

Boron trifluoride

BF₃

1. Identification of the substance/mixture and of the company/undertaking

Product identifier	
Name of product	Boron trifluoride Art-Nr.: 1800
Name of substance	boron-trifluoride
Index No	005-001-00-X
EC No	231-569-5
CAS No	7637-07-2

Manufacturer / Distributor:

Ehsan International Gases

40/9, Aurangabad, Nazimabad
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Recommended intended purpose(s)

Basic substance.
Catalyst.

2. Hazards identification

Classification according to 67/548/EEC or 1999/45/EC

R14

T+; R26

C; R35

R-phrases

14	Reacts violently with water.
26	Very toxic by inhalation.
35	Causes severe burns.

Hazard classes and Hazard categories	Hazard Statements	Classification procedure
Liquef. Gas	H280	
Acute Tox. 2	H330	
Skin Corr. 1A	H314	

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

Hazard statements for physical hazards

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H280 Contains gas under pressure; may explode if heated.

Hazard statements for health hazards

H314 Causes severe skin burns and eye damage. H330 Fatal if inhaled.

Labelling according to Regulation (EC) No 1272/2008 [CLP/GHS]



GHS04



GHS05



GHS06

Signal word

Danger

Hazard statements for physical hazards

H280 Contains gas under pressure; may explode if heated.

Hazard statements for health hazards

H314 Causes severe skin burns and eye damage. H330 Fatal if inhaled.

Precautionary Statements

Prevention

P260 Do not breathe gas/vapours.

P280 Wear protective gloves/protective clothing/eye protection/face protection.

Response

P303 + P361 + P353 IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.

P304 + P340 IF INHALED: Remove to fresh air and keep at rest in a position comfortable for breathing.

P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P315 Get immediate medical advice/attention.

Storage

P403 Store in a well-ventilated place.

P405 Store locked up.

Supplemental Hazard information (EU)

Physical properties

Reacts violently with water.

Health properties

Corrosive to the respiratory tract.

! Information pertaining to special dangers for human and environment

Reacts violently with water.

Dangerous substances are released in case of decomposition.

Gas/vapour heavier than air. May accumulate in confined spaces, particularly at or below ground level. Contact with liquid may cause cold burns/frostbite.

3. Composition/information on ingredients

CAS No 7637-07-2

boron-trifluoride

EC No 231-569-5

Index No 005-001-00-X

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4. First aid measures

General information

Remove contaminated soaked clothing immediately.
Adhere to personal protective measures when giving first aid.
Seek medical treatment immediately.

In case of inhalation

Remove the casualty into fresh air and keep him immobile.
In case of breathing difficulties give oxygen.
In the event of pulmonary irritation treat initially with corticoid spray, e.g. Ventolair- or Pulmicort- metered-dose aerosol (Ventolair and Pulmicort are registered trademarks).
Seek medical treatment immediately.
In case of respiratory standstill give artificial respiration by respiratory bag (Ambu bag) or respirator. Send for a doctor.

In case of skin contact

In case of contact with skin wash off immediately with plenty of water.
In case of frostbite rinse with plenty of water. Don't remove clothing.
Seek medical treatment immediately.

In case of eye contact

Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
Call for a doctor immediately.

In case of ingestion

Ingestion is not considered a potential route of exposure.

Physician's information / possible dangers

Risk of pulmonary oedema

Treatment (Advice to doctor)

Continue to monitor for pneumonia and pulmonary oedema.
Monitor circulation.

5. Firefighting measures

Suitable extinguishing media

Product does not burn, fire-extinguishing activities according to surrounding.

Extinguishing media which must not be used for safety reasons

Full water jet

Special hazards arising from the substance or mixture

In the event of fire the following can be released:

Hydrogen fluoride (HF)

Fluorine

Fluoroboric acid

Special protective equipment for fire-fighters

Use breathing apparatus with independent air supply (isolated). Wear full protective clothing.

Additional information

Cool endangered containers with water spray jet.

Exposure to fire may cause containers to rupture/explode.

