>
<td>Thermal conductivity</td>
<td>W/m·K 1</td>
</tr>
<tr>
<td></td>
<td>Strength of extension</td>
<td>psi ≥ 100</td>
</tr>
<tr>
<td></td>
<td>Water absorption</td>
<td>% 0.01</td>
</tr>
<tr>
<td></td>
<td>Operating temperature</td>
<td>°C -60 ~ 200</td>
</tr>
<tr>
<td>After curing</td>
<td></td>
<td>TSL-SIG-G2A10(A/B)</td>
</tr>
</tbody>
</table>

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Graphene

Graphene Composites - Lightweight, High-Strength Composites

- Excellent rigidity and impact resistance
- Dimensional stability to resist deformation
- Excellent chemical resistance and yield resistant to strong acidity and alkalinity
- Excellent workability
- Continuous production by mold is possible
- High electromagnetic wave absorption
- Excellent adhesion to paint
- Low density and light weight 0.3 ~ 1.0 g/cm³

Applications

- Yachts and canoes
- New energy vehicles, electric carts, and covers
- Medical device
- Heavy industries and remodeled vehicles
- Drones, aerospace, aerospace and defense products

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High-temperature conductive graphene composite resin is a new graphene application product developed by Qingdao DT Nanotechnology Co., Ltd. Increase the strength of conventional materials and products by utilizing graphene's excellent light weight, high strength, high thermal conductivity and corrosion resistance. As a substitute for conventional products, it is suitable for applications in fields such as LED lighting, electric vehicles, drones, aircraft, and products for the defense industry, in order to improve heat radiation and corrosion resistance and to upgrade significantly.

### Technical Data Sheet

<table>
<thead>
<tr>
<th>Product Numbers</th>
<th>Unit</th>
<th>Density (g/cm³)</th>
<th>Thermal Conductivity (H) (W/mk)</th>
<th>Thermal Conductivity (V) (W/mk)</th>
<th>Resistance (Ω)</th>
<th>Flexural Stress (MPa)</th>
<th>Tensile Strength (MPa)</th>
<th>Charpy Impact Strength (7.5J) (KJ/m²)</th>
<th>Deflection Under Load (°C)</th>
<th>Flammability</th>
</tr>
</thead>
<tbody>
<tr>
<td>DZ-PGC-LH03</td>
<td>g/cm³</td>
<td>1.3±0.1</td>
<td>≥ 14</td>
<td>≥ 2.5</td>
<td>0.05 - 0.5</td>
<td>≥ 45</td>
<td>≥ 20</td>
<td>&gt;230(Tfx=1.82Mpa), &gt;230(Tfx=8Mpa)</td>
<td>≥ 3</td>
<td>V0</td>
</tr>
<tr>
<td>DZ-PGC-LH03(powder)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Comparative Test

+ **Test I:** Weight comparison of 3 same-volume sample plates
  (Iron, aluminum, graphene composite resin 300 × 300 × 3 mm)

- Iron plate: 207g
- Aluminum plate: 78.7g
- Graphene plate: 39.3g

5 times for steel plates and 2 times for aluminum plates compared to graphene resin plates

+ **Test II:** 3 same-volume sample plates at room temperature of 108°C were left in a high temperature tester at 20°C for 1 hour. Each surface temperature was compared 5 minutes after removal.

- Iron plate: 61.3°C
- Aluminum plate: 55.9°C
- Graphene plate: 31.3°C

2 times for steel plates and 1.8 times for aluminum plates compared to graphene resin plates

---

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Graphene Modified Heat Dispersion Coatings

This product is an improved radiator coating for graphene that hardens at room temperature and by drying. Graphene is contained in the paint component, which greatly improves thermal conductivity and corrosion resistance, and exhibits excellent insulation, waterproofing and corrosion resistance. Ideal for heat dissipation and heat exchange in various environments such as vacuum and high temperature, for surfaces of products that require enhanced heat dissipation and temperature reduction or heat exchange. It is an entirely new type of high-efficiency, energy-saving, anticorrosive coating, specially developed for industrial heat exchangers, radiators and other special coatings.

