Safety Data Sheet

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Document group: 35-9067-6
Version number: 1.01
Revision date: 27/06/2019
Supersedes date: 31/10/2017
Transportation version number: 1.00 (31/10/2017)

This Safety Data Sheet has been prepared in accordance with the REACH Regulation (EC) 1907/2006 and its modifications.

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1. Product identifier
3M Boron Nitride Cooling Filler Platelets Grades 001, 003 SF

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

Identified uses
filling agent, Industrial use., Intermediate

1.3. Details of the supplier of the safety data sheet

Address: 3M United Kingdom PLC, 3M Centre, Cain Road, Bracknell, Berkshire, RG12 8HT.
Telephone: +44 (0)1344 858 000
E Mail: tox.uk@mmm.com
Website: www.3M.com/uk

1.4. Emergency telephone number
+44 (0)1344 858 000

SECTION 2: Hazard identification

2.1. Classification of the substance or mixture
CLP REGULATION (EC) No 1272/2008

CLASSIFICATION:
This material is not classified as hazardous according to Regulation (EC) No. 1272/2008, as amended, on classification, labelling, and packaging of substances and mixtures.

2.2. Label elements
CLP REGULATION (EC) No 1272/2008
Not applicable

2.3. Other hazards
None known.
SECTION 3: Composition/information on ingredients

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>CAS Nbr</th>
<th>EC No.</th>
<th>REACH Registration No.</th>
<th>% by Wt</th>
<th>Classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Azanyldyneborane</td>
<td>701-292-9</td>
<td>01-2119947399-20</td>
<td>95 - 100</td>
<td>Substance not classified as hazardous</td>
<td></td>
</tr>
<tr>
<td>Boron oxide</td>
<td>1303-86-2</td>
<td>215-125-8</td>
<td>&lt; 0.3</td>
<td>Repr. 1B, H360FD</td>
<td></td>
</tr>
</tbody>
</table>

Note: Any entry in the EC# column that begins with the numbers 6, 7, 8, or 9 are a Provisional List Number provided by ECHA pending publication of the official EC Inventory Number for the substance. Please see section 16 for the full text of any H statements referred to in this section.

For information on ingredient occupational exposure limits or PBT or vPvB status, see sections 8 and 12 of this SDS.

SECTION 4: First aid measures

4.1. Description of first aid measures

Inhalation
Remove person to fresh air. If you feel unwell, get medical attention.

Skin contact
Wash with soap and water. If signs/symptoms develop, get medical attention.

Eye contact
Flush with large amounts of water. Remove contact lenses if easy to do. Continue rinsing. If signs/symptoms persist, get medical attention.

If swallowed
Rinse mouth. If you are concerned, get medical advice.

4.2. Most important symptoms and effects, both acute and delayed
See Section 11.1 Information on toxicological effects

4.3. Indication of any immediate medical attention and special treatment required
Not applicable.

SECTION 5: Fire-fighting measures

5.1. Extinguishing media
Material will not burn. Use a fire fighting agent suitable for the surrounding fire.

5.2. Special hazards arising from the substance or mixture
None inherent in this product.

Hazardous Decomposition or By-Products

<table>
<thead>
<tr>
<th>Substance</th>
<th>Condition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carbon monoxide.</td>
<td>During combustion.</td>
</tr>
<tr>
<td>Carbon dioxide.</td>
<td>During combustion.</td>
</tr>
<tr>
<td>Toxic Vapour/Gas</td>
<td>During combustion.</td>
</tr>
</tbody>
</table>

5.3. Advice for fire-fighters
Wear full protective clothing, including helmet, self-contained, positive pressure or pressure demand breathing apparatus, bunker coat and pants, bands around arms, waist and legs, face mask, and protective covering for exposed areas of the head.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures
Evacuate area. Ventilate the area with fresh air. For large spill, or spills in confined spaces, provide mechanical ventilation to disperse or exhaust vapours, in accordance with good industrial hygiene practice. Refer to other sections of this SDS for information regarding physical and health hazards, respiratory protection, ventilation, and personal protective equipment.

