



Graphene

Material Safety Data Sheet

Qingdao DT Nanotech Co., Ltd.
SIC Co., Ltd.

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Graphene Powders Material Safety Data Sheet

1. Chemicals and Enterprise Identification

- Name of Chemicals : Graphene powders
 - Common or commodity names of chemicals : Graphene nanosheets
 - Enterprise name : Qingdao DT Nanotech Co., Ltd.
 - Address : The Graphite New Material Industrial Park, Nanshu, Town, Laixi City, Qingdao, Shandong Province, China
 - Enterprise Emergency Telephone / Fax : 0532-8343-2166 / 0532-8640-2866
-

2. Composition / Composition Information

- Chemical composition : Carbon
 - CAS number : 7440-44-0
 - Content : $\geq 99.9\%$
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3. Overview of danger

- Danger category : It can stimulate the respiratory tract.
 - Invasion pathway : Inhalation, direct contact with eyes or skin.
 - Health hazard : A small amount of inhalation can cause temporary cough. It has been reported that intravenous injection of graphene oxide (1 mg/kg or 10 mg/kg by weight of organism) mainly concentrates in the lungs, but no pathological phenomena have been observed in various organs of organism. Graphene oxide deposited in the main organs of the body disappears completely after 3 months (refer to Graphene: Safe or Toxic? The two faces of the medal). There is no report on the health hazards of graphene powder.
 - Environmental harm : Stive
 - Risk of explosion : Not easy to burn, not easy to explode.
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4. Emergency measures

- Skin contact : Wash skin contact area with hand sanitizer and other mild cleansers, and rinse with plenty of clean water. Remove and isolate contaminated clothes and shoes, and clean them before reusing them.

- Eye contact : Immediately rinse your eyes with plenty of water for at least 15 minutes and open your upper and lower eyelids from time to time. If you feel irritation or foreign body sensation, you can immediately seek medical treatment.
 - Inhalation : Immediately move the patient to fresh air and clean the nasal cavity with clean water. If dyspnea occurs, oxygen inhalation should be given; if the patient's breathing stops, artificial respiration should be given immediately, and medical treatment should be sent immediately.
 - Ingestion : A small amount of water is needed to clean the mouth when it enters the mouth. If swallowed in large quantities, rinse the mouth with a large amount of water, so that patients drink more water, and immediately see a doctor.
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5. Fire control measures

- Hazard characteristics : No
 - Harmful combustion products : Carbon dioxide.
 - Fire extinguishing Methods and extinguishing agents : Graphene powders are neither natural nor supportive of combustion. Any fire extinguishing method can be used to extinguish the surrounding fire source. Keep fire containers cool with water.
-

6. Emergency Leakage Handling

7. Operational Disposal and Storage

- Cautions for Operational Disposal : Fire extinguishing requires wearing gas masks, helmet, fire extinguishing clothes, gloves and rubber boots to prevent the inhalation of toxic and irritating gases.
 - Storage considerations : Dry, ventilated, sealed storage; materials are sealed with containers and stored in ventilated places to ensure good air quality in storage areas. Take necessary preventive measures to prevent static interference. Used containers should be cleaned and stored separately from the product.
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8. Contact control / personal protection

- Engineering control : In the powder production and use areas, it is recommended to equip good ventilation facilities to ensure good ventilation in the working areas of employees.

- Respiratory system protection : Dust mask with appropriate filter is provided. Any series of filter can be selected. The filter efficiency is more than 95%. The filter elements should be replaced in time according to the working environment. Emergency or planned access to areas of unknown concentration, or in immediate life-threatening or health conditions, it is necessary to carry self-propelled positive pressure full-cover respirator and air-supply positive pressure full-cover respirator to assist self-propelled positive pressure respirator. When escaping, the respirator with high-efficiency filter layer and particle-proof comprehensive cover and self-portable escape respirator can be used.
- Eye protection : Ordinary protective goggles will do.
- Body protection : Just wear workshop overalls (without special protection).
- Hand protection : Ordinary experimental gloves can be used.
- Other protection : A. Do not eat, drink or smoke in the work area.
 B. Before and after the start of the work, the exposed parts of the skin should be carefully cleaned, and the hands or other parts of the product should not be used to contact the eyes.
 C. Graphene is a good conductor of electricity. Therefore, when working on live line, attention should be paid to personal cleanliness and operation safety.

