



Material Safety Data Sheet

Boric Acid

Edition: 26/05/2011

In compliance with Regulation (EC)1907/2006

1) Identification of substance/preparation and of the company undertaking

Material	Boric Acid
EC No:	233-139-2
CAS No	10043-35-3
REACH registration No.	01-2119486683-25
REACH Registration notes :	This is a substance of very high concern (SHVC) and is on the REACH Regulation (EC 1907/2006) Candidate List
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1.2) Relevant identified uses of the substance or mixture and uses advised against

1.2.1) Relevant identified uses

Construction products,
Fertilisers,
Printing ink,
Water Treatment,
Abrasives,
Autotcausticising,
Brake Fluid,
Carburizing Pastes,
Ceramic glazes and frits,
Cosmetics & Pharmaceuticals,
Detergents and cleaners,
Engine Coolants,
Flame retardants,
Glass,
Intumescent Paints,
Metallurgical flux,
Nuclear applications,
pH Buffers,
Polymer production,
Reagent chemicals,

Refractory Products,
Wallboard,
Lubricant,
Grease,
Catalyst,
Adhesive.

1.2.2) Uses advised against

None

2) Hazard Identification

2.1) Classification of the substance or mixture

Classification according to Regulation (EC) No. 1272/2008 [CLP]

Physical and Chemical Hazards	Not classified
Human health	Repr. 1B – H360FD
Environment	Not classified

Classification according to Directive 67/548/EEC

R40 Limited evidence of a carcinogenic effect.

The Full text for all R-phrases and Hazard Statements are Displayed in Section 16

Adverse physicochemical, human health and environmental effects

No additional information available

2.2.) Label elements

Labelling according to Regulation (EC) No. 1272/2008 (CLP)

Hazard pictograms (CLP):

GHS08



Signal word (CLP): DANGER

Hazard statements (CLP):

H360FD – May damage fertility or the unborn child

Precautionary statements (CLP):

Prevention: P201 - Obtain special instructions before use.
P202 – Do not handle until all safety precautions have been read and understood.
P281 – Use personal protective equipment as required.

Response: P308 + P313 – If exposed or concerned GET MEDICAL ADVICE/ATTENTION.
P405 – Store locked up.

Disposal: P501 – Dispose of contents and container in accordance with all local, regional, national and international regulations.

2.3) Other hazards

This substance/mixture does not meet the PBT criteria of REACH, annex XIII.

This substance/mixture does not meet the vPvB criteria of REACH, annex XIII.

3) Composition

3.1) Substances

Product name: Boric Acid

REACH Registration number 01-2119486683-25

REACH Registration notes This is a substance of very high concern (SHVC) and is on the REACH Regulation (EC 1907/2006) Candidate List.

EC No. 233-139-2

CAS No. 10043-35-3

Gross Formula H_3BO_3

Composition Comments Purity 90-100% w/w

4) First Aid Measures

4.1) Description of first aid measures

After inhalation: Remove victim to fresh air. If breathing is difficult, give oxygen. If breathing stops, perform cardio pulmonary resuscitation (CPR). Take to hospital.

After skin contact Wash immediately with plenty of soap and water. Remove contaminated clothing and shoes. Wash contaminated clothing before reuse.

After eye contact In case of eye contact, immediately rinse with clean water for 20-30 minutes. Call a doctor.

After ingestion If swallowed try to induce vomiting: NEVER MAKE AN UNCONSCIOUS PERSON VOMIT OR DRINK FLUIDS! Seek medical advice immediately and show the container or label.

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

General information: Prolonged or repeated exposure may cause: Convulsions, Anaemia. May cause damage to the liver and kidneys.

Inhalation: May cause irritation to mucous membranes. Nausea, vomiting, Diarrhoea, Drowsiness, dizziness, disorientation, vertigo, Headache, hypotension (low blood pressure). Renal injury, Cyanosis (blue tissue condition, nails, lips and/or skin), Prolonged or repeated exposure may cause: Unconsciousness, death. May cause irritation to the respiratory system, Mucous membranes.

Ingestion Fumes from the stomach contents may be inhaled resulting in the same symptoms as inhalation

Eye contact: Irritating and may cause redness and pain.

5) Fire Fighting

5.1) Extinguishing media

Use extinguishing media appropriate for the surrounding materials.

5.2) Special hazards arising from the substance or mixture

This 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. Dyke and collect extinguishing water.

