SAFETY DATA SHEET

Revision Date: 12/12/2022
Revision #: 4

ACCORDING TO EC-REGULATIONS 1907/2006 (REACH), 1272/2008 (CLP) & 2015/830

SECTION 1: IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

1.1 Product identifier
Product Name: SWCNT-OH
Synonyms: Hydroxyl-functionalised single-walled carbon nanotubes SWNT-OH, SWCNT-OH
Chemical Name: Single-walled carbon nanotubes – hydroxyl functionalised
Chemical Formula: C (-OH)
CAS No.: N/A
EC No.: Not available.
Index No.: Not available.
REACH Registration No.: Not applicable.

1.2 Relevant identified uses of the substance or mixture and uses advised against
Identified Use(s): PC21 Laboratory chemicals, Research and development use only

1.3 Details of the supplier of the safety data sheet
Company Identification: Ossila Limited
Address of Supplier: Solpro Business Park
 accelerator and Multicore Research
Windsor Street
Sheffield
Postal code: S4 7WB, UK
Telephone: +441142999180
E-mail: info@ossila.com
Office hours: 08:00 - 17:00

1.4 Emergency telephone number
Emergency Phone #: +44 (0) 20 3885 0382 (CHEMTREC)

SECTION 2: HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture
Regulation (EC) No. 1272/2008 (CLP)
Eye Irrit. 2: Causes serious eye irritation
STOT SE 3: May cause respiratory irritation

2.2 Label elements
According to Regulation (EC) No. 1272/2008 (CLP)
Product Name: SWCNT-OH

Hazard Pictogram(s)
GHS07

Signal Word(s)
Warning

Hazard Statement(s)
H319: Causes serious eye irritation
H335: May cause respiratory irritation

Precautionary Statement(s)
P305 + P351 + P338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P312: Call a POISON CENTER or doctor if you feel unwell.
P337 + P313: If eye irritation persists: Get medical advice/attention.

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.

2.4 Additional Information
Not applicable.
SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

3.1 Substances

<table>
<thead>
<tr>
<th>Hazardous ingredient(s)</th>
<th>CAS No.</th>
<th>EC No.</th>
<th>%W/W</th>
<th>Hazard Statement(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Single-walled carbon nanotubes – hydroxyl functionalised</td>
<td>N/A</td>
<td>Not available.</td>
<td>&gt;90%</td>
<td>Eye Irrit. 2 H319</td>
</tr>
<tr>
<td>Carbon Nanotubes (other)</td>
<td></td>
<td></td>
<td>&lt;5%</td>
<td>STOT SE 3 H335</td>
</tr>
</tbody>
</table>

3.2 Mixtures

Not applicable.

SECTION 4: FIRST AID MEASURES

4.1 Description of first aid measures

General Advice
First aiders should ensure they have taken adequate steps to protect themselves from exposure (see Section 8 for recommended personal protection equipment). Show this safety data sheet to the doctor in attendance.

Inhalation
Remove person to fresh air and keep comfortable for breathing. Get medical advice/attention if you feel unwell.

Skin Contact
Rinse skin with water. If skin irritation occurs, get medical advice/attention.

Eye Contact
Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

Ingestion
Rinse out mouth with water. Get medical advice/attention if you feel unwell.

4.2 Most important symptoms and effects, both acute and delayed

Most important symptoms and effects, both acute and delayed, are included on labelling (Section 2.2) and in Section 11.

4.3 Indication of any immediate medical attention and special treatment needed

Treat symptomatically.

SECTION 5: FIREFIGHTING MEASURES

5.1 Extinguishing media

Suitable Extinguishing media
As appropriate for surrounding fire.

Unsuitable extinguishing media
As appropriate for surrounding fire.

5.2 Special hazards arising from the substance or mixture

Carbon oxides

5.3 Advice for firefighters

Fire fighters should wear complete protective clothing including self-contained breathing apparatus.

SECTION 6: ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures

Follow safe handling advice and personal protective equipment recommendations (as per section 8). Provide adequate ventilation.