9. Physicochemical Characteristics

- Appearance and shape : BLACK-GREY powder.
- Specific gravity : No data
- Odor : Odorless
- Solubility : Insoluble in water
- Melting point (°C) : 3680°C
- Ignition temperature : No data
- Boiling Point (°C) : No data
- Oxygenation : No
- Flash point (°C) : No data
- Combustibility : No data
- Explosiveness : No
- Main Application : Conductive agent for battery, capacitor and other energy storage equipment.

10. Stability and reactivity

- Stability : The chemical properties are very stable.
- Prohibited substance : No.
- Conditions for avoiding contact : Water, moisture or moist air.

- Polymerization hazards : No.
 - Decomposition products : It can not be decomposed under normal temperature and pressure. When decomposed by heating, it may contain toxic carbon compounds.
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11. Toxicology information

- Acute toxicity : Not found.
- Sub-acute and chronic toxicity : No irritation to skin. But if the powder enters the eyes, it may cause eye discomfort if it is not handled correctly. In the experiment of mice, graphene oxide was dripped into the respiratory tract of mice through trachea. Graphene oxide accumulated in the lungs of mice and stagnated for weeks to months. Physiological and biochemical analysis showed that graphene oxide could significantly induce acute lung injury in mice, causing typical pulmonary edema, but it could be reversed by antiinflammatory drugs such as dexamethasone (according to Chinese Science Journal 201).

3-5-27 First Edition: Progress in Respiratory Toxicity of Graphene. However, whether graphene has this damage or not, there is no experimental data for reference.

12. Ecology data

- Eco-toxicity : No information on this aspect is available yet.
 - Biodegradability : No information on this aspect is available yet.
 - Aquatic plant hazards : No information on this aspect is available yet.
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13. Waste disposal

- Waste properties : Industrial liquid waste.
 - Disposal method : The material can be treated and recycled according to the contaminated condition. If any method can not be recycled, it needs to be classified and stored in sealed containers for safe and environmentally friendly treatment.
 - Abandoned matters needing attention : Prevent dust and pollution.
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14. Transport Information

- Dangerous Goods Number : No.
- Packaging Mark : It does not belong to dangerous chemicals and has no special packing mark.

- Packaging methods : Sealed bags, sealed plastic barrels, sealed glass containers, etc.
 - Transportation Notes : According to the selected packaging method to determine.
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15. Regulation Information

«Safety Production Law of the People's Republic of China», «Regulations on Safety Management of Hazardous Chemicals», «Classification and Marking of Commonly Used Hazardous Chemicals», «Classification and Name Number of Hazardous Goods», and «Regulations on Transportation Management of Hazardous Goods».

16. Other Information

- References :
 - Revision Explain :
 - Tabulation Department : Customer service department
 - Data audit : Quality department
 - Date : 2019 - 06 - 03
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Graphene Conductive Slurry (H₂O) Material Safety Data Sheet

1. Chemicals and Enterprise Identification

- Name of Chemicals : Graphene Conductive Slurry (H₂O)
 - Common or commodity names of chemicals : Graphene water slurry
 - Enterprise name : Qingdao DT Nanotech Co., Ltd.
 - Address : The Graphite New Material Industrial Park, Nanshu, Town, Laixi City, Qingdao, Shandong Province, China
 - Enterprise Emergency Telephone / Fax : 0532-8343-2166 / 0532-8640-2866
-

2. Composition / Composition Information

- Chemical composition : Carbon , H₂O
 - CAS number : 7440-44-0
 - Content : ≥ 3.5 % , ≥ 96 %
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3. Overview of danger

- Danger category : It can stimulate the respiratory tract.
 - Invasion pathway : Direct contact with eyes or skin.
 - Health hazard : Skin contact is harmless to the human body; if the product enters the eyes, it will cause irritation.
 - Environmental harm : No
 - Risk of explosion : Not easy to burn, not easy to explode.
-

4. Emergency measures

- Skin contact : Skin contact with this mixture is harmless to human body. It can be washed with clean water or soapy water. If you have any discomfort, please see a doctor immediately.
- Eye contact : If touching liquid products, rinse them with plenty of clear water for at least 15 minutes. If necessary, they can be sent to a doctor for treatment.
- Inhalation : In general, it is not possible to inhale liquids. If inhaled, it should be moved to an open ventilated place immediately. If necessary, artificial respiration should be carried out. Appropriate measures should be taken in time. If necessary, it can be treated by a doctor.