Protective equipment for fire-fighters: Use of approved supplied air or self-contained breathing apparatus operated in positive pressure mode must be worn in case of fire.

6) Accidental Release

6.1) Personal precautions, protective equipment and emergency procedures

General measures: Keep public away from danger area. See section 8.2.

Avoid dust production.

Avoid all contact with this substance.

6.1.1) For non-emergency personnel

No additional information available

6.1.2) For emergency responders

No additional information available

6.2) Environmental precautions

Prevent entry to sewers and soil. Notify authorities if product enters sewers or public waters.

6.3) Methods and material for containment and cleaning up

Methods for cleaning up: Collect mechanically and transfer into appropriate container for disposal. Avoid dust production.

6.4) Reference to other sections

See section 8 and 13 for more information.

7) Handling/Storage

7.1) Precautions for safe handling

Precautions for safe handling:

Do not breathe dust. Avoid all contact with this substance Wash hands plentifully and other exposed areas with water after handling. Remove contaminated clothing and shoes. Wash clothing before re-using.

Packagings:

Even those that have been emptied, will retain product

residue. Always obey safety warnings and handle empty packagings as if they were full. Avoid all contact with this substance.

Hygiene measures:

When using do not eat, drink or smoke. Wash hands and other exposed areas with mild soap and water before eat, drink or smoke and when leaving work. Remove contaminated clothing and shoes.

7.2) Conditions for safe storage, including any incompatibilities

Storage conditions: Store in dry, cool, well-ventilated area between 2-40°C. Keep away from food, drink and animal feeding stuffs.

Incompatible products: Keep away from Bases, alkalis (both organic and inorganic)

7.3) Specific end use(s)

The identified uses for this product are detailed in Section 1.2

8) Exposure Controls None

8.1) Control Parameters

Chemical Name		STD	TWA – 8Hrs	STEL – 15 Min
Boric Acid		OEL	10 mg/m ³	-
DNEL				
Industry	Dermal	Long Term	Systemic Effects	68.6 mg/kg/day
Industry	Inhalation	Long Term	Systemic Effects	1.45 mg/m ³
Consumer	Oral	Long Term	Systemic Effects	0.17 mg/kg/day
Consumer	Inhalation	Long Term	Systemic Effects	0.97 mg/m ³
Consumer	Oral	Long Term	Systemic Effects	0.17 mg/kg/day
Consumer	Dermal	Long Term	Systemic Effects	34.3 mg/kg/day
PNEC				
Freshwater		1.35	mg/l	
Marinewater		1.35	mg/l	
Freshwater	Intermittent release	9.1	mg/l	
Sediment		1.8	mg/kg	
Soil		5.4	mg/kg	
STP		1.75	mg/l	

8.2. Exposure controls

Appropriate engineering controls: Use as far as possible in a closed system. Provide a regular control of the atmosphere. Emergency eye wash fountains and safety showers should be available in the immediate vicinity of any potential exposure. Local exhaust and general ventilation must be adequate to meet exposure standards. Please refer to the annex (exposure scenarios).

Hand protection: Use gloves resistant to chemical products corresponding to EN 374:3. Take advice to gloves' supplier.

Eye protection: Wear safety glasses with side shields according EN 166.

Skin and body protection: Wear closed protective clothing. Respiratory protection: Use respiratory protection mask according to EN 140 or EN 405 with filter type P3 according to EN 143:2000 or FFP3 according to EN 149:2001.

Environmental exposure controls: Prevent entry to sewers and soil.

9) Physical/Chemical Properties

Physical state	Crystalline powder.
Colour	white.
Odour	odourless.
Odour threshold	Not applicable
pH value, Diluted Solution	5.1
Relative evaporation rate (butylacetate=1)	No data available
Melting point	>1,000 °C
Freezing point	No data available
Initial boiling point	>1,000 ⁰ C
Flash point	Not flammable
Self ignition temperature	Not applicable
Decomposition temperature	No data available
Flammability (solid, gas)	Not flammable
Vapour pressure	0.000099 Pa at 25 ⁰ C
Relative vapour density at 23°C	1.49
Density	5.2 – 5.8 gm/ml
Solubility in water	Very soluble in water
Solubility Value (g/100g H ₂ O@20 ⁰ C)	4.92
Partition Coefficient (N-Octanol/Water)	-1.09 (22 ⁰ C)
Viscosity, dynamic	No data available
Explosive properties	No data available
Oxidising properties	Product is not explosive
Explosive limits	No data available

9.2) Other Information

Mol. Weight

10) Stability/Reactivity

10.1) Reactivity

If moisture is present boric acid can be corrosive to iron.