Fire residues and contaminated firefighting water must be disposed of in accordance with the local regulations. Collect contaminated firefighting water separately, must not be discharged into the drains.

6. Accidental release measures

Personal precautions

See chapter 8.

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Remove persons to safety.
Evacuate area.
Keep people away and stay on the upwind side.

Environmental precautions

Do not discharge into the drains or bodies of water..
Collect contaminated water / firefighting water separately.
If possible, stop flow of product.
Prevent spread over a wide area (e.g. by containment or oil barriers).
Suppress gases/vapours/mists with water spray jet Do not discharge into the subsoil/soil.

Methods for cleaning up

Ensure adequate air ventilation.
Take up with absorbent material (e.g. sand, kieselguhr, acid binder, general-purpose binder, sawdust).
Clean contaminated objects and floor thoroughly under consideration of environment regulations. After taking up the material dispose according to regulation.

Additional Information

Informations for safe handling see chapter 7.
Informations for personal protective equipment see chapter 8.
No water on the leaks.

7. Handling and storage

! Advice on safe handling

Use only in thoroughly ventilated areas.
Transfer and handle only in enclosed systems.
Prevent cylinders from falling over.
Ensure valve outlet cap nut or plug is correctly fitted.
Ensure valve protection device is correctly fitted.
Open valve slowly to avoid pressure shock.
Use only properly specified equipment which is suitable for this product, its supply pressure and temperature.
Do not allow backfeed into the container.
Suck back of water into the container must be prevented.
No water to valves, flanges and other fittings.
Purging of pipes and valves with inert gases - to avoid: water, solvents.

Advice on protection against fire and explosion

The product is not combustible.

Requirements for storage rooms and vessels

Ventilate store-rooms thoroughly.
Use transportable pressure equipment.
Suitable materials: Normalised steel and carbon steel, tempered steel, stainless steel.
Valve: Suitable materials: Carbon steels, stainless steel.
Unsuitable materials: Aluminium alloys, brass, copper alloys.

Advice on storage compatibility Do

not store with combustible materials.
Do not store together with animal feedstuffs.
Do not store together with food.
Do not store together with oxidizing agents.

Further information on storage conditions

Ensure valve protection device is correctly fitted.
Store closed container at cool and aired place.
Store only in original container at temperature of 50°C maximum (=122°F).
Prevent cylinders from falling over.

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Information on storage stability

Unlimited stability.

Recommendation(s) for intended use

no

8. Exposure controls/personal protection

Ingredients with occupational exposure limits to be monitored

CAS No	Name	Code	[mg/m ³]	[ppm]	Remark
7637-07-2	Boron trifluoride	PEL, 8 hours	3	1	OSHA, USA
7637-07-2	Boron trifluoride	REL, 8 hours	3	1	NIOSH, USA

Respiratory protection

Breathing apparatus in the event of high concentrations.

Keep self contained breathing apparatus readily available for emergency use.

Short term: filter apparatus, Filter B

Short term: filter apparatus, combination filter B-P3

Hand protection

Protective gloves

chemical-resistant gloves

Eye protection

safety goggles, in case of increased risk add protective face shield

Skin protection

protective clothing

General protective measures

Do not inhale gases/vapours/aerosols.

Hygiene measures

At work do not eat, drink, smoke or take drugs.

Wash hands before breaks and after work.

9. Physical and chemical properties

Form

compressed liquified gas

Colour

colourless

Odour

pungent

Important health, safety and environmental information

	Value	Temperature	at	Method	Remark
Acid number	not applicable				
boiling point	-100,3 °C	melting point		1013 hPa	
	-128,7 °C				
Flash point	no				

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	Value	Temperature	at	Method	Remark
Flammable solid	not applicable				
Flammability (gas)	no				
Ignition temperature	no				
Autoignition	no				
Lower explosion limit	no				
Upper explosion limit	no				
Vapour pressure	100 bar	20 °C			
Density	1,57 g/cm ³	-100,3 °C			liquid phase
Bulk density	not applicable				
Rel. vapour density	2,37				air = 1
Solubility in water	3700 g/l	20 °C			hydrolyses
Partition coefficient (log p_{OW})				not applicable	
Viscosity dynamic	0,0171 mPa*s	25 °C			
Solvent concentration	not applicable				
Oxidizing properties	no				
Explosive properties	no				
Additional information	Product effects hygroscopic. In case of warming up in water f				

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10. Stability and reactivity

Conditions to avoid

Heat sources / heat - risk of bursting.
Humidity.

