



## Material Safety Data Sheet

### 1. Identification of the Substance/Mixture and of the Company

<b>Product Details/Name</b>	Graphene Shielding Paint GSS-A
<b>Use of Substance</b>	Conductive Coating for EMI, EMR shielding
<b>Supplier Details</b>	Graphene Star Ltd NETPark Incubator, Thomas Wright Way, NETPark, TS21 3FD Telephone: +44(0) 2039126022 Email: <a href="mailto:trading@graphene-star.com">trading@graphene-star.com</a>



## 2. Hazards Identification

<b>Primary route(s) of exposure</b>	Inhalation, skin contact, eye contact, ingestion
<b>Inhalation:</b>	Irritation of respiratory tract, lungs. Prolonged inhalation may lead to mucous membrane irritation, dizziness and/or lightheadedness, headache, nausea, chest pain, coughing, difficulty of breathing, severe lung irritation, pneumoconiosis.
<b>Skin contact:</b> <b>Eye contact:</b> <b>Ingestion:</b>	Irritation of skin. Irritation of eyes. Prolonged or repeated contact can cause tearing of eyes, redness of eyes. Ingestion may cause mouth and throat irritation, nausea, gastro-intestinal disturbances, abdominal pain.
<b>Medical conditions aggravated by exposure:</b>	Eye, skin, respiratory disorders, asthma-like conditions.

## 3. First Aid Measures

<b>After Eye Contact</b>	Immediately rinse (flush) eyes with water for at least 15 min holding the eyelid open. Remove contact lenses. If irritation persists, seek medical attention.
<b>After Skin Contact</b>	Wash immediately the exposed area with soap and water, rinsing thoroughly and remove contaminated clothing. Seek medical attention if irritation persists.
<b>After Ingestion</b>	If swallowed rinse mouth with water immediately. Seek medical attention.
<b>After Inhalation</b>	Move the exposed person to fresh air. If not breathing give artificial respiration and seek medical attention.

## 4. Composition/Information on Ingredients

<b>Material</b>	Carbon 1-50%, Acrylic water dispersion 50-99%
<b>Synonyms</b>	Few-layer graphene, graphene flakes, graphene sheets



## 5. Fire Fighting Measures

<b>Suitable extinguishing media</b>	Dry chemical or foam water fog. Carbon dioxide. Closed containers may burst if exposed to extreme heat or fire. In closed tanks, water or foam may cause frothing or eruption.
<b>Fire Hazards</b>	Burning produces irritation. May combust to toxic fumes with CO content in oxygen deficient conditions.
<b>Fire Fighting Instructions</b>	Water may be used to cool and protect exposed containers. Firefighters should use full protective clothing, eye protection, and self-contained breathing apparatus.

## 6. Accidental Release Measures

<b>Person Related Safety Precautions</b>	Wear suitable protective equipment. Wear suitable respiratory equipment according to Health and Safety Executive guidelines for use of nanomaterials at work. Ensure appropriate ventilation in the working area and avoid raising dust. If the operator gets in contact with the materials, it is recommended to seek a full body shower as soon as possible where skin and hair can be washed with water and soap.
<b>Environmental Precautions</b>	Do not let product enter drains.
<b>Methods for Cleaning and Collecting</b>	Contain and clean up spill if safe to do so using an electrically protected vacuum cleaner or by wet-brushing. Dispose of dry waste in closed container for proper disposal according to local regulations.

## 7. Handling and Storage

<b>Handling</b>	Store between 5°C (41°F) and 35°C (95°F).
<b>Storage</b>	Use only with adequate ventilation. Keep out of reach of children. Avoid contact with skin and eyes, and breathing of vapors. Wash hands thoroughly after handling, especially before eating or smoking. Keep containers tightly closed and upright when not in use. Avoid conditions which result in formation of inhalable particles such as spraying, or abrading (sanding) painted surfaces. If such conditions cannot be avoided, use appropriate respiratory protection as directed under exposure controls/personal protection.