10.2) Chemical stability

Stable under normal conditions of handling and storage.

10.3) Possibility of hazardous reactions

Formation of explosive mixtures with Strong reducing agents and alkali metals

10.4) Conditions to avoid

Protect from water, moisture and strong heat

10.5) Incompatible materials

Potassium, Alkalis, Hydrogen gas, carbonates and hydroxides, Acetic anhydride.

10.6 Hazardous decomposition products

Loses chemically bound water upon heating forming metaboric acid (HBO₂) (212-221⁰ F), Then pyroboric acid (H₂B₄O₇) (285-320⁰ F) and boric anhydride at higher temperatures.

11) Toxicological Info

11.1 Information on toxicological effects

Acute Toxicity	Acute toxicity (Oral LD50) Acute toxicity (Dermal LD50) Acute toxicity (Inhalation LD50)	>2,000 mg/kg Rat Test method(s) OECD 401 >2,000mg/kg Rabbit Test method(s) FIFRA (40 CFR 163) >2.03 mg/l (dust/mist) Rat 4 hours Test method(s) OECD 403
Skin Corrosion/Irritation	Dose Primary dermal irritation index (PDI) Erythema\eschar score Oedema score	500 mg 24 hr Rabbit 0.1 (72 hr) Very slight erythema – barely perceptible (1) No oedema (0) Test method(s) FIFRA (40 CFR 163) Not classified
Serious eye damage/irritation		Not classified Test method(s): equivalent or similar to OECD 405.
Respiratory or skin sensitisation	Skin sensitisation	Buehler test: Guinea Pig Test method(s) OECD 406 Not Sensitising
Germ cell mutagenicity	Genotoxicity – In Vitro Genotoxicity – In Vivo	Gene Mutation Test method(s) OECD 471 Negative Chromosome aberration Test method(s) equivalent to similar to OECD 474
Carcinogenicity	Carcinogenicity	NOEL >1,150 mg/kg Oral Mouse Test method(s) equivalent or similar to OECD 451
Reproductive Toxicity	Reproductive Toxicity – Fertility	Three-generation study: LOAEL 58.5 mg/kg Oral Rat P.

	Reproductive Toxicity – Development	<p>The units are expressed in “mg/ug of Boron.</p> <p>Test method(s) Toxicology and Applied Pharmacology 23: 351-364.</p> <p>Known reproductive toxicant based on animal evidence</p> <p>Developmental toxicity: NOAEC 21.8 mg/kg Oral Rabbit.</p> <p>The units are expressed in mg/ug of Boron.</p> <p>Test method(s) equivalent or similar to OECD 414.</p> <p>May damage the unborn child.</p>
Specific target organ toxicity – single exposure	STOT – Single exposure	No information available
Specific target organ toxicity – repeated exposure	STOT – Repeated exposure	<p>LOAEL 58.5 mg/kg Oral Rat</p> <p>Test method(s) Toxicology and Applied Pharmacology 23: 351-364.</p> <p>Not classified</p>
Aspiration hazard	<p>Viscosity</p> <p>Inhalation</p> <p>Ingestion</p> <p>Skin contact</p> <p>Eye contact</p>	<p>No data available</p> <p>Dust may irritate throat and respiratory system and cause coughing</p> <p>Irritating. May cause nausea, stomach pain and vomiting</p> <p>May cause skin irritation/eczema</p> <p>Irritating and may cause redness and pain</p>

12) Ecological Information

Ecotoxicity: Not regarded as dangerous for the environment

12.1) Toxicity

Acute Toxicity – Fish

LC50 96 hours 79.7 mg/l Pimephales promelas (Fat-head Minnow)

The units are expressed in mg/ug of Boron.

Test method(s): EPA OPPTS 850. 1075

Not classified. Summary values used in CSR: 423 to 4145 mg boric-acid/L

Acute Toxicity – Aquatic Invertebrates

EC50 48 hours 133mg/l Daphnia magna

The units are expressed in mg/ug of Boron.

Test method(s): ASTM Standard E 729-80

Not classified

Acute Toxicity – Aquatic Plants

EC50 72 hours 52.5mg/l Selenastrum capricornutum

The units are expressed in mg/ug of Boron.

