

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 Hexagonal boron nitride monolayer film on quartz
Synonyms Hexagonal BN, h-BN, white graphene
Chemical Name Hexagonal boron nitride
Chemical Formula BN
CAS No. 10043-11-5
EC No. 701-292-9
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
Windsor Street
Sheffield
Postal code S4 7WB, UK
Telephone: +441 142999180
E-mail info@ossila.com
Office hours 08:00 - 17:00

1.4 Emergency telephone number

Emergency Phone # +44 (0) 20 3885 0382 (CHEMTREC)

| Other Regions | Emergency Phone Number (CHEMTREC) |
|-----------------------------|-----------------------------------|
| Europe, Middle East, Africa | +44 20 3885 0382 |
| North America | +1 703 527 3887 |
| Central America | +52 55 8526 4930 |
| South America | +55 11 4349 1359 |
| Asia, India, and Oceania | +65 3163 8374 |

SECTION 2: HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture

Not a hazardous substance or mixture according to Regulation (EC) No. 1272/2008.

2.2 Label elements

The product does not need to be labelled in accordance with EC directives or respective national laws.

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

No components need to be disclosed according to the applicable regulations.

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

Borane, boron oxides
 Nitrogen oxides (NOx)

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 but avoid making dust. Use vacuum equipment for collecting spilt 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 Store in a well-ventilated place. Keep container tightly closed.
 Storage life Ambient.
 Incompatible materials 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 No Occupational Exposure Limit assigned.

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

Body protection

Respiratory protection

No personal respiratory protection is necessary under normal circumstances.

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

Physical State Solid: Film.
 Substrate: Rigid.
 Colour Film: Transparent.
 Substrate: Transparent.
 Odour Not known.
 Odour threshold Not known.
 Melting point/freezing point Not known.
 Initial boiling point and boiling range Not known.
 Flammability Not known.
 Lower and upper explosion limit Not known.

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| Flash Point | Not known. |
| Auto-ignition temperature (°C) | Not known. |
| Decomposition temperature (°C) | Not known. |
| pH | Not known. |
| Kinematic viscosity | Not known. |
| Solubility(ies) | Solubility (Water): Not known. Solubility (Other): Not known. |
| Partition coefficient: n-octanol/water (log value) | Not known. |
| Vapour pressure | Not known. |
| Density | Not known. |
| Relative density | Not known. |
| Relative vapour density | Not known. |
| Particle characteristics | Not known. |
| 9.2 Other information | None. |

SECTION 10: STABILITY AND REACTIVITY

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| 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

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| 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. |
| 11.2.2. Information on other hazards | None known. |

SECTION 12: ECOLOGICAL INFORMATION

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| 12.1 Toxicity | |
| Toxicity - Aquatic invertebrates | No data available |
| Toxicity - Fish | No data available |
| Toxicity - Algae | No data available |
| Toxicity - Sediment Compartment | No data available |
| Toxicity - Terrestrial Compartment | No data available |
| 12.2 Persistence and Degradation | |
| | 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 | |
| | 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

Not listed

Community Rolling Action Plan (CoRAP) Regulation (EC) N° 850/2004 of the European Parliament and of the Council on persistent organic pollutants

Not listed

Regulation (EC) N° 1005/2009 on substances that deplete the ozone layer

Not listed

Regulation (EU) N° 649/2012 of the European Parliament and of the Council concerning the export and import of hazardous chemicals

Not listed

National regulations

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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