- Ingestion : Let the injured person drink a lot of water or milk in order to dilute the chemicals and try to make him vomit. Then see a doctor immediately.
-

5. Fire control measures

- Hazard characteristics : Non-flammable liquid. Reactions may occur if strong oxidants are encountered.
 - Harmful combustion : When thermal decomposition releases water vapor, it may produce carbon monoxide, carbon dioxide and other gases.
 - Fire extinguishing Method- sand extinguishing agents : Use water, dry powder, foam and carbon dioxide extinguisher to extinguish fire. Keep fire containers cool with water.
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6. Emergency Leakage Handling

7. Operational Disposal and Storage

- Cautions for Operational Disposal : Pay attention to the leak
 - Storage considerations : The products are stored in sealed containers in a cool and ventilated place to ensure good air quality in the storage area. Take necessary preventive measures, such as anti-static electricity, anti-pollution and so on. Used containers need to be cleaned. Store separately from the product.
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8. Contact control / personal protection

- Engineering control : It is very stable at normal atmospheric temperature and ordinary pressure and does not require special management measures.
- Respiratory system protection : Wear a dust mask with suitable filter, dust-proof respirator, etc.
- Eye protection : Avoid contact; wear proper goggles.
- Body protection : Avoid contact; Suitable dress.
- Hand protection : Avoid contact; It can be equipped with rubber gloves and plastic gloves.
- Other protection : Smoking, eating and drinking are prohibited in the workplace. After the work is finished, bathe and change clothes. Pay attention to personal hygiene.

9. Physicochemical Characteristics

- Appearance and shape : High purity graphene is suspended in water.
- Specific gravity : 1.03 ~ 1.10 (H₂O=1)
- Odor :
- Solubility : No
- Melting point (°C) :
- Ignition temperature :
- Boiling Point (°C) : 100°C (H₂O)
- Oxygenation :
- Flash point (°C) :
- Combustibility :
- Explosiveness : No
- Main Application : Widely used in supercapacitors, lithium-ion batteries, lead-carbon batteries, marine engineering coatings, special functional coatings, engineering plastics, rubber, aerospace and defense industries and many other fields.

10. Stability and reactivity

- Stability : The chemical properties are very stable at room temperature and pressure.
- Prohibited substance : Avoid strong oxidants such as fire source, strong acid and alkali.
- Conditions for avoiding contact : Water, moisture or moist air.
- Polymerization hazards : No.
- Decomposition products : It can not be decomposed under normal temperature and pressure. When decomposed by heating, it may contain toxic carbon compounds.

11. Toxicology information

- Acute toxicity : Not found.
- Sub-acute and chronic toxicity : The steam generated by the decomposition of the product will irritate the eyes.

12. Ecology data

- Eco-toxicity : No information on this aspect is available yet.
- Biodegradability : No information on this aspect is available yet.
- Aquatic plant hazards : No information on this aspect is available yet.

13. Waste disposal

- Waste properties : Industrial liquid waste.
- Disposal method : The material can be treated and recycled according to the contaminated condition. If any method can not be recycled, it needs to be classified and stored in sealed containers for safe and environmentally friendly treatment.
- Abandoned matters needing attention : Prevent pollution.

14. Transport Information

- Dangerous Goods Number : GB 3.2 class 32197
- Packaging Mark : Non-flammable liquid.
- Packaging methods : Plastic chemical barrel, sealed and preserved.
- Transportation Notes : Store in a cool, ventilated and dry warehouse, away from fire and avoid direct sunlight. Handling light handling, to prevent damage to packaging.

15. Regulation Information

Refer to the relevant national laws and requirements, such as the "New Chemical Environmental Management Measures" and so on.

16. Other Information

- References :
 - Revision Explain :
 - Tabulation Department : Customer service department
 - Data audit : Quality department
 - Date : 2019 - 04 - 26
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Graphene Conductive Slurry (NMP) Material Safety Data Sheet

1. Chemicals and Enterprise Identification

- Name of Chemicals : Graphene Conductive Slurry NMP
 - Common or commodity names of chemicals : Graphene water slurry
 - Enterprise name : Qingdao DT Nanotech Co., Ltd.
 - Address : The Graphite New Material Industrial Park, Nanshu, Town, Laixi City, Qingdao, Shandong Province, China
 - Enterprise Emergency Telephone / Fax : 0532-8343-2166 / 0532-8640-2866
-

2. Composition / Composition Information

- Chemical composition : Carbon , H₂O
 - CAS number : 7440-44-0
 - Content : $\geq 3.5\%$, $\geq 96\%$
-

3. Overview of danger

- Danger category : It can stimulate the respiratory tract.
 - Invasion pathway : Direct contact with eyes or skin.
 - Health hazard : Skin contact is harmless to the human body; if the product enters the eyes, it will cause irritation.
 - Environmental harm : No
 - Risk of explosion : Not easy to burn, not easy to explode.
-

4. Emergency measures

- Skin contact : Skin contact with this mixture is harmless to human body. It can be washed with clean water or soapy water. If you have any discomfort, please see a doctor immediately.
- Eye contact : If touching liquid products, rinse them with plenty of clear water for at least 15 minutes. If necessary, they can be sent to a doctor for treatment.
- Inhalation : In general, it is not possible to inhale liquids. If inhaled, it should be moved to an open ventilated place immediately. If necessary, artificial respiration should be carried out. Appropriate measures should be taken in time. If necessary, it can be treated by a doctor.

