SAFETY DATA SHEET FOR SYNTHETIC CUBIC BORON NITRIDE POWDER

1. Identification of the Substance/ Preparation and of the Company/ Undertaking

1.1. Product Identifier
Synthetic cubic Boron Nitride Powder, ABN, Micron+ ABN.
Substance Name: Synthetic cubic Boron Nitride Powder.
EC No.: 233-136-6
REACH Registration No.: 01-2119854593-30-0000
CAS No.: 10043-11-5

1.2. Relevant Identified Uses of the Substance or Mixtures and Uses Advised Against
Identified Uses of the Substance: Abrasive material used in ferrous materials machining.
Uses Advised Against: None.

1.3. Details of the Supplier of the Safety Data Sheet
Company: Element Six Ltd
Address: Shannon Airport
Shannon, Co Clare,
Ireland.
Phone: +353 61 471655 Fax: +353 61 471201
E-mail: salesorders@e6.com

1.4. Emergency number: +353 61 471655

2. Hazards Identification

2.1. Classification of the Substance

This substance is classified as not hazardous according to Regulation (EC) 1272/2008.

2.1.2. Classification According to Directive 67/ 548/ EEC
This substance is not dangerous according to Directive 67/548/EEC.

2.1.3. Additional Information
None.

2.2. Label Elements

2.2.1. Labelling According to Regulation (EC) No 1272/ 2008 (CLP/ GHS)
There is no obligation to label this product according to Regulation (EC) 1272/2008.

2.3. Other Hazards
Exposure to dusts, by skin contact, ingestion and inhalation can occur when handling, chemically treating, heat treating, abrasive cutting, grinding, polishing or abrading the surface of this material in a manner which generates particulates.
3. Composition/Information on Ingredients
   3.1. Substances

<table>
<thead>
<tr>
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</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>cubic Boron Nitride</td>
<td>233-136-6</td>
<td>100%</td>
<td>Classified as not hazardous.</td>
<td>Classified as not dangerous.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>01-2119854593-30-0000</td>
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<td></td>
<td>10043-11-5</td>
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</tbody>
</table>

3.2. Mixtures
   None

4. First Aid Measures
   4.1. Description of First Aid Measures
       General Notes: As a general rule, in case of doubt or if symptoms persist, always consult a doctor or seek medical attention.
       Following Inhalation: Move subject to fresh air.
       Following Skin Contact: Wash skin thoroughly with soap and water.
       Following Eye Contact: Keeping the eyelids apart, flush thoroughly with water.
       Following Ingestion: Rinse out mouth and drink plenty of water.
       Notes for the Doctor: None.

   4.2. Most Important Symptoms and Effects, both Acute and Delayed
       No information available.

   4.3. Indication of Immediate Medical Attention and Special Treatment Needed
       No information available.

5. Fire Fighting Measures
   5.1. Extinguishing Media
       Suitable Extinguishing Media: Water, foam, sand, powder, carbon dioxide (CO2).
       Unsuitable Extinguishing Media: No information available.

   5.2. Special Hazards Arising from the Substance or Mixture
       During fire fighting, toxic fumes may occur.

   5.3. Advice for Fire-Fighters
       Wear special protective equipment for fire-fighters such as self-contained respiratory protective equipment and full protective suit.

   5.4. Additional Information
       No information available.
6. Accidental Release Measures

6.1. Personal Precautions, Protective Equipment and Emergency Procedures
Avoid dust formation. Ventilate area leak or spill. Wear appropriate personal protective equipment. Isolate hazard area. Keep unnecessary and unprotected personnel from entering area of leak or spill.

6.2. Environmental Precautions
Avoid product from entering into drains, surface water or groundwater.

6.3. Methods and Materials for Contamination and Cleaning Up
Avoid dust formation. Ventilate area of leak or spill. Wear appropriate personal protective equipment. Isolate hazard area. Keep unnecessary and unprotected personnel from entering. Vacuum or carefully scoop up material spillages and place in appropriate containers for disposal.

6.4. Reference to Other Sections
Reference section 7 and 8 for personal protection equipment. Refer section 13 on disposal of waste.

7. Handling and Storage

7.1. Precautions for Safe Handling

7.1.1. Protective Measures
Measures to Prevent Fire: Keep away from sources of ignition.
Measures to Prevent Aerosol and Dust Generation: Not possible to create aerosol under normal working conditions. Do not permit dust to collect on walls, floors, machinery or equipment. Ensure the area is well ventilated.
Measures to Protect the Environment: Keep container tightly closed. Clean-up all spillages.

7.1.2. Advice on General Occupational Hygiene
Wear personal protection equipment. Avoid generation and inhalation of dusts. Avoid contact with skin, eyes and clothes. Wash hands and face after handling. Do not eat, drink or smoke in the workplace. Wash contaminated clothes prior to reuse.

7.2. Conditions for Safe Storage, Including and Incompatibilities
Technical Measures and Storage Conditions: Store in a cool, dry, well ventilated area. Keep containers sealed when not in use.
Packaging Materials: Keep/store in original packaging.
Requirements for Storage Rooms and Vessels: No information available.
Hints on Storage Assembly: No information available.
Storage Class: 13 (Non combustible solid materials)
Further Information on Storage Conditions: No information available.