6.2. Environmental precautions
Avoid release to the environment.

6.3. Methods and material for containment and cleaning up
Collect as much of the spilled material as possible. Place in a closed container approved for transportation by appropriate authorities. Clean up residue. Seal the container. Dispose of collected material as soon as possible.

6.4. Reference to other sections
Refer to Section 8 and Section 13 for more information

SECTION 7: Handling and storage

7.1. Precautions for safe handling
Avoid skin contact with hot material. For industrial/occupational use only. Not for consumer sale or use. Do not handle until all safety precautions have been read and understood. Do not breathe dust/fume/gas/mist/vapours/spray. Do not get in eyes, on skin, or on clothing. Do not eat, drink or smoke when using this product. Wash thoroughly after handling. Use personal protective equipment (eg. gloves, respirators…) as required.

7.2. Conditions for safe storage including any incompatibilities
No special storage requirements.

7.3. Specific end use(s)
See information in Section 7.1 and 7.2 for handling and storage recommendations. See Section 8 for exposure controls and personal protection recommendations.

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Occupational exposure limits
If a component is disclosed in section 3 but does not appear in the table below, an occupational exposure limit is not available for the component.

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>CAS Nbr</th>
<th>Agency</th>
<th>Limit type</th>
<th>Additional comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Boron oxide</td>
<td>1303-86-2</td>
<td>UK HSC</td>
<td>TWA:10 mg/m3; STEL:20 mg/m3</td>
<td></td>
</tr>
</tbody>
</table>

UK HSC : UK Health and Safety Commission
TWA: Time-Weighted-Average
STEL: Short Term Exposure Limit
CEIL: Ceiling

Biological limit values
No biological limit values exist for any of the components listed in Section 3 of this safety data sheet.

8.2. Exposure controls

8.2.1. Engineering controls
Use general dilution ventilation and/or local exhaust ventilation to control airborne exposures to below relevant Exposure Limits and/or control dust/fume/gas/mist/vapours/spray. If ventilation is not adequate, use respiratory protection equipment.

**8.2.2. Personal protective equipment (PPE)**

**Eye/face protection**

Select and use eye/face protection to prevent contact based on the results of an exposure assessment. The following eye/face protection(s) are recommended:

- Safety glasses with side shields.

*Applicable Norms/Standards*

Use eye protection conforming to EN 166

**Skin/hand protection**

Select and use gloves and/or protective clothing approved to relevant local standards to prevent skin contact based on the results of an exposure assessment. Selection should be based on use factors such as exposure levels, concentration of the substance or mixture, frequency and duration, physical challenges such as temperature extremes, and other use conditions. Consult with your glove and/or protective clothing manufacturer for selection of appropriate compatible gloves/protective clothing.

Gloves made from the following material(s) are recommended:

<table>
<thead>
<tr>
<th>Material</th>
<th>Thickness (mm)</th>
<th>Breakthrough Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nitrile rubber.</td>
<td>No data available</td>
<td>No data available</td>
</tr>
</tbody>
</table>

*Applicable Norms/Standards*

Use gloves tested to EN 374

**Respiratory protection**

An exposure assessment may be needed to decide if a respirator is required. If a respirator is needed, use respirators as part of a full respiratory protection program. Based on the results of the exposure assessment, select from the following respirator type(s) to reduce inhalation exposure:

- Half facepiece or full facepiece air-purifying respirator suitable for particulates

For questions about suitability for a specific application, consult with your respirator manufacturer.

*Applicable Norms/Standards*

Use a respirator conforming to EN 140 or EN 136: filter type P

**Thermal hazards**

Wear heat insulating gloves when handling hot material to prevent thermal burns.