- Ingestion : Let the injured person drink a lot of water or milk in order to dilute the chemicals and try to make him vomit. Then see a doctor immediately.
-

5. Fire control measures

- Hazard characteristics : Non-flammable liquid. Reactions may occur if strong oxidants are encountered.
 - Harmful combustion : When thermal decomposition releases water vapor, it may produce carbon monoxide, carbon dioxide and other gases.
 - Fire extinguishing Method- sand extinguishing agents : Use water, dry powder, foam and carbon dioxide extinguisher to extinguish fire. Keep fire containers cool with water.
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6. Emergency Leakage Handling

7. Operational Disposal and Storage

- Cautions for Operational Disposal : Pay attention to the leak
 - Storage considerations : The products are stored in sealed containers in a cool and ventilated place to ensure good air quality in the storage area. Take necessary preventive measures, such as anti-static electricity, anti-pollution and so on. Used containers need to be cleaned. Store separately from the product.
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8. Contact control / personal protection

- Engineering control : It is very stable at normal atmospheric temperature and ordinary pressure and does not require special management measures.
- Respiratory system protection : Wear a dust mask with suitable filter, dust-proof respirator, etc.
- Eye protection : Avoid contact; wear proper goggles.
- Body protection : Avoid contact; Suitable dress.
- Hand protection : Avoid contact; It can be equipped with rubber gloves and plastic gloves.
- Other protection : Smoking, eating and drinking are prohibited in the workplace. After the work is finished, bathe and change clothes. Pay attention to personal hygiene.

9. Physicochemical Characteristics

- Appearance and shape : High purity graphene is suspended in water.
- Specific gravity : 1.03 ~ 1.10 (H₂O=1)
- Odor :
- Solubility : No
- Melting point (°C) :
- Ignition temperature :
- Boiling Point (°C) : 100°C (H₂O)
- Oxygenation :
- Flash point (°C) :
- Combustibility :
- Explosiveness : No
- Main Application : Widely used in supercapacitors, lithium-ion batteries, lead-carbon batteries, marine engineering coatings, special functional coatings, engineering plastics, rubber, aerospace and defense industries and many other fields.

10. Stability and reactivity

- Stability : The chemical properties are very stable at room temperature and pressure.
- Prohibited substance : Avoid strong oxidants such as fire source, strong acid and alkali.
- Conditions for avoiding contact : Water, moisture or moist air.
- Polymerization hazards : No.
- Decomposition products : It can not be decomposed under normal temperature and pressure. When decomposed by heating, it may contain toxic carbon compounds.

11. Toxicology information

- Acute toxicity : Not found.
- Sub-acute and chronic toxicity : The steam generated by the decomposition of the product will irritate the eyes.

12. Ecology data

- Eco-toxicity : No information on this aspect is available yet.
- Biodegradability : No information on this aspect is available yet.
- Aquatic plant hazards : No information on this aspect is available yet.

13. Waste disposal

- Waste properties : Industrial liquid waste.
- Disposal method : The material can be treated and recycled according to the contaminated condition. If any method can not be recycled, it needs to be classified and stored in sealed containers for safe and environmentally friendly treatment.
- Abandoned matters needing attention : Prevent pollution.

14. Transport Information

- Dangerous Goods Number : GB 3.2 class 32197
- Packaging Mark : Non-flammable liquid.
- Packaging methods : Plastic chemical barrel, sealed and preserved.
- Transportation Notes : Store in a cool, ventilated and dry warehouse, away from fire and avoid direct sunlight. Handling light handling, to prevent damage to packaging.

15. Regulation Information

Refer to the relevant national laws and requirements, such as the "New Chemical Environmental Management Measures" and so on.

