1. Identification of the substance/mixture and of the company/undertaking

1.1. Product Details

Product Code : M892, M893
Name : Graphene oxide (nitrogen doped) solution
REACH No. : A registration number is not available for this substance as the substance or its uses are exempted from registration or the annual tonnage does not require a registration.

1.2. Relevant identified uses of the substance or mixture and uses advised against

Identified uses : Laboratory chemicals

1.3. Supplier details

Supplied by : Ossila Limited
Kroto Innovation Centre
Broad Lane, Sheffield
S3 7HQ, UK
Telephone : 0114 213 2770
Email address : info@ossila.com

2. Hazards identification

2.1. Classification of the substance or mixture

Classifications according to Regulation (EC) No. 1272/2008
Flammable liquids (Category 2), H225
Eye Irritation (Category 2), H319
Specific target organ toxicity – single exposure (Category 3), Central nervous system, H336

2.2. Label elements

Labelling according Regulation (EC) No 1272/2008

Signal word Danger

Hazard statement(s)
H225 Highly flammable liquid and vapour.
H319 Causes serious eye irritation.
H336 May cause drowsiness or dizziness.

Precautionary statement(s)
P210 Keep away from heat/sparks/open flames/hot surfaces. – No smoking.
P261 Avoid breathing vapours.
P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

Supplemental Hazard Statements None.
2.3. Other hazards
This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.

3. Composition/Information on ingredients

3.2 Mixtures
Synonyms: Graphene Oxide (Nitrogen Doped) suspension

<table>
<thead>
<tr>
<th>Component</th>
<th>CAS #</th>
<th>Weight %</th>
<th>CLP Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>2-Propanol</td>
<td>67-63-0</td>
<td>≤ 50 %</td>
<td>Flam. Liq. 2 (H225); Eye Irrit. 2 (H319); STOT SE 3 (H336)</td>
</tr>
</tbody>
</table>

4. First aid measures

4.1. Description of first aid measures

After Inhalation
If inhaled, remove to fresh air. If not breathing give artificial respiration. Call a physician.

After skin contact
In case of skin contact, wash with soap and flush with copious amounts of water for at least 15 minutes. Remove contaminated clothing and shoes. Call a physician.

After eye contact
In case of contact with eyes, flush with copious amounts of water for at least 15 minutes. Assure adequate flushing by separating the eyelids with fingers. Call a physician.

After Ingestion
Do NOT induce vomiting. Never give anything by mouth to an unconscious person. If swallowed, wash out mouth with water. Call a physician.

4.2. Most important symptoms and effects, both acute and delayed
The most important known symptoms and effects are described in section 11.

4.3. Indication of any immediate medical attention and special treatment needed
Contact a poison centre immediately in case of ingestion or inhalation of a large amount of product.

5. Fire fighting

5.1. Extinguishing media
Suitable extinguishing media: Dry chemical, alcohol-resistant foam, carbon dioxide or water spray. Consult with local fire authorities before attempting large scale fire-fighting operations.

5.2. Special hazards arising from the substance of mixture
Hazardous combustion products: Carbon oxides, nitrogen oxides.
5.3. Advice for firefighters

Wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear.

6. Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

Use personal protective equipment (see section 8). Avoid breathing vapours or mist. Ensure adequate ventilation. Remove all sources of ignition. Beware of vapours accumulating to form explosive concentrations in low areas.

6.2. Environmental precautions

Prevent further leakage or spilling if safe to do so. Do not let product enter drains.

6.3. Containment and cleaning:

Contain and clean up spill if safe to do so using an electrically protected vacuum cleaner or by wet-brushing. Dispose of in a closed container for proper disposal according to local regulations.

7. Handling and storage

7.1. Precautions for safe handling

Avoid contact with skin and eyes. Avoid inhalation of vapour or mist. Keep away from sources of ignition and avoid the build of electrostatic charge.

7.2. Conditions for safe storage, including any incompatibilities

Store in a cool, dry and well-ventilated place inside of a tightly sealed container. Reseal containers that have been opened and keep upright to prevent leakage.

7.3. Specific end uses

Use in laboratories.

8. Exposure controls / Personal protection

8.1. Control parameters

UK – EH40 Workplace Exposure Limits (WEL).

Components with workplace control parameters

<table>
<thead>
<tr>
<th>Component</th>
<th>CAS #</th>
<th>Control parameters</th>
</tr>
</thead>
<tbody>
<tr>
<td>2-Propanol</td>
<td>67-63-0</td>
<td>500ppm (STEL)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1250 mg/m³ (STEL)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>400 ppm (TWA)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>999 mg/m³ (TWA)</td>
</tr>
</tbody>
</table>

TWA - time weighted average; STEL - Short Term Exposure Limit

Biological occupational exposure limits

This product does not contain any hazardous materials with biological limits.