*Applicable Norms/Standards*

Use gloves tested to EN 407

**SECTION 9: Physical and chemical properties**

**9.1. Information on basic physical and chemical properties**

- **Physical state**: Solid.
- **Specific Physical Form:** Fine powder (less than 10 microns).
- **Appearance/Odour**: Odourless, white, powder
- **Odour threshold**: No data available.
- **pH**: Not applicable.
- **Boiling point/boiling range**: No data available.
Melting point: Not applicable.
Flammability (solid, gas): Not classified
Explosive properties: Not classified
Oxidising properties: Not classified
Flash point: No flash point
Autoignition temperature: No data available.
Flammable Limits (LEL): >=3,000 g/m³ [Details: EN 14034-3]
Flammable Limits (UEL): No data available.
Vapour pressure: Not applicable.
Relative density: No data available.
Water solubility: <=0.162 mg/l [Test Method: UN Method]
Solubility - non-water: <=0.000162 g/l
Partition coefficient: n-octanol/water: No data available.
Evaporation rate: No data available.
Vapour density: No data available.
Decomposition temperature: 2,730 ºC
Viscosity: Not applicable.
Density: 2.25 g/cm³ [@ 20 ºC] [Details: reference pressure 1013 hPa]

9.2. Other information
EU Volatile Organic Compounds: No data available.

SECTION 10: Stability and reactivity

10.1 Reactivity
This material is considered to be non reactive under normal use conditions.

10.2 Chemical stability
Stable.

10.3 Possibility of hazardous reactions
Hazardous polymerisation will not occur.

10.4 Conditions to avoid
None known.

10.5 Incompatible materials
None known.

10.6 Hazardous decomposition products
<table>
<thead>
<tr>
<th>Substance</th>
<th>Condition</th>
</tr>
</thead>
<tbody>
<tr>
<td>None known.</td>
<td></td>
</tr>
</tbody>
</table>

Refer to section 5.2 for hazardous decomposition products during combustion.

SECTION 11: Toxicological information

The information below may not agree with the EU material classification in Section 2 and/or the ingredient classifications in Section 3 if specific ingredient classifications are mandated by a competent authority. In addition, statements and data presented in Section 11 are based on UN GHS calculation rules and classifications derived from 3M assessments.

11.1 Information on Toxicological effects
Signs and Symptoms of Exposure

Based on test data and/or information on the components, this material may produce the following health effects:

**Inhalation**
Respiratory tract irritation: Signs/symptoms may include cough, sneezing, nasal discharge, headache, hoarseness, and nose and throat pain. Dust from cutting, grinding, sanding or machining may cause irritation of the respiratory system: Signs/symptoms may include cough, sneezing, nasal discharge, headache, hoarseness, nose and throat pain.

**Skin contact**
Mechanical skin irritation: Signs/symptoms may include abrasion, redness, pain, and itching.

**Eye contact**
Mechanical eye irritation: Signs/symptoms may include pain, redness, tearing and corneal abrasion. Dust created by cutting, grinding, sanding, or machining may cause eye irritation: Signs/symptoms may include redness, swelling, pain, tearing, and blurred or hazy vision.

**Ingestion**
May cause additional health effects (see below).

Additional Health Effects:

**Reproductive/Developmental Toxicity:**
Contains a chemical or chemicals which can cause birth defects or other reproductive harm.

Toxicological Data
If a component is disclosed in section 3 but does not appear in a table below, either no data are available for that endpoint or the data are not sufficient for classification.

**Acute Toxicity**

<table>
<thead>
<tr>
<th>Name</th>
<th>Route</th>
<th>Species</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall product</td>
<td>Ingestion</td>
<td></td>
<td>No data available; calculated ATE &gt;5,000 mg/kg</td>
</tr>
<tr>
<td>Azanyldyneborane</td>
<td>Dermal</td>
<td>Rabbit</td>
<td>LD50 &gt; 20,000 mg/kg</td>
</tr>
<tr>
<td>Azanyldyneborane</td>
<td>Ingestion</td>
<td>Rat</td>
<td>LD50 &gt; 50,000 mg/kg</td>
</tr>
<tr>
<td>Boron oxide</td>
<td>Dermal</td>
<td></td>
<td>estimated to be &gt; 5,000 mg/kg</td>
</tr>
<tr>
<td>Boron oxide</td>
<td>Inhalation-Dust/Mist</td>
<td></td>
<td>estimated to be &gt; 12.5 mg/l</td>
</tr>
<tr>
<td>Boron oxide</td>
<td>Ingestion</td>
<td></td>
<td>estimated to be &gt; 5,000 mg/kg</td>
</tr>
</tbody>
</table>

