SAFETY DATA SHEET
BORAX ANHYDROUS
According to Regulation (EC) No 1907/2006

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

1.1. Product identifier

Product name  BORAX ANHYDROUS
Product No.  B05
Synonyms, Trade Names  Sodium tetraborate (Borax), Sodium tetraborate pentahydrate CAS# 12179-04-3, Sodium tetraborate decahydrate CAS# 1303-96-4.
REACH Registration number  01-2119409790-32
REACH Registration notes  This is a substance of very high concern (SVHC) and is on the REACH Regulation (EC 1907/2006) Candidate List. According to REACH Annex V, paragraph 6; the hydrates of a substance are covered by the registration of the anhydrous material.
CAS-No.  1330-43-4
EU Index No.  005-011-00-4
EC No.  215-540-4

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


Uses advised against  None known.

1.3. Details of the supplier of the safety data sheet

Supplier  Norkem Limited, Norkem House, Bexton Lane, Knutsford, Cheshire, WA16 9FB. UK.
T: + 44 (0)1565 755550
F: + 44 (0)1565 755496
datasheet@norkem.com

1.4. Emergency telephone number

T: 01270 502891 (UK Transport emergencies only)

SECTION 2: HAZARDS IDENTIFICATION

2.1. Classification of the substance or mixture

Physical and Chemical Hazards
Human health  Eye Irrit. 2 - H319;Repr. 1B - H360FD
Environment  Not classified.

Classification (67/548/EEC)  Repr. Cat. 2;R60, R61. Xi;R36.
The Full Text for all R-Phrases and Hazard Statements are Displayed in Section 16.

Physical and Chemical Hazards  Concentration limits for H360:
Sodium tetraborate anhydrous: C >= 4.5%
Sodium tetraborate pentahydrate: C >= 6.5%
Sodium tetraborate decahydrate: C >= 8.5%

For H319:
C >= 10.0%

2.2. Label elements

EC No.  215-540-4
Signal Word: Danger

Hazard Statements:
- H319: Causes serious eye irritation.
- H360FD: May damage fertility or the unborn child.

Precautionary Statements:
- P202: Do not handle until all safety precautions have been read and understood.
- P281: Use personal protective equipment as required.
- P305+351+338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
- P308+313: IF exposed or concerned: Get medical advice/attention.
- P405: Store locked up.
- P501: Dispose of contents/container in accordance with regional regulations.

Supplementary Precautionary Statements:
- P201: Obtain special instructions before use.
- P280: Wear protective gloves/protective clothing/eye protection/face protection.
- P264: Wash contaminated skin thoroughly after handling.
- P313: Get medical advice/attention.
- P337+313: If eye irritation persists: Get medical advice/attention.

2.3. Other hazards

Not classified as PBT/vPvB by current EU criteria.

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

3.1. Substances

Product name: BORAX ANHYDROUS

REACH Registration number: 01-2119490790-32

REACH Registration notes: This is a substance of very high concern (SVHC) and is on the REACH Regulation (EC 1907/2006) Candidate List. According to REACH Annex V, paragraph 6, the hydrates of a substance are covered by the registration of the anhydrous material.

CAS-No.: 1330-43-4

EU Index No.: 005-011-00-4

EC No.: 215-540-4

Gross Formula: Na2B4O7

SECTION 4: FIRST AID MEASURES

4.1. Description of first aid measures

Inhalation
Provide rest, warmth and fresh air. Get medical attention if any discomfort continues.

Ingestion
Immediately rinse mouth and drink plenty of water (200-300 ml). Get medical attention.

Skin contact
Remove affected person from source of contamination. Wash the skin immediately with soap and water. Get medical attention promptly if symptoms occur after washing.

Eye contact
Remove victim immediately from source of exposure. Make sure to remove any contact lenses from the eyes before rinsing. Promptly wash eyes with plenty of water while lifting the eye lids. Continue to rinse for at least 15 minutes. Contact physician if irritation persists.

4.2. Most important symptoms and effects, both acute and delayed

General information
See section 11 for additional information on health hazards.