7.3. Specific End Use(s)
Recommendations: Refer to section 1.2.
Industrial Sector Specific Solutions: Refer to section 1.2.
8. Exposure Controls / Personal Protection

8.1. Control Parameters

8.1.1. Occupational Exposure Limit Values

<table>
<thead>
<tr>
<th>Country Code</th>
<th>Name</th>
<th>EC No. CAS No.</th>
<th>Specification</th>
<th>Long Term OEL</th>
<th>Short Term OEL</th>
<th>Remarks</th>
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<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

8.1.2. DNEL and PNEC Values

No DNEL values derived/calculated. No PNEC values derived/calculated.

8.1.3. Control Banding

No information available.

8.2. Exposure Controls

8.2.1. Appropriate Engineering Controls

Product Related Measures to Prevent Exposure: Avoid contact with skin, eyes and clothing. Do not eat, drink or smoke in the workplace. Wear personal protection equipment. Wash hands and face before breaks and at the end of work.

Structural Measures to Prevent Exposure: Provide adequate ventilation in the workplace. Use appropriate engineering controls such as process enclosures, local exhaust ventilation or other engineering controls to control airborne levels below recommended exposure limits as indicated in section 8.1.1.

Organisational Measures to Prevent Exposure: No information available.

Technical Measures to Prevent Exposure: No information available.

8.2.2. Personal Protection Equipment

8.2.2.1. Eye and Face Protection:

Wear safety glasses, goggles or face shield. PPE specification is process dependent.

8.2.2.2. Skin Protection:

Hand Protection: Wear appropriate chemical resistant gloves. PPE specification is process dependent.

Body Protection: Wear body protection. PPE specification is process dependent.

Other Protection: Wear other appropriate protection as detailed in risk assessment and depending on process being undertaken.

8.2.2.3. Respiratory Protection:

Use respiratory protection in situations where adequate ventilation is not supplied. PPE specification is process dependent.

8.2.2.4. Thermal Hazards:

In situations where thermal hazards exist, wear appropriate protection such as thermal gloves and aprons. PPE specification is process dependent.

8.2.3. Environmental Exposure Controls:

Refer to section 6.
### 9. Physical and Chemical Properties

#### 9.1. Information on Basic Physical and Chemical Properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appearance</td>
<td>Solid, Powder, Amber, Grey or Black, Crystalline.</td>
</tr>
<tr>
<td>Odour</td>
<td>Odourless.</td>
</tr>
<tr>
<td>Odour Threshold</td>
<td>None.</td>
</tr>
<tr>
<td>pH</td>
<td>Not applicable.</td>
</tr>
<tr>
<td>Melting Point / Freezing Point</td>
<td>3,500 °C.</td>
</tr>
<tr>
<td>Initial Boiling Point and Boiling Range</td>
<td>Not applicable.</td>
</tr>
<tr>
<td>Flash Point</td>
<td>Not applicable.</td>
</tr>
<tr>
<td>Evaporation Rate</td>
<td>Not applicable.</td>
</tr>
<tr>
<td>Flammability</td>
<td>Not flammable.</td>
</tr>
<tr>
<td>Upper/Lower Flammability or Explosive Limits</td>
<td>Not flammable.</td>
</tr>
<tr>
<td>Vapour Pressure</td>
<td>Not applicable.</td>
</tr>
<tr>
<td>Vapour Density</td>
<td>Not applicable.</td>
</tr>
<tr>
<td>Relative Density</td>
<td>3.46 at 20°C.</td>
</tr>
<tr>
<td>Solubility in Water</td>
<td>Insoluble.</td>
</tr>
<tr>
<td>Partition Coefficient: n-octanol/water</td>
<td>Not applicable.</td>
</tr>
<tr>
<td>Auto-ignition Temperature</td>
<td>Not applicable.</td>
</tr>
<tr>
<td>Decomposition Temperature</td>
<td>No data.</td>
</tr>
<tr>
<td>Viscosity</td>
<td>Not applicable.</td>
</tr>
<tr>
<td>Explosive Properties: Lower Explosive Limit</td>
<td>None.</td>
</tr>
<tr>
<td>Explosive Properties: Upper Explosive Limit</td>
<td>None.</td>
</tr>
<tr>
<td>Oxidising Properties</td>
<td>None.</td>
</tr>
</tbody>
</table>

#### 9.2. Other Safety Information

Molecular Weight: 24.83 g/mol.

### 10. Stability and Reactivity

#### 10.1. Reactivity

Under standard conditions, no ignition, explosion, self-heating or visible decomposition.

#### 10.2. Chemical Stability

Inorganic solid with a high chemical inertness. It is stable under normal temperatures and pressures. Does not react with oxygen below 1300°C and is completely inert against all known acids/bases. Practically insoluble in water and organic solvents.

#### 10.3. Possibility of Hazardous Reactions

Product is not dust explosive in its delivered form. The addition of particulate matter and mixture with air may result in potentially dust explosion risks. Reactions possible with strong acid and or strong oxidising agents.