ATE = acute toxicity estimate

**Skin Corrosion/Irritation**
For the component/components, either no data is currently available or the data is not sufficient for classification.

**Serious Eye Damage/Irritation**
For the component/components, either no data is currently available or the data is not sufficient for classification.

**Skin Sensitisation**
For the component/components, either no data is currently available or the data is not sufficient for classification.

**Respiratory Sensitisation**
For the component/components, either no data is currently available or the data is not sufficient for classification.

**Germ Cell Mutagenicity**
For the component/components, either no data is currently available or the data is not sufficient for classification.
Carcinogenicity
For the component/components, either no data is currently available or the data is not sufficient for classification.

Reproductive Toxicity

Reproductive and/or Developmental Effects
For the component/components, either no data is currently available or the data is not sufficient for classification.

Target Organ(s)

Specific Target Organ Toxicity - single exposure
For the component/components, either no data is currently available or the data is not sufficient for classification.

Specific Target Organ Toxicity - repeated exposure
For the component/components, either no data is currently available or the data is not sufficient for classification.

Aspiration Hazard
For the component/components, either no data is currently available or the data is not sufficient for classification.

Please contact the address or phone number listed on the first page of the SDS for additional toxicological information on this material and/or its components.

SECTION 12: Ecological information

The information below may not agree with the EU material classification in Section 2 and/or the ingredient classifications in Section 3 if specific ingredient classifications are mandated by a competent authority. In addition, statements and data presented in Section 12 are based on UN GHS calculation rules and classifications derived from 3M assessments.

12.1. Toxicity
No product test data available.

<table>
<thead>
<tr>
<th>Material</th>
<th>CAS #</th>
<th>Organism</th>
<th>Type</th>
<th>Exposure</th>
<th>Test endpoint</th>
<th>Test result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Boron oxide</td>
<td>1303-86-2</td>
<td>Green Algae</td>
<td>Estimated</td>
<td>72 hours</td>
<td>EC50</td>
<td>168 mg/l</td>
</tr>
<tr>
<td>Boron oxide</td>
<td>1303-86-2</td>
<td>Crustacea other</td>
<td>Estimated</td>
<td>96 hours</td>
<td>LC50</td>
<td>207 mg/l</td>
</tr>
<tr>
<td>Boron oxide</td>
<td>1303-86-2</td>
<td>Fish</td>
<td>Estimated</td>
<td>96 hours</td>
<td>LC50</td>
<td>239 mg/l</td>
</tr>
<tr>
<td>Boron oxide</td>
<td>1303-86-2</td>
<td>Zebra Fish</td>
<td>Estimated</td>
<td>34 days</td>
<td>Effect Concentration 10%</td>
<td>22 mg/l</td>
</tr>
<tr>
<td>Boron oxide</td>
<td>1303-86-2</td>
<td>Green Algae</td>
<td>Estimated</td>
<td>72 hours</td>
<td>Effect Concentration 10%</td>
<td>113 mg/l</td>
</tr>
<tr>
<td>Boron oxide</td>
<td>1303-86-2</td>
<td>Crustacea other</td>
<td>Estimated</td>
<td>42 days</td>
<td>NOEC</td>
<td>21.3 mg/l</td>
</tr>
</tbody>
</table>

12.2. Persistence and degradability

<table>
<thead>
<tr>
<th>Material</th>
<th>CAS Nbr</th>
<th>Test type</th>
<th>Duration</th>
<th>Study Type</th>
<th>Test result</th>
<th>Protocol</th>
</tr>
</thead>
<tbody>
<tr>
<td>Boron oxide</td>
<td>1303-86-2</td>
<td>Data not availbl- insufficient</td>
<td>N/A</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