Inhalation
Irritation of nose, throat and airway.
BORAX ANHYDROUS

Ingestion

Skin contact
No specific symptoms noted.

Eye contact
Causes serious eye irritation.

4.3. Indication of any immediate medical attention and special treatment needed
Observation only is required for adult ingestion of less than 5 grams. For ingestion in excess of 5 grams, maintain adequate kidney function and force fluids.

SECTION 5: FIREFIGHTING MEASURES

5.1. Extinguishing media

Extinguishing media
Use fire-extinguishing media appropriate for surrounding materials. The product is non-combustible.

5.2. Special hazards arising from the substance or mixture

Specific hazards
The product is non-combustible. If heated, harmful vapours may be formed.

5.3. Advice for firefighters

Special Fire Fighting Procedures
Cool containers exposed to flames with water until well after the fire is out. Move container from fire area if it can be done without risk.
Dike and collect extinguishing water.

Protective equipment for fire-fighters
Self contained breathing apparatus and full protective clothing must be worn in case of fire.

SECTION 6: ACCIDENTAL RELEASE MEASURES

6.1. Personal precautions, protective equipment and emergency procedures

Wear protective clothing as described in Section 8 of this safety data sheet. Provide adequate ventilation. Avoid inhalation of dust and vapours. Avoid dust formation.

6.2. Environmental precautions

Do not allow to enter drains, sewers or watercourses. Remove any intact containers from the water. Advise local water authority that none of the affected water should be used for irrigation or for the abstraction of potable water until natural dilution returns the boron level to its normal environmental background level.

6.3. Methods and material for containment and cleaning up

Wear necessary protective equipment. Stop leak if possible without risk. DO NOT touch spilled material. Remove spillage with vacuum cleaner. If not possible, collect spillage with shovel, broom or the like. Collect spillage in containers, seal securely and deliver for disposal according to local regulations.

6.4. Reference to other sections

Wear protective clothing as described in Section 8 of this safety data sheet. See section 11 for additional information on health hazards. Collect and dispose of spillage as indicated in section 13.

SECTION 7: HANDLING AND STORAGE

7.1. Precautions for safe handling

Avoid spilling, skin and eye contact. Keep away from heat, sparks and open flame. Ventilate well, avoid breathing vapours. Use approved respirator if air contamination is above accepted level. Avoid discharge into drains, water courses or onto the ground.

7.2. Conditions for safe storage, including any incompatibilities

Store in tightly closed original container in a dry, cool and well-ventilated place. Keep in original container. Store away from: Strong reducing agents. See also section 10.3.

7.3. Specific end use(s)

For further information see attached Exposure Scenario.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1. Control parameters

<table>
<thead>
<tr>
<th>Name</th>
<th>STD</th>
<th>TWA - 8 Hrs</th>
<th>STEL - 15 Min</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>BORAX ANHYDROUS</td>
<td>WEL</td>
<td>1 mg/m3</td>
<td></td>
<td></td>
</tr>
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</table>
BORAX ANHYDROUS

WEL = Workplace Exposure Limit.

**DNEL**

<table>
<thead>
<tr>
<th>Industry</th>
<th>Inhalation.</th>
<th>Short Term Local Effects</th>
<th>22.3 mg/m³</th>
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</thead>
<tbody>
<tr>
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<td>Inhalation.</td>
<td>Long Term Systemic Effects</td>
<td>12.8 mg/m³</td>
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<tr>
<td>Industry</td>
<td>Dermal</td>
<td>Long Term Systemic Effects</td>
<td>&gt;42000 mg/kg/day</td>
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<tr>
<td>Consumer</td>
<td>Oral</td>
<td>Short Term Systemic Effects</td>
<td>1.5</td>
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<tr>
<td>Consumer</td>
<td>Inhalation.</td>
<td>Short Term Local Effects</td>
<td>22.3 mg/m³</td>
</tr>
<tr>
<td>Consumer</td>
<td>Dermal</td>
<td>Long Term Systemic Effects</td>
<td>303.5 mg/kg/day</td>
</tr>
<tr>
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<td>Inhalation.</td>
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<tr>
<td>Consumer</td>
<td>Oral</td>
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<td>1.5 mg/kg/day</td>
</tr>
<tr>
<td>Consumer</td>
<td>Inhalation.</td>
<td>Long Term Systemic Effects</td>
<td>22.3</td>
</tr>
</tbody>
</table>