8.2. Exposure controls

Engineering measures

Handle in accordance with good industrial engineering/laboratory practices for hygiene and safety. Ensure eyewash stations and safety showers are close to the laboratory workstation. Ensure good general ventilation is present when handling the product.
Personal protective equipment

**Eyes:** Wear safety glasses with side-shields conforming to appropriate government standards such as NOISH (US) or EN166 (EU).

**Skin:** 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.

**Clothing:** Wear complete suit protecting against chemicals; the type of equipment should be appropriate for the concentration and amount of dangerous substance used.

**Respirators:** Use multi-purpose combination (US) or type ABEK (EN 14387) respirator cartridges as a backup to engineering controls. Use respirators that have been approved under appropriate government standards such as NIOSH (US) or CEN (EU).

**General hygiene measures**

Wash thoroughly after handling. Wash contaminated clothing before reuse.

9. Physical and chemical properties

9.1. Information on basic physical and chemical properties

- **Appearance**: Dark grey liquid
- **Odour**: Alcohol-like
- **Odour threshold**: No data available
- **pH**: No data available
- **Melting/freezing point**: No data available
- **Boiling point/range**: No data available
- **Flash point**: No data available
- **Evaporation rate**: No data available
- **Flammability**: No data available
- **Explosive limits**: No data available
- **Vapour pressure**: No data available
- **Vapour density**: No data available
- **Relative density**: No data available
- **Solubility(ies)**: Miscible with water
- **Partition coefficient: n-octanol/water**: No data available
- **Autoignition temperature**: No data available
- **Decomposition temperature**: No data available
- **Viscosity**: No data available
- **Explosive properties**: No data available
- **Oxidising properties**: No data available

9.2. Other safety information

No data available.

10. Stability and reactivity

10.1 Reactivity

No data available.

10.2. Chemical stability

Stable under normal temperatures and pressures under recommended storage conditions.

10.3. Possibility of hazardous reactions

No data available.
10.4. Conditions to avoid
Heat, flames and sparks. Extremes of temperature and direct sunlight.

10.5. Incompatible materials
Strong oxidising agents, Acid anhydrides, Aluminium, Halogenated compounds, Acids

10.6. Hazardous decomposition products
No known hazardous decomposition products.

11. Toxicological information

11.1. Information on toxicological effects

Acute toxicity
No data available.

Skin corrosion/irritation
May cause mild skin irritation.

Serious eye damage/eye irritation
May cause eye irritation.

Respiratory or skin sensitization
May cause irritation to skin and respiratory tract.

Germ cell mutagenicity
No data available.

Carcinogenicity
IARC: No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

Reproductive toxicity
No data available.

Specific target organ toxicity - single exposure
No data available.

Specific target organ toxicity - repeated exposure
Inhalation, Oral – May cause drowsiness or dizziness.

Aspiration hazard
No data available.

Routes of exposure
Eye contact, ingestion, inhalation, skin contact.

Signs and Symptoms of Exposure
No data available.

To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

12. Ecological information

12.1. Toxicity
No data available.

12.2. Persistence and degradability
No data available.

12.3. Bioaccumulative potential
No data available.

12.4. Mobility in soil
No data available.
12.5. Results of PBT and vPvB assessment
PBT/vPvB assessment not available as chemical safety assessment not required/not conducted.

12.6. Other adverse effects
No data available.

13. Disposal

13.1. Waste treatment methods

Product
Burn in a chemical incinerator equipped with an afterburner and scrubber. Observe all federal, state and local environmental regulations and directives on waste and hazardous waste. Offer surplus material to a licensed professional waste disposal professional.

Contaminated packaging
Dispose of as unused product.

14. Transport

14.1 UN number
ADR/RID: 1219  IMGD: 1219  IATA: 1219

14.2 UN proper shipping name
ADR/RID: Isopropanol solution
IMGD: Isopropanol solution
IATA: Isopropanol solution

14.3 Transport hazard class(es)
ADR/RID: 3  IMGD: 3  IATA: 3

14.4 Packaging group
ADR/RID: II  IMGD: II  IATA: II

14.5 Environmental hazards
ADR/RID: no  IMGD Marine pollutant: no  IATA: no

14.6 Special precautions for user
No data available

15. Regulatory information
This safety datasheet complies with the requirements of Regulation (EC) No. 1907/2006, the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH).

15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture
No data available.

15.2. Chemical safety assessment
No chemical safety report/assessment was carried out for this product.
16. Other information

Warranty

This material is for research and development use only. The information provided here is based upon the available information from material suppliers but not warranted as complete and is provided only as a guide. Ossila Limited shall not be held responsible for any damage resulting from use or handling of this product.