12.3 : Bioaccumulative potential

<table>
<thead>
<tr>
<th>Material</th>
<th>Cas No.</th>
<th>Test type</th>
<th>Duration</th>
<th>Study Type</th>
<th>Test result</th>
<th>Protocol</th>
</tr>
</thead>
<tbody>
<tr>
<td>Boron oxide</td>
<td>1303-86-2</td>
<td>Estimated BCF</td>
<td>60 days</td>
<td>Bioaccumulation</td>
<td>&lt; 0.1</td>
<td>Other methods</td>
</tr>
</tbody>
</table>


12.4. Mobility in soil
Please contact manufacturer for more details

12.5. Results of the PBT and vPvB assessment
This material does not contain any substances that are assessed to be a PBT or vPvB

12.6. Other adverse effects
No information available.

SECTION 13: Disposal considerations

13.1 Waste treatment methods
Dispose of contents/ container in accordance with the local/regional/national/international regulations.
Dispose of waste product in a permitted industrial waste facility. Empty drums/barrels/containers used for transporting and handling hazardous chemicals (chemical substances/mixtures/preparations classified as Hazardous as per applicable regulations) shall be considered, stored, treated & disposed of as hazardous wastes unless otherwise defined by applicable waste regulations. Consult with the respective regulating authorities to determine the available treatment and disposal facilities.

SECTION 14: Transportation information

ADR/IATA/IMDG: Not restricted for transport.

SECTION 15: Regulatory information

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

Authorization status under REACH:
The following substance/s contained in this product might be or is/are subject to authorization in accordance with REACH:

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>CAS Nbr</th>
</tr>
</thead>
<tbody>
<tr>
<td>Boron oxide</td>
<td>1303-86-2</td>
</tr>
</tbody>
</table>

Authorization status: listed in the Candidate List of Substances of Very High Concern for Authorization

15.2. Chemical Safety Assessment
A chemical safety assessment has not been carried out for this substance/mixture in accordance with Regulation (EC) No 1907/2006, as amended.

SECTION 16: Other information

List of relevant H statements

H360FD May damage fertility. May damage the unborn child.

Revision information:
Section 3: Composition/ Information of ingredients table information was modified.
Section 5: Fire - Extinguishing media information information was modified.
Section 6: Accidental release personal information information was modified.
Section 7: Precautions safe handling information information was modified.
Section 9: Flash point information information was modified.
Section 11: Acute Toxicity table information was modified.
Section 11: Health Effects - Eye information information was modified.
Section 11: Health Effects - Inhalation information information was modified.
Section 11: Health Effects - Skin information information was modified.
Section 11: Specific Target Organ Toxicity - repeated exposure text information was added.
Section 11: Target Organs - Repeated Table information was deleted.
Section 12: Component ecotoxicity information information was modified.
Section 12: No PBT/vPvB information available warning information was modified.
Section 12: Persistence and Degradability information information was modified.
Section 12: Biocumulative potential information information was modified.
Section 13: 13.1. Waste disposal note information was modified.
Section 13: EU waste code (product as sold) information information was deleted.
Section 13: European waste code disclaimer information was deleted.
Section 13: Standard Phrase Category Waste GHS information was modified.
Section 15: Chemical Safety Assessment information was modified.
Section 15: Regulations - Inventories information was deleted.

DISCLAIMER: The information on this Safety Data Sheet is based on our experience and is correct to the best of our knowledge at the date of publication, but we do not accept any liability for any loss, damage or injury resulting from its use (except as required by law). The information may not be valid for any use not referred to in this Data Sheet or use of the product in combination with other materials. For these reasons, it is important that customers carry out their own test to satisfy themselves as to the suitability of the product for their own intended applications.

3M United Kingdom MSDSs are available at www.3M.com/uk