#### 10.4. Conditions to Avoid

Unknown.
### 10.5. Incompatible Materials

Strong acids, strong oxidizing agents.

### 10.6. Hazardous Decomposition Products

Toxic fumes such as oxides of boron and nitrogen may be generated in case of fire.

### 11. Toxicological Information

#### 11.1. Toxicokinetics, Metabolism and Distribution

No data.

#### 11.2. Information on Toxicological Effects

**11.2.1. Substances**

**Acute Toxicity:**

Cubic Boron Nitride is not Acute Toxic.

**Acute Oral/Dermal Toxicity** LD50 rat: >2000 mg/kg.

**Acute Inhalation Toxicity** LC50 rat: > 5.2 mg/m³ air.

**Skin Corrosion/Irritation:** Dusts may cause skin irritation. Not a skin sensitizer.

**Serious Eye Damage/Irritation:** Dusts may cause irritation to eyes.

**Respiratory or Skin Sensitisation:** Dusts may irritate the respiratory tract.

**Germ Cell Mutagenicity:** No mutagenic effect known.

**Carcinogenicity:** No carcinogenic effect known.

**Reproductive Toxicity:** No reproductive effect known.

**STOT-single exposure:** No data.

**STOT-repeated exposure:** No data.

**Aspiration Hazard:** No data.

#### 11.2.2. Mixtures

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### 12. Ecological Information

#### 12.1. Toxicity

No potential known.

*Acute toxicity, fish (oncorhynchus mykiss):* LC50(96h) >100 mg/L.

*Acute toxicity, daphnia (daphnia magna):* EC50(48h) >100 mg/L.

#### 12.2. Persistence and Degradability

Cubic Boron Nitride is not degradable or biodegradable in water.

#### 12.3. Bioaccumulative Potential

No Bioaccumulative potential.

#### 12.4. Mobility in Soil

No potential known.

#### 12.5. Results of PBT and vPvB Assessment

Cubic boron nitride is an inorganic substance. The PBT/vPvB criteria of REACH Annex XIII do not apply to
12.6. Other Adverse Effects
No other potential adverse effects known.

13. Disposal Considerations

13.1. Waste Treatment Methods

13.1.1. Product/ Packaging Disposal
Waste disposal according to official state regulations.

13.1.2. Waste Treatment Options:
No data.

13.1.3. Sewage Disposal Options:
No data.

13.1.4. Other Disposal Recommendations:
Consult the appropriate authorities about waste disposal.

13.2. Additional Information:
Waste must be disposed of in accordance with the regulations after consultation with the competent local authorities and the disposal company in a suitable and licensed facility.

14. Transport Information


14.7. Additional Information: No data.

15. Regulatory Information

15.1. Safety, Health and Environmental Regulations/ Legislation Specific for the Substance or Mixture

EU Regulations


Other EU Regulations
Observe and comply with the requirements of associated EU Regulations.
National Regulations
Observe and comply with the requirements of regional and national legislation.

Other Regulations
- Australian: Inventory of Chemical Substances (AICS): Components of this product are listed.
- Canadian: Domestic Substance List (DSL): Components of this product are listed.
- China: Inventory of Existing Chemical Substances (IECSC): Components of this product are not listed.
- Japan: Existing and New Chemical Substances (MITI): Components of this product are listed.
- New Zealand: Inventory of Chemicals (NZIOC): Components of this product are listed.
- US: Toxic Substance Control Act List (TSCA): Components of this product are listed.
- US: Proposition 65 List: Components of this product are not listed.
- EU: European Inventory of Existing Commercial Chemicals Substances (EINECS): Components of this product are listed.
- EU: European Chemical Agency, Registered Substances (ECHA CHEM): Components of this product are listed.
- EU: European Classification & Labelling Inventory: Components of this product are not listed.

15.2. Chemical Safety Assessment
A Chemical Safety assessment has been carried out.

16. Other Information

16.1. Indication of Changes
Revision 3 of this Safety Data Sheet, updated all 16 sections.

16.2. Abbreviations and Acronyms
- DNEL: Derived No Effect Level.
- EWC: European Waste Catalogue.
- LD50: Lethal Dose 50%.
- NOEL: No Observed Effect Level.
- OEL: Occupational Exposure Limit.
- PBT: Persistent, Bioaccumulative, Toxic.
- PNEC: Predicted No Effect Concentration.
- vPvB: Very Persistent and Very Bioaccumulative.

16.3. Key Literature References and Sources of Data
Reference Manuals and Publications.
Company Studies and Studies from Other Manufacturers.
Reference Work and Literature

16.4. Relevant R- and H-phrases
None

16.5. Training Advice
Please contact our customer service department for training advice.
### 16.6. Further Information

The above information is based on our current standard of knowledge and does not constitute any warranty of conditions of the product. The product must not be used for any purposes other than those specified. It remains the user's responsibility to adhere to existing laws and regulations. The information given in this safety data sheet must be regarded as a description of the safety requirements relating to the product and not a guarantee of its properties.