16. Other Information

- References :
 - Revision Explain :
 - Tabulation Department : Customer service department
 - Data audit : Quality department
 - Date : 2019 - 04 - 26
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Thermal Conductive Graphene Silicone Grease Material Safety Data Sheet

1. Chemicals and Enterprise Identification

- Name of Chemicals : Thermal Conductive Graphene Silicone Grease
 - Common or commodity names of chemicals : Graphene thermal conductive silicone grease, Graphene Thermal Conductive Paste
 - Enterprise name : Qingdao DT Nanotech Co., Ltd.
 - Address : The Graphite New Material Industrial Park, Nanshu, Town, Laixi City, Qingdao, Shandong Province, China
 - Enterprise Emergency Telephone / Fax : 0532-8343-2166 / 0532-8640-2866
-

2. Composition / Composition Information

- Chemical composition : Dimethyl silicone oil , Alumina , Graphene
 - CAS number : 63148-62-9 , 1344-28-1 , 7782-42-5
 - Content : 5 - 15 % , 80 - 90 % , 0.1 - 5.0 %
-

3. Overview of danger

- Danger category : Non hazardous goods
 - Invasion pathway : Percutaneous skin absorption, Ingestion.
 - Health hazard : Can stimulate the skin, slightly damage the skin, eating harmful to the body.
 - Environmental harm : Basically no impact.
 - Risk of explosion : This product is non combustible.
-

4. Emergency measures

- Skin contact : Remove from skin and wash skin with soapy water and clear water.
- Eye contact : Lift the eyelids, wash them with flowing water or saline, and see a doctor.
- Inhalation : Usually not. Immediately leave the scene and go to the fresh air to keep the respiratory tract unobstructed. Seek medical treatment when breathing is difficult.
- Ingestion : Usually not. Seek medical advice.

5. Fire control measures

- Hazard characteristics : No harm.
- Harmful combustion products : Incomplete combustion of carbides and metal oxides.
- Fire extinguishing Methods and extinguishing agents : In case of a big fire, use foam or water mist; Use carbon dioxide or water mist in small fires; water can be used to cool the burning exposure vessel.

6. Emergency Leakage Handling

- Emergency Management : When a small amount of leakage is found, the barrel needs to be changed in time and wipe out the leakage with a rag. If a large number of leaks are found, dykes or pits should be built around the leaking area, the materials without impurities in the upper layer should be recovered back to the container, and the remaining materials should be covered with sand, and then be removed and sent to the three waste treatment stations for incineration.

7. Operational Disposal and Storage

- Cautions for Operational Disposal : Avoid contact with skin and eyes. Please do not eat. Handle contaminated clothing immediately. Implement good industrial hygiene measures. Clean after operation, especially before eating or smoking, strictly abide by the operating rules, equip necessary fire fighting equipment and protective equipment.
- Storage considerations : Keep the container sealed and avoid water or moisture during storage.

8. Contact control / personal protection

- Engineering control : Strengthen ventilation and wear rubber protective gloves in direct contact.
- Respiratory system protection : Normally not required.
- Eye protection : Use safety glasses.
- Body protection : Normally no, no requirement.
- Hand protection : Chemical protective gloves should be worn when direct contact with the product
- Other protection : Fireworks and food are forbidden at work site, and cleaning work is done after completion of work.

9. Physicochemical Characteristics

- Appearance and shape : Paste like.
- Odor : Odorless
- Solubility : No Data
- Melting point (°C) : No Data
- Ignition temperature : No Data
- Boiling Point (°C) : No Data
- Oxygenation : No
- Flash point (°C) : No Data
- Combustibility : Nonflammable 94V - 0
- Explosiveness : No
- Main Application : Thermal Conductive Interface Materials.
- Other physical and chemical properties : No

10. Stability and reactivity

- Stability : Stable.
- Prohibited substance : Strong oxidizers, water, explosives, spontaneous combustion.
- Conditions for avoiding contact : Water, moisture or moist air.
- Polymerization hazards : Do not produce harmful polymers.
- Decomposition products : Carbon dioxide and trace amounts of incompletely burned solids, Water, metal oxides.

11. Toxicology information

- Acute toxicity : Not found.
- Sub-acute and chronic toxicity : Eye contact may produce mild irritation. Small amount of inhalation has no effect; excessive exposure can cause fatigue; prolonged exposure may cause irritation; long-term skin contact may cause allergic reactions.

12. Ecology data

- Eco-toxicity : No harm.
- Biodegradability : Solids do not decompose in water. Decomposition of harmless substances.
- Aquatic plant hazards : No bacterial effects.

13. Waste disposal

- Waste properties : Industrial liquid waste.
- Disposal method : Qualified recyclers handle, It is suggested that incineration be used.
- Abandoned matters needing attention : Disposal should be far away from residential areas and handled in places where human and animal activities are scarce.