Materials to avoid

Reactions with light metals.
Reactions with organic substances.
Reactions with water.

Hazardous decomposition products

fluoric containing products
Hydrogen fluoride

Additional information

Stable under normal conditions.

11. Toxicological information

Acute toxicity/Irritability/Sensitization

	Value/Validation	Species	Method	Remark
LD50 acute oral	320 mg/kg	rat		BASF-Test
LC50 acute inhalation	387 ppm (1 h)	rat		
Irritability skin	corrosive	rabbit		BASF-Test
Irritability eye	strong corrosive			experiences
Skin sensitization		not determined		
Sensitization respiratory system		not determined		

Subacute Toxicity - Carcinogenicity

	Value	Species	Method	Validation
Mutagenicity				not determined
Reproduction-Toxicity				not determined
Carcinogenicity				not determined

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Experiences made from practice

Risk of strong health injuries in case of long-term exposition.
Inhalation can cause damage to the respiratory tract or lungs.
Irritates respiratory tract.
Renal damage is possible.
Pulmonary damage is possible.
Irritates mucous membranes.

12. Ecological information

	Elimination rate	Method of analysis	Method	Validation
Physico-chemical				not determined
Data on elimination (persistence and degradability)				
degradability				
Biological degradability				
	Inorganic product, cannot be eliminated from the water by biological purification processes.			
	Elimination rate	Method of analysis	Method	Validation

Biological eliminability

Inorganic product, cannot be eliminated from the water by biological purification processes.

Ecotoxicological effects

	Value	Species	Method	Validation
Fish	LC50 22 - 46 mg/l (96 h)	Leuciscus idus	DIN 38412 T.15	
Daphnia	EC50 21,3 mg/l (48 h)	Daphnia magna	ISO 6341	

Behaviour in sewage plant

The product is an acid. Neutralization is normally necessary before a waste water is discharged into sewage treatment plants.

Additional ecological information

Value	Method	Remark
COD		not determined
BOD		not determined

General regulation

Do not allow uncontrolled leakage of product into the environment.
Product is not allowed to be discharged into the ground water or aquatic environment.
Product is not allowed to be discharged into aquatic environment, drains or sewage treatment plants.

13. Disposal considerations

Waste code No.
16 05 04*

Name of waste
gases in pressure containers (including halons) containing dangerous substances

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Wastes marked with an asterisk are considered to be hazardous waste pursuant to Directive 91/689/EEC on hazardous waste.

Recommendations for the product

Dispose of as hazardous waste.

Recommendations for packaging

Transportable pressure equipment (empty, residual pressure): Return to supplier / manufacturer.

14. Transport information

Land and inland navigation transport ADR/RID

UN 1008 BORON TRIFLUORIDE, 2.3 (8), (C/D), Classification code: 2TC

Marine transport IMDG

UN 1008 BORON TRIFLUORIDE, 2.3 (8)

Ems: F-C, S-U

Air transport ICAO/IATA-DGR

UN 1008 Boron trifluoride, 2.3 (8)

FORBIDDEN

15. Regulatory information

16. Other information

Recommend uses and restrictions

National and local regulations concerning chemicals shall be observed.

Further information

All declarations of safety-data-sheet refer to pure substance.

The information contained herein is based on the state of our knowledge. It characterizes the product with regard to the appropriate safety precautions. It does not represent a guarantee of the properties of the product.

Wording of the R/H-phrases specified in chapter 3 (not the classification of the mixture!)

R 14 Reacts violently with water.

R 26 Very toxic by inhalation.

R 35 Causes severe burns.

H314 Causes severe skin burns and eye damage.

H330 Fatal if inhaled.