6.2 Environmental precautions

Avoid release to the environment.

6.3 Methods and material for containment and cleaning up

Sweep up spilled substance - avoid making dust. Use vacuum equipment for collecting spill materials, where practicable. Dispose of contents in accordance with local, state or national legislation.

6.4 Reference to other sections

See Also Section 8, 13.

SECTION 7: HANDLING AND STORAGE

7.1 Precautions for safe handling

Advice on safe handling
Avoid inhalation, ingestion, and contact with skin and eyes. Use only in a well-ventilated area. Wear protective clothing as per section 8.

Hygiene measures
Keep away from food and drink. Wash hands after handling, before breaks, and at the end of workday.

7.2 Conditions for safe storage, including any incompatibilities

Storage temperature
Ambient.

Storage life
Stable under normal conditions.

Incompatible materials
None known.

7.3 Specific end use(s)

Apart from the uses mentioned in section 1.2 no other specific uses are stipulated.
SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Control parameters
8.1.1 Occupational Exposure Limits

<table>
<thead>
<tr>
<th>Substance</th>
<th>CAS No.</th>
<th>LTEL (8 hr TWA ppm)</th>
<th>LTEL (8 hr TWA mg/m³)</th>
<th>STEL (ppm)</th>
<th>STEL (mg/m³)</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>Graphite</td>
<td>N/A</td>
<td>10</td>
<td>4</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Region: EU
Source: EU Occupational Exposure Limits

8.2 Exposure controls
8.2.1 Appropriate engineering controls
Ensure adequate ventilation and/or exhaust. A washing facility/water for eye and skin cleaning purposes should be present.

8.2.2 Personal protection equipment
Eye Protection
Wear eye protection with side protection tested and approved under appropriate government standards such as EN166 (EU).

Hand protection
Handle with gloves. Gloves must be inspected prior to use and proper glove removal techniques should be used. The selected protective gloves have to satisfy the specifications of Regulation (EU) 2016/425 and the standard EN 374 derived from it.

Body protection
Choose body protection in relation to its type, to the concentration and amount of dangerous substances, and to the specific work-place.

Respiratory protection
Where risk assessment shows air-purifying respirators are appropriate use a full-face particle respirator type N99 (US) or type P2 (EN 143) respirator cartridges as a backup to engineering controls.

Thermal hazards
None known.

8.2.3 Environmental Exposure Controls
Avoid release to the environment.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical State</td>
<td>Solid: Fibrous Powder.</td>
</tr>
<tr>
<td>Colour</td>
<td>Black</td>
</tr>
<tr>
<td>Odour</td>
<td>Not known</td>
</tr>
<tr>
<td>Odour threshold</td>
<td>Not known</td>
</tr>
<tr>
<td>Melting point/freezing point</td>
<td>Not known</td>
</tr>
<tr>
<td>Initial boiling point and boiling range</td>
<td>Not known</td>
</tr>
<tr>
<td>Flammability</td>
<td>Not known</td>
</tr>
<tr>
<td>Lower and upper explosion limit</td>
<td>Not known</td>
</tr>
<tr>
<td>Flash Point</td>
<td>Not known</td>
</tr>
<tr>
<td>Auto-ignition temperature (°C)</td>
<td>Not known</td>
</tr>
<tr>
<td>Decomposition temperature (°C)</td>
<td>Not known</td>
</tr>
<tr>
<td>pH</td>
<td>Not known</td>
</tr>
<tr>
<td>Kinematic viscosity</td>
<td>Not known</td>
</tr>
<tr>
<td>Solubility (Water): Limited</td>
<td>Solubility (Other): Not known</td>
</tr>
<tr>
<td>Partition coefficient: n-octanol/water (log value)</td>
<td>Not known</td>
</tr>
<tr>
<td>Vapour pressure</td>
<td>Not known</td>
</tr>
<tr>
<td>Density</td>
<td>Not known</td>
</tr>
<tr>
<td>Relative density</td>
<td>Not known</td>
</tr>
<tr>
<td>Relative vapour density</td>
<td>Not known</td>
</tr>
<tr>
<td>Particle characteristics</td>
<td>Not known</td>
</tr>
</tbody>
</table>