14. Transport Information

- Dangerous Goods Number : -
- Packaging Mark : General cargo.
- Packaging methods : PUusually 1kg black bucket.
- Transportation Notes : Prevent sunshine and rain, pay extra caution during handling. Prohibit collision. Corresponding fire fighting equipment and leak emergency equipment should be equipped during transportation. It's best to avoid high temperature in summer. Keep away from public places and densely populated places. Transport vehicles must be equipped with fire protection devices.

15. Regulation Information

«Safety Production Law of the People's Republic of China», «Regulations on Safety Management of Hazardous Chemicals», «Classification and Marking of Commonly Used Hazardous Chemicals», «Classification and Name Number of Hazardous Goods», and «Regulations on Transportation Management of Hazardous Goods».

16. Other Information

- References : "Silicone synthesis technology and product application", "Viscose analysis and testing technology", "Silicone materials".
- Tabulation Department : Customer service department
- Data audit : Quality department
- Date : 2019 - 06 - 04

A/B-component Graphene Thermal Conductive Pouring Sealant Material Safety Data Sheet

1. Chemicals and Enterprise Identification

- Name of Chemicals : A/B-component Graphene Thermal Conductive Pouring Sealant
 - Common or commodity names of chemicals : Silica gel sealant
 - Enterprise name : Qingdao DT Nanotech Co., Ltd.
 - Address : The Graphite New Material Industrial Park, Nanshu, Town, Laixi City, Qingdao, Shandong Province, China
 - Enterprise Emergency Telephone / Fax : 0532-8343-2166 / 0532-8640-2866
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2. Composition / Composition Information

- Chemical composition : Vinyl silicone oil , polymethylhydrosiloxane , alumina , graphene
 - CAS number : 68083-19-2 , 63148-57-2 , 1344-28-1 , 7782-42-5
 - Content : 30 - 45 % , 2.0 - 3.0 % , > 50 % , 0.5 - 5.0 %
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3. Overview of danger

- Danger category : Non hazardous goods.
 - Invasion pathway : Percutaneous skin absorption, Ingestion.
 - Health hazard : Can stimulate the skin, slightly damage the skin, eating harmful to the body.
 - Environmental harm : Basically no impact.
 - Risk of explosion : This product is non-flammable and will release flammable ethanol when exposed to water or humid air.
-

4. Emergency measures

- Skin contact : Remove from skin and wash skin with soapy water and clear water.
- Eye contact : Lift the eyelids, wash them with flowing water or saline, and see a doctor.
- Inhalation : Usually not. Immediately leave the scene and go to the fresh air to keep the respiratory tract unobstructed. Seek medical treatment when breathing is difficult.
- Ingestion : Usually not. Seek medical advice.

5. Fire control measures

- Hazard characteristics : No harm.
- Harmful combustion products : Incomplete combustion of carbides and metal oxides.
- Fire extinguishing Methods and extinguishing agents : In case of a big fire, use foam or water mist; Use carbon dioxide or water mist in small fires; water can be used to cool the burning exposure vessel.

6. Emergency Leakage Handling

- Emergency Management : When a small amount of leakage is found in barreled products, the staff will change the barrel in time and absorb the leaked liquid on the ground with sand, coal ash, etc. If a large number of leaks are found, dykes or pits should be built around the leaking area. Recycle the upper layer of mucus without impurities and put it into the container. The remnants are covered with sand. After eradication, it is sent to three waste treatment stations for incineration treatment.

7. Operational Disposal and Storage

- Cautions for Operational Disposal : With ventilation and exhaust equipment, products exposed to water or moist air will release flammable ethanol. When using, ventilation and exhaust equipment should be provided, ethanol should be controlled within the prescribed range or respiratory protection equipment should be used to avoid contact with eyes. Avoid inhaling fog and keep the container sealed. Do not take in. Handle contaminated clothing immediately. Implement good industrial hygiene measures. Clean after operation, especially before smoking, strictly abide by the operation rules, equip necessary fire fighting equipment and protective equipment.
- Storage considerations : Keep away from oxides. Keep the container sealed and avoid moisture or moisture during storage. No contact with organic compounds containing N, P, S, Sn, Pb, Hg, As, alkynes and olefins.

8. Contact control / personal protection

- Engineering control : Strengthen ventilation and wear rubber protective gloves in direct contact.
- Respiratory system protection : Keep away from oxides. Keep the container sealed and avoid moisture or moisture during storage. No contact with organic compounds containing N, P, S, Sn, Pb, Hg, As, alkynes and olefins.