**PNEC**

| Freshwater | 1.35 mg/l |
| Marinewater| 1.35 mg/l |
| Sediment (Freshwater) | 9.1 mg/l |
| Sediment (Marinewater) | 1.8 mg/l |
| Soil        | 5.4 mg/kg |

STP 1.75

The units are expressed in 'mg/µg' of: Boron. These PNECs are added value PNECs- they are to be added to the natural background levels of: Boron. - in the appropriate compartments (e.g. soils, sediments). Sediment and soil PNEC values are in mg/kg are ‘dry weight’ (dw).

### 8.2. Exposure controls

**Protective equipment**

- Engineering measures
  Provide adequate general and local exhaust ventilation.
- Respiratory equipment
  If ventilation is insufficient, suitable respiratory protection must be provided. EN149. Provide adequate ventilation. Observe occupational exposure limits and minimize the risk of inhalation of dust.
- Hand protection
  Use protective gloves. The protective gloves to be used must comply with the specifications of Directive 89/686/EEC.
- Eye protection
  Wear approved safety goggles. Recommended: EN 166.
- Other Protection
  Provide eyewash, quick drench.
- Hygiene measures
  DO NOT SMOKE IN WORK AREA! Wash hands at the end of each work shift and before eating, smoking and using the toilet. Wash promptly if skin becomes contaminated. Promptly remove any clothing that becomes contaminated. When using do not eat, drink or smoke.
- Skin protection
  Wear suitable protective clothing to prevent skin contact.

### SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

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

- **Appearance**: Crystals.
- **Colour**: Anhydrous solid: Clear // Hydrated forms: White.
- **Odour**: Odourless.
- **Solubility**: Slightly soluble in water.
- **Initial boiling point and boiling range**: 1575°C Anhydrous solid.
- **Melting point (°C)**: 741°C Anhydrous solid.
- **Relative density**: 2.3 (20°C)
- **Bulk Density**: 1140 kg/m³
- **Vapour pressure**: Not applicable.
BORAX ANHYDROUS

pH-Value, Diluted Solution 9.25 (1%, 20°C)
Solubility Value (G/100G H2O@20°C) 4.9

Endpoint waived according to REACH Annex VII, IX or XI.

Partition Coefficient (N-Octanol/Water) - 1.09 (22°C)

Mol. Weight 201.22

Anhydrous solid.

SECTION 10: STABILITY AND REACTIVITY

10.1. Reactivity
Reaction with strong reducing agents such as metal hydrides or alkali metals will generate hydrogen gas which could create an explosive hazard.

10.2. Chemical stability
Anhydrous solid: The substance is hygroscopic and will absorb water by contact with the moisture in the air. Hydrated forms: Loses water on heating.

10.3. Possibility of hazardous reactions
Reaction with strong reducing agents such as metal hydrides or alkali metals will generate hydrogen gas which could create an explosive hazard.

10.4. Conditions to avoid
Water, moisture. Avoid heat.

10.5. Incompatible materials
Materials To Avoid

10.6. Hazardous decomposition products
None known.

SECTION 11: TOXICOLOGICAL INFORMATION

11.1. Information on toxicological effects

Toxicological information
Sodium Tetraborate Anhydrous is chemically and toxicologically related to Boric Acid; the majority of the Borate chronic toxicity studies were conducted using Boric Acid. Sodium Tetraborate Anhydrous is converted to Boric Acid in biological systems. The Boric Acid data discussed in this section can be converted to Sodium Tetraborate Anhydrous equivalent data by dividing by a factor of 1.2292.