Test method(s): OECD 201

Not classified. Summary values used in CSR: >229 mg-boric acid/L

12.2) Persistence and degradability

Degradability- Not applicable - Inorganic chemical

12.3) Bioaccumulative potential

None

Partition coefficient- -1.09 (22⁰C)

12.4) Mobility in soil

The product is soluble in water. Mobile.

Adsorption. Desorption Coefficient - Soil

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.

13) Disposal Consideration

13.1. Waste treatment methods

Waste treatment methods: Dispose of this material and its container at hazardous or special waste collection point. Dispose in a safe manner in accordance with local/national regulations.

Additional information: Empty packaging can have residues or dusts and are subject to proper waste disposal, as above. Dispose in a safe manner in accordance with local/national regulations.

Ecology - waste materials: See the European waste catalogue.

14) Transport Information

In accordance with ADR / RID / ADNR / IMDG / ICAO / IATA

14.1. UN number

Not applicable

14.2. UN proper shipping name

Not classified as dangerous according to Transport Regulations

14.3. Transport hazard class(es)

Not applicable

14.4. Packing group

Not applicable

14.5. Environmental hazards

Environmentally Hazard substance/Marine Pollutant – No

14.6. Special precautions for user

14.6.1. Overland transport

Not applicable

14.6.2. Transport by sea

No additional information available

14.6.3. Air transport

No additional information available

14.7. Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

Not applicable

15) Regulatory Information

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

EU-Legislation Regulation

(EC) No 1907/2006 of the European Parliament and of the Council of 18 December 2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH), establishing a European Chemicals Agency, amending Directive 1999/45/EC and repealing Council Regulation (EEC) No 793/93 and Commission Regulation (EC) No 1488/94 as well as Council Directive 76/769/EEC and Commission Directives 91/155/EEC, 93/67/EEC, 93/105/EC and 2000/21/EC, including amendments.

Water hazard classification – WGK

15.2 Chemical Safety Assessment

A chemical safety assessment has been carried out

16) Other Information

Indication of changes: according to Regulation (EC) No. 1907/2006 (REACH) with its amendment Regulation (EC) No 453/20101

Data sources: Reach dossier.

Abbreviations and acronyms:

ADN: European Agreement concerning international carriage of Dangerous goods by Inland waterways

ADR: European Agreement concerning international carriage of Dangerous goods by Road

AF: Assessment factor

BCF: Bioconcentration factor
Bw: Body weight
CAS: Chemical Abstracts Service
CLP: Classification, labelling, packaging
CSR: Chemical Safety Report
DMEL: Derived maximum effect level
DNEL: Derivative No effect Level
EC: European Community
ELV: Emission limit values
EN: European Norm
EUH: European Hazard Statement
EWC: European Waste catalogue
IATA: International Air Transport Association
ICAO: International Civil Aviation Organization
IMDG: International Maritime Dangerous Goods
LC50: Median lethal concentration
LD50: Median lethal dose
NOAEL: No-observed-adverse-effect-level
NOEC: No observed effect concentration
OEL: Operator exposure level
PBT: Persistent, bioaccumulative, Toxic
PEC: Predicted effect level
PNEC: Predicted No effect Concentration
REACH: Registration, evaluation and autorisation of chemicals
RID: Regulations concerning the international carriage of dangerous goods by rail
STEL: Short Term Exposure Limit
TWA: Time weighted average
vPvB: Very persistent, very bioaccumulative.

Training advice: None.

Full text of R-, H-, P- and EUH-phrases:

H302	Harmful if swallowed.
H332	Harmful if inhaled.
H351	Suspected of causing cancer
H360FD	May damage fertility or the unborn child
H373	May cause damage to organs through prolonged or repeated exposure
H400	Very toxic to aquatic life.
H410	Very toxic to aquatic life with long lasting effects.
R20/22	Harmful by inhalation and if swallowed
R33	Danger of cumulative effects
R40	Limited evidence of a carcinogenic effect.
R50	Very toxic to aquatic organisms
R53	May cause long-term adverse effects in the aquatic environment
R61	May cause harm to the unborn child
R62	Possible risk of impaired fertility
P201	Obtain special instructions before use
P202	Do not handle until all safety precautions have been read and understood

P281	Use personal protective equipment as required.
P308 + P313	IF exposed or concerned: Get medical advice/attention
P405	Store locked up
P501	Dispose of contents/containers in accordance with all local. Regional. National and international regulations
Xn	Harmful
N	Dangerous for the environment

SDS EU (REACH Annex II)

This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product.

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