- Eye protection : Use safety glasses.
 - Body protection : Normally no, no requirement.
 - Hand protection : Chemical protective gloves should be worn when direct contact with the product.
 - Other protection : Fireworks and food are forbidden at the work site, and cleaning work is done in time after the work is finished. When exposed to water or moisture, the product is converted to flammable methanol. When operating, wear air supply respirator or self-contained respirator, and use ventilation equipment to control methanol exposure according to exposure index.
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9. Physicochemical Characteristics

- Appearance and shape : Liquid like.
 - Odor : Odorless
 - Solubility : No data
 - Melting point (°C) : No data
 - Ignition temperature : No data
 - Boiling Point (°C) : No data
 - Oxygenation : No
 - Flash point (°C) : No data
 - Combustibility : Nonflammable V-0
 - Explosiveness : No
 - Main Application : Filling, Heat Conduction and Moisture-proof for Electrical Appliances Filling.
 - Other physical and chemical properties : Can be completely solidified.
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10. Stability and reactivity

- Stability : Stable.
- Prohibited substance : Strong oxidizers, water, explosives, spontaneous combustion.
- Conditions for avoiding contact : Water, moisture or moist air; organic compounds containing N, P, S, etc; Sn, Pb, Hg, As plasma chemicals; compounds containing alkynes and olefins.
- Polymerization hazards : Do not produce harmful polymers.
- Decomposition products : Carbon dioxide and trace amounts of incompletely burned solids, Water, metal oxides.

11. Toxicology information

- Acute toxicity : Not found.
- Sub-acute and chronic toxicity : Eye contact may produce mild irritation. Small amount of inhalation has no effect; excessive exposure can cause fatigue; prolonged exposure may cause irritation; long-term skin contact may cause allergic reactions.

12. Ecology data

- Eco-toxicity : No harm.
- Biodegradability : Solids do not decompose in water. Decomposition of harmless substances.
- Aquatic plant hazards : No bacterial effects.

13. Waste disposal

- Waste properties : Industrial solid waste.
- Disposal method : Qualified recyclers handle, It is suggested that incineration be used.
- Abandoned matters needing attention : Disposal should be far away from residential areas and handled in places where human and animal activities are scarce.

14. Transport Information

- Dangerous Goods Number : -
- Packaging Mark : General cargo.
- Packaging methods : Usually 25L plastic bucket is used.
- Transportation Notes : Prevent sunshine and rain, pay extra caution during handling. Prohibit collision. Corresponding fire fighting equipment and leak emergency equipment should be equipped during transportation. It's best to avoid high temperature in summer. Keep away from public places and densely populated places. Transport vehicles must be equipped with fire protection devices.

15. Regulation Information

«Safety Production Law of the People's Republic of China», «Regulations on Safety Management of Hazardous Chemicals», «Classification and Marking of Commonly Used Hazardous Chemicals», «Classification and Name Number of Hazardous Goods», and «Regulations on Transportation Management of Hazardous Goods».

16. Other Information

- References : "Silicone synthesis technology and product application", "Viscose analysis and testing technology", "Silicone materials".
 - Tabulation Department : Customer service department
 - Data audit : Quality department
 - Date : 2019 - 06 - 04
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Graphene modified heat exchanger paint Material Safety Data Sheet

1. Chemicals and Enterprise Identification

- Name of Chemicals : Graphene modified heat exchanger paint
 - Common or commodity names of chemicals : The cooling coating
 - Enterprise name : Qingdao DT Nanotech Co., Ltd.
 - Address : The Graphite New Material Industrial Park, Nanshu, Town, Laixi City, Qingdao, Shandong Province, China
 - Enterprise Emergency Telephone / Fax : 0532-8343-2166 / 0532-8640-2866
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2. Composition / Composition Information

- Chemical composition : Graphene , synthetic resin , curing agent , filler , additives
 - CAS number : 7782-42-5 , 37247-87-3
 - Content :
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3. Overview of danger

- Danger category : Non hazardous goods.
 - Invasion pathway : Percutaneous skin absorption, Ingestion.
 - Health hazard : Can stimulate the skin, slightly damage the skin, eating harmful to the body.
 - Environmental harm : Basically no impact.
 - Risk of explosion : This product is non combustible.
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4. Emergency measures

- Skin contact : Remove from skin and wash skin with soapy water and clear water.
- Eye contact : Lift the eyelids and wash them with flowing water or saline. If you feel irritation or foreign body sensation, see a doctor in time.
- Inhalation : Usually not. If inhalation should immediately leave the scene to the fresh air, keep the respiratory tract unobstructed, such as oxygen infusion when breathing difficulties, immediate medical treatment.
- Ingestion : Usually not. When a small amount enters the mouth, a large amount of clean water is needed to clean the mouth. If swallowed, a large amount of clean water should be used to clean the mouth. Drink more water and see a doctor in time.