Acute toxicity:
Acute Toxicity (Oral LD50) > 2000 mg/kg Rat
Test method(s): OECD 401. Testing was carried out using a structural analogue. (Boric acid)

Acute Toxicity (Dermal LD50) > 2000 mg/kg Rabbit
Test method(s): FIFRA (Sodium tetraborate pentahydrate)

Acute Toxicity (Inhalation LC50) > 2.03 mg/l (dust/mist) Rat 4 hours
Maximum attainable airborne concentration. Test method(s): OECD 403. Testing was carried out using a structural analogue. (Boric acid)
BORAX ANHYDROUS

**Skin Corrosion/Irritation:**

**Dose**
500 mg 24 hr Rabbit

**Primary dermal irritation index (PDI)**
0.1 (72hr)

**Erythema/eschar score**
Very slight erythema - barely perceptible (1).

**Oedema score**
No oedema (0).

Test method(s): FIFRA (40 CFR 163) (Boric acid)

Not classified.

**Serious eye damage/irritation:**

Not classified. Test method(s): equivalent or similar to OECD 405. (Sodium tetraborate pentahydrate)

**Respiratory or skin sensitisation:**

**Skin sensitisation**
Buehler test: Guinea Pig

Test method(s): OECD 406. (Sodium tetraborate pentahydrate)

Not Sensitising.

**Germ cell mutagenicity:**

**Genotoxicity - In Vitro**

Gene Mutation:

Test method(s): equivalent or similar to OECD 471. (Boric acid)

Negative.

**Genotoxicity - In Vivo**

Chromosome aberration:

Test method(s): equivalent or similar to OECD 474. (Boric acid)

Negative.

**Carcinogenicity:**

**Carcinogenicity**

NOEL > 1150 mg/kg Oral Mouse

Test method(s): equivalent or similar to OECD 451. (Boric acid)

Not classified.

**Reproductive Toxicity:**

**Reproductive Toxicity - Fertility**

Three-generation study: LOAEL 58.5 mg/kg Oral Rat

The units are expressed in 'mg/µg' of: Boron. Test method(s): Toxicology and Applied Pharmacology 23: 351 - 364.

Known reproductive toxicant based on animal evidence.

**Reproductive Toxicity - Development**

Developmental toxicity: NOAEL 9.6 mg/kg Oral Rat

The units are expressed in 'mg/µg' of: Boron. Test method(s): OECD 414. The dose levels used in animal studies are significantly greater than those which humans would normally be exposed to. A human study of occupationally exposed Borate workers showed no adverse fertility effects.

May damage the unborn child.

**Specific target organ toxicity - single exposure:**

**STOT - Single exposure**

No information available.

**Specific target organ toxicity - repeated exposure:**

**STOT - Repeated exposure**

LOAEL 58.5 mg/kg Oral Rat

Not classified. Test method(s): Toxicology and Applied Pharmacology 23: 351 - 364. The units are expressed in 'mg/µg' of: Boron.

**Aspiration hazard:**

**Viscosity**

No data available.
BORAX ANHYDROUS

Inhalation
Dust may irritate throat and respiratory system and cause coughing.

Ingestion
Irritating. May cause nausea, stomach pain and vomiting.

Skin contact
May cause skin irritation/eczema.

Eye contact
Irritating and may cause redness and pain.

SECTION 12: ECOLOGICAL INFORMATION

Ecotoxicity
The product components are not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment. Boron is the element in sodium tetraborate anhydrous that is used to characterise ecological effects. To convert Sodium tetraborate anhydrous data to Boron, multiply by 0.214.

12.1. Toxicity

Acute Fish Toxicity
Boron naturally occurs in seawater at an average concentration of 5 mg B/liter. In laboratory studies the acute toxicity (96-hr LC50) for under-yearling Coho salmon (Oncorhynchus kisutch) in seawater was determined as 40 mg B/L (added as Sodium Metaborate). The Minimum Lethal Dose for minnows exposed to Boric Acid at 20°C for 6 hours is 18,000 to 19,000 mg/B/l in distilled water, 19,000 to 19,500 in hard water.