9.2 Other information
None.

SECTION 10: STABILITY AND REACTIVITY

10.1 Reactivity
None anticipated.

10.2 Chemical Stability
Stable under recommended storage conditions.

10.3 Possibility of hazardous reactions
Not known.

10.4 Conditions to avoid
Not known.

10.5 Incompatible materials
Not known.
10.6 Hazardous decomposition products

In the event of fire: see Section 5

SECTION 11: TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

Acute toxicity - Ingestion No data available.
Acute toxicity - Skin Contact No data available.
Acute toxicity - Inhalation No data available.
Skin corrosion/irritation No data available.
Serious eye damage/irritation No data available.
Skin sensitization data No data available.
Respiratory sensitization data No data available.
Germ cell mutagenicity No data available.
Carcinogenicity No data available.
Reproductive toxicity No data available.
Lactation No data available.
STOT - single exposure No data available.
STOT - repeated exposure No data available.
Aspiration hazard No data available.

11.2 Information on other hazards

11.2.1 Endocrine disrupting properties
None known.

SECTION 12: ECOLOGICAL INFORMATION

12.1 Toxicity

Toxicity - Aquatic invertebrates No data available.
Toxicity - Fish No data available.
Toxicity - Algae No data available.
Toxicity - Sediment Compartment Not classified.
Toxicity - Terrestrial Compartment Not classified.

12.2 Persistence and Degradation

Not known.

12.3 Bioaccumulative potential

Not known.

12.4 Mobility in soil

Not known.

12.5 Results of PBT and vPvB assessment

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.

12.6 Endocrine disrupting properties

Not known.

12.7 Other adverse effects

Not known.

SECTION 13: DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods

Dispose of contents in accordance with local, state or national legislation. Recycle only completely emptied packaging. Normal disposal is via incineration operated by an accredited disposal contractor. Send to a licensed recycler, reclaimer or incinerator.

13.2 Additional Information

Disposal should be in accordance with local, state or national legislation.

SECTION 14: TRANSPORT INFORMATION

IATA/IMO/RID/ADR Not classified as hazardous for transport.

SECTION 15: REGULATORY INFORMATION

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

European Regulations - Authorisations and/or Restrictions On Use
Candidate List of Substances of Very High Concern for Authorisation Not listed
REACH: ANNEX XIV list of substances subject to authorisation Not listed
REACH: Annex XVII Restrictions on the manufacture, placing on the market and use of certain dangerous substances, mixtures and articles
Community Rolling Action Plan (CoRAP) Not listed
Regulation (EC) No 1005/2009 on substances that deplete the ozone layer Not listed
Regulation (EU) No 649/2012 of the European Parliament and of the Council concerning the export and import of hazardous chemicals Not listed
National regulations Not known.
Other Not known.

15.2 Chemical Safety Assessment
A REACH chemical safety assessment has not been carried out.

SECTION 16: OTHER INFORMATION

The following sections contain revisions or new statements:

LEGEND

Acronyms
ADN : European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways
ADR : European Agreement concerning the International Carriage of Dangerous Goods by Road
CAS : Chemical Abstracts Service
CLP : Regulation (EC) No 1272/2008 on classification, labelling and packaging of substances and mixtures
DNEL : Derived No Effect Level
EC : European Community
EINECS : European Inventory of Existing Commercial Chemical Substances
IATA : International Air Transport Association
IBC : Intermediate Bulk Container
ICAO : International Civil Aviation Organization
IMDG : International Maritime Dangerous Goods
LTEL : Long term exposure limit
PBT : Persistent, Bioaccumulative and Toxic
PNEC : Predicted No Effect Concentration
REACH : Registration, Evaluation, Authorisation and Restriction of Chemicals
RID : Regulations concerning the International Carriage of Dangerous Goods by Rail
STEL : Short term exposure limit
STOT : Specific Target Organ Toxicity
UN : United Nations
vPvB : very Persistent and very Bioaccumulative

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