5. Fire control measures

- Hazard characteristics : No harm.
- Harmful combustion products : Incomplete combustion of carbides, metal oxides, granular powder.
- Fire extinguishing Methods and extinguishing agents : Use in case of fire, Foam or water mist; Use carbon dioxide in small fires, Water mist; Water can cool the burning exposure vessel.

6. Emergency Leakage Handling

- Emergency Management : When a small amount of leakage is found, the barrel needs to be changed in time and wipe out the leakage with a rag. If a large number of leaks are found, dykes or pits should be built around the leaking area, the materials without impurities in the upper layer should be recovered back to the container, and the remaining materials should be covered with sand, and then be removed and sent to the three waste treatment stations for incineration.

7. Operational Disposal and Storage

- Cautions for Operational Disposal : Avoid contact with skin and eyes. Please do not eat. Handle contaminated clothing immediately. Implement good industrial hygiene measures. Clean after operation, especially before eating or smoking, strictly abide by the operating rules, equip necessary fire fighting equipment and protective equipment.
- Storage considerations : Storage environment should be dry, cool and ventilated to avoid heat and fire sources. Packing containers are kept airtight. The effective storage period is one year. If it exceeds the storage period, the tank should be reopened for inspection to confirm whether it can be used continuously.

8. Contact control / personal protection

- Engineering control : Strengthen ventilation and wear rubber protective gloves in direct contact.
- Respiratory system protection : Wear protective masks.
- Eye protection : Use safety glasses.
- Body protection : Normally no, no requirement.
- Hand protection : Chemical protective gloves should be worn when direct contact with the product.

- Other protection : Fireworks and food are forbidden at the work site. Before and after work, the exposed parts of skin should be cleaned carefully. Hands or other parts with products should not be used to contact eyes. Graphene is a good conductor of electricity. Therefore, when working on live line, personal cleaning and operation safety should be paid attention to. Do a good job of cleaning in time after the completion of the work.
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9. Physicochemical Characteristics

- Appearance and shape : Coating
 - Odor : Mild irritant odor
 - Solubility : No data
 - Melting point (°C) : No data
 - Ignition temperature : No data
 - Boiling Point (°C) : No data
 - Oxygenation : No
 - Flash point (°C) : No data
 - Combustibility : No data
 - Explosiveness : No
 - Main Application : Special protective coatings for industrial heat exchangers.
 - Other physical and chemical properties : No
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10. Stability and reactivity

- Stability : Stable.
 - Prohibited substance : Strong oxidizers, water, explosives, spontaneous combustion.
 - Conditions for avoiding contact : Water, moisture or moist air.
 - Polymerization hazards : Do not produce harmful polymers.
 - Decomposition products : Carbon dioxide and trace amounts of incompletely burned solids, Water, metal oxides.
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11. Toxicology information

- Acute toxicity : Not found.
- Sub-acute and chronic toxicity : Eye contact may produce mild irritation. Small amount of inhalation has no effect; excessive exposure can cause fatigue; prolonged exposure may cause irritation; long-term skin contact may cause allergic reactions.

12. Ecology data

- Eco-toxicity : No harm.
- Biodegradability : Coatings do not decompose in water. No harmful substances decompose.
- Aquatic plant hazards : No bacterial effects.

13. Waste disposal

- Waste properties : Industrial solid waste.
- Disposal method : The material can be treated and recycled according to the contaminated condition. If no matter what method is used, it can not be recycled, it needs to be classified and stored in sealed containers, which can be safely and environmentally treated in a unified way.
- Abandoned matters needing attention : Disposal should be far away from residential areas and handled in places where human and animal activities are scarce.

14. Transport Information

- Dangerous Goods Number : -
- Packaging Mark : General cargo.
- Packaging methods : Commonly iron bucket.
- Transportation Notes : Prevent sunshine and rain, pay extra caution during handling. Prohibit collision. Corresponding fire fighting equipment and leak emergency equipment should be equipped during transportation. It's best to avoid high temperature in summer. Keep away from public places and densely populated places. Transport vehicles must be equipped with fire protection devices.

15. Regulation Information

«Safety Production Law of the People's Republic of China», «Regulations on Safety Management of Hazardous Chemicals», «Classification and Marking of Commonly Used Hazardous Chemicals», «Classification and Name Number of Hazardous Goods», and «Regulations on Transportation Management of Hazardous Goods».

16. Other Information

- References :
- Revision explain :
- Tabulation Department : Customer service department
- Data audit : Quality department
- Date : 2019 - 04 - 29

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