## 8. Exposure Controls and Personal Protection

<b>Exposure Guidelines</b>	Not yet established. Keep exposure as low as it is technically feasible. For information, levels for graphite are: Graphite (CAS no. 7782-42-5) TWA: ACGIH (TLV): 2.0 mg/m <sup>3</sup> respirable OSHA (PEL): 15 mL/m <sup>3</sup> respirable.
<b>Storage</b>	Keep away from oxidizing agents, ignition sources and heat. Avoid contact with acids. Keep in a cool, dry and well-ventilated area. Keep containers tightly closed and store in correctly labelled containers.
<b>Engineering Measures</b>	Local Exhaust Ventilation should be used, ducted fume cabinets or nanoparticle filter cabinets with a H14 HEPA filter is recommended. If this is not practical respiratory protection must be worn.
<b>Respiratory Protection</b>	Control environmental concentrations to be below applicable exposure standards when using this material. When respiratory protection is determined to be necessary, use a NIOSH/MSHA (Canadian z94.4) approved elastomeric sealing-surface facepiece respirator, outfitted with organic vapor cartridges and paint spray (dust/mist) prefilters.
<b>Skin Protection</b>	Handle with appropriate gloves and use proper glove removal technique to avoid skin contact. Dispose of gloves in accordance with applicable laws. Wash and dry hands. The selected protective gloves have to satisfy the specifications of EU Directive 89/686/EEC and the standard EN 374 derived from it.
<b>Environmental Exposure</b>	Environmental exposure should be minimized using the engineering measures identified above. Solid waste should be packaged as above and disposed of as hazardous waste.
<b>Eye Protection</b>	Wear safety glasses with side-shields conforming to appropriate government standards such as NOISH (US) or EN166 (EU).

## 9. Physical and Chemical Properties

<b>Appearance</b>	The gray acrylic paint, dry matter content up to 50%.
<b>Odour</b>	Odourless.
<b>Freezing point:</b>	Delivery form as powder: N/A; Ready usable as liquid paint: 0°C / 32°F.
<b>Boiling Point</b>	No data available
<b>Vapour Density</b>	Not applicable.
<b>Specific Gravity:</b>	1.05 - 1.25
<b>Evaporation rate (Water=80):</b>	80
<b>pH Level:</b>	7-8
<b>V.O.C.:</b>	N/A



## 10. Stability and Reactivity

<b>Reactivity</b>	No data available
<b>Stability</b>	Stable under normal temperatures and pressures under recommended storage conditions.
<b>Materials to Avoid</b>	Avoid contact with strong oxidizing agents, halogens, alkali metals and acids.
<b>Conditions to Avoid</b>	Heat and open flames
<b>Hazardous Decomposition products</b>	There is not known hazardous decomposition products.

## 11. Toxicological Information

<b>Toxicological Information</b>	No additional effects are anticipated.
<b>Reproductive effects:</b>	No reproductive effects are anticipated.
<b>Mutagenicity:</b>	No mutagenic effects are anticipated.
<b>Teratogenicity:</b>	No teratogenic effects are anticipated.

## 12. Ecological Information

<b>Eco-toxicity</b>	No data are available on this product.
<b>Mobility</b>	Is expected to be limited due to poor water solubility.
<b>Degradation</b>	No data are available on this product.
<b>Bioaccumulation</b>	No data are available on this product.
<b>Further Information</b>	No environmental risk is expected if the product is handled under the described conditions.



### 13. Disposal Considerations

<b>General Information</b>	Do not allow product to enter drains. Do not flush into surface water.
<b>Disposal Methods</b>	Empty paint containers should be recycled. Dried up leftovers of paint can be disposed of in household waste. Bring liquid leftovers of paint to waste collection centers. Do not dispose of in sink, water, or ground! Dispose in accordance with all applicable regulations. Avoid discharge to natural waters.

### 14. Transport Information

<b>Further Information</b>	Non-hazardous for road, air and sea transport. Clearly label packaging and keep an MSDS on the outside of all packaging.
<b>DOT Hazard Class:</b>	Not regulated per DOT.

### 15. Regulatory Information

<b>Labelling</b>	Samples may contain PAHs classified as hazardous to health according to EU and UK chemicals legislation.
<b>Safety Phrases</b>	S38 In case of insufficient ventilation, wear suitable respiratory equipment.

The information supplied in this safety data sheet is designed only as guidance for the safe use, storage and handling of the product. This information is correct to the best of our knowledge and belief at the date of publication however no guarantee is made to its accuracy. This information relates to the specific material designated and may not be valid for such materials used in combination with any other materials or in any other process.

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