**Technical Data Sheet**

<table>
<thead>
<tr>
<th>Testing Items</th>
<th>Unit</th>
<th>Product technical data</th>
<th>Test method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Viscosity</td>
<td>s</td>
<td>≥ 105</td>
<td>(V-4i), (group A)</td>
</tr>
<tr>
<td>Adhesion</td>
<td>level</td>
<td>≥ 1</td>
<td>Circle method</td>
</tr>
<tr>
<td>Hardness</td>
<td>level</td>
<td>≥ 4H</td>
<td>-</td>
</tr>
<tr>
<td>Flexibility</td>
<td>mm</td>
<td>1</td>
<td>-</td>
</tr>
<tr>
<td>Abrasive Resistance</td>
<td>W/mk</td>
<td>25.1</td>
<td>-</td>
</tr>
<tr>
<td>Oil resistance</td>
<td>m°C/W</td>
<td>0.008</td>
<td>-</td>
</tr>
<tr>
<td>Acid resistance</td>
<td></td>
<td>90</td>
<td>-</td>
</tr>
</tbody>
</table>

**Applications**

+ Ideal for protecting special coatings on industrial heat exchangers. It can also be applied to heat dissipating objects such as CPUs, LED lighting fixtures, electrical appliances, racks, wire cables, heaters, fans, heat pipes, tanks, industrial equipment, buildings, cooling devices, vehicles, vacuum furnaces, vacuum heaters, vacuum dryers, and heat exchangers, and to object equipment with relatively small conductive areas and conductivities but no large convection spaces.

1. The composite coating protects the heat exchanger for a long time even in a poor corrosive environment.
2. Ideal as a protective coating for equipment used in high-temperature acidic environments of 250 degrees or more!

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Graphene Modified Anti-static Coating

This product is a graphene modified conductive paint that cures at room temperature using a primer coat and top coat as a set.
The coating material contains graphene nanomaterial, which greatly improves corrosion resistance and electrical resistance.
This new high-performance anticorrosive coating developed for oil storage tanks is highly acclaimed. It has been introduced as an anticorrosive coating for storage tanks by many oil refining companies in China and other countries.

Technical Data Sheet

<table>
<thead>
<tr>
<th>Variables</th>
<th>Unit</th>
<th>Characteristics</th>
<th>Inspection Standard</th>
</tr>
</thead>
<tbody>
<tr>
<td>Color and Appearance</td>
<td>-</td>
<td>Various</td>
<td>Visual Inspection</td>
</tr>
<tr>
<td>Adhesion Class</td>
<td>-</td>
<td>0</td>
<td>GB/T 9286-1998</td>
</tr>
<tr>
<td>Suppleness</td>
<td>mm</td>
<td>1</td>
<td>GB/T 1731-1993</td>
</tr>
<tr>
<td>Impact Resistance</td>
<td>kg·cm</td>
<td>50</td>
<td>GB/T 1732-1993</td>
</tr>
<tr>
<td>Surface Resistance</td>
<td>Ω</td>
<td>× 10⁶⁺⁺</td>
<td>90d, GB/T 16906-1997</td>
</tr>
<tr>
<td>Salt Corrosion</td>
<td>grade</td>
<td>Rust Level ≤ 1</td>
<td>1000h, GB/T 1771-2007</td>
</tr>
</tbody>
</table>

Applications

+ Ideal as antiseptic coating in oil storage tanks and oil pipelines.
Use this product for maintenance of new or existing structures such as various circulating water pipes, petrochemical pipes, buried steam pipes, ships, bridges, oil pipes, gas pipes, water pipes, etc.

1. The combined coating protects the heat exchanger for a long time even in a corrosive environment.
2. Ideal as a protective coating for equipment used in high-temperature acidic environments of 250 degrees or more.

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The special functions of graphene, such as high conductivity, thermal conductivity, chemical stability, and high temperature resistance, have important practical value in the coating field. Especially in the industrial development of marine powers, special marine functional paints are the most important to meet multi-functional requirements such as “Thin, light, wide and strong”.

+ By creating a thin coating with uniform distribution, it is possible to increase resistance to external shocks such as high barrier resistance, high weather resistance, salt water spray resistance, acid resistance, alkali resistance, strong photodegradation resistance, and strong anti-ion permeability.
+ Conductive graphene coating is also useful for preventing dry static electricity, shielding electromagnetic waves, absorbing waves, and conducting corrosion.
+ By using a combination of anti-corrosion paints containing different amounts of graphene in accordance with the anti-corrosion painting process, even a small amount of the paint is effective in preventing corrosion.

**Applications**

+ This product is used as a heavy anticorrosive paint for ships to improve the quality of heavy anticorrosive paint and electromagnetic wave shielding paint in the ship manufacturing process.
+ The product can be used for anticorrosive work against corrosive environments such as acids, alkalis, salts and oils (grease), and can also be used for anticorrosive work in aerospace, ship manufacturing processes, and public works.
+ Graphene has electromagnetic wave blocking properties, light weight, and thin, so it is compatible with a wide absorption band of electromagnetic wave blocking materials, and can be applied to communications facilities, aerospace, defense industry, and electronic precision components.

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