Rainbow trout (S. gairdneri) 24-day LC50 = 150.0 mg/B/L 36-day NOEC-LOEC = 0.75-1 mg/B/L Goldfish (Carassius auratus) 7-day NOEC-LOEC = 26.50 mg/B/L 3-day LC50 = 178 mg/B/L.

Acute Toxicity - Aquatic Invertebrates
EC50 48 hours 133 mg/l Daphnia magna
The units are expressed in 'mg/µg' of: Boron. Test method(s): ASTM Standard E 729-80 Not classified.

Acute Toxicity - Aquatic Plants
EC50 72 hours 52.5 mg/l Selenastrum capricornutum
The units are expressed in 'mg/µg' of: Boron. Test method(s): OECD 201. Not classified. Summary values used in CSR: >229 mg-boric acid/L.

Acute Toxicity - Terrestrial
30 mg/kg Anas Platyrhynchos (Mallard duck)
Adverse affect seen in the growth rates of offspring. Test method(s): Test material fed daily to adults/parents.

12.2. Persistence and degradability

Degradability
The product is degraded completely by hydrolysis. Boron is an essential micronutrient for healthy growth of plants. It can be harmful for boron sensitive plants in high quantities. The product is soluble in water and is easily absorbed by the soil. Boron is usually found in the soil and is absorbed by the mineral portion of the soil. At high levels it could be toxic to the environment. Limits for the final disposal of waste water: Boron = 2mg/l and disposal at sea: Boron = 10mg/l.

12.3. Bioaccumulative potential

Will not bio-accumulate.

Partition coefficient - 1.09 (22°C)

12.4. Mobility in soil

Mobility:
The product is soluble in water.

12.5. Results of PBT and vPvB assessment

This product does not contain any PBT or vPvB substances. Not Applicable - Inorganic chemical.

12.6. Other adverse effects

None known.

SECTION 13: DISPOSAL CONSIDERATIONS

General Information
Waste to be treated as controlled waste. Disposal to licensed waste disposal site in accordance with local Waste Disposal Authority. Tonnage quantities of product should not be sent to landfills but should be reused for an appropriate application.

13.1. Waste treatment methods
BORAX ANHYDROUS

Dispose of waste and residues in accordance with local authority requirements. Residues and empty containers should be taken care of as hazardous waste according to local and national provisions.

SECTION 14: TRANSPORT INFORMATION

General

14.1. UN number
Not applicable.

14.2. UN proper shipping name
Not applicable.

14.3. Transport hazard class(es)
Not applicable.

14.4. Packing group
Not applicable.

14.5. Environmental hazards

Environmentally Hazardous Substance/Marine Pollutant
No.

14.6. Special precautions for user
Not applicable.

14.7. Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code
Not applicable.

SECTION 15: REGULATORY INFORMATION

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

Guidance Notes
Workplace Exposure Limits EH40.

EU Legislation

15.2. Chemical Safety Assessment

A chemical safety assessment has been carried out.

SECTION 16: OTHER INFORMATION

General information

The following information is provided to conform with article 13 of the EC Directive on Packaging and Packaging Waste 94/62/EC:

• Wherever possible we use returnable packaging and pallets. Details of these are on our Sales Contracts
• For any non-returnable packaging the cost of disposal is at your expense, but we do have a list of reproprocessors available
• In most cases, but not all, we are able to supply products in returnable packaging but the additional cost of this will be for the customer’s expense. Please ask for details with your specific requirements
• Any products supplied in returnable packaging is clearly marked to this effect.

Revision Date 18/10/2011
Revision 5
Supersedes date 20/06/2011

Risk Phrases in Full
R36 Irritating to eyes.
R60 May impair fertility.
R61 May cause harm to the unborn child.

Hazard Statements in Full
H319 Causes serious eye irritation.
H360FD May damage fertility or the unborn child.
BORAX ANHYDROUS

Disclaimer

This information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process. Such information is, to the best of the company's knowledge and belief, accurate and reliable as of the date indicated. However, no warranty guarantee or representation is made to its accuracy, reliability or completeness. It is the user’s responsibility to satisfy himself as to the suitability of such information for his own particular use.