

1 Identification

Product identifier

Product name: Potassium borohydride

Stock number: 46847

CAS Number:

13762-51-1

EC number:

237-360-5

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

Identified use: SU24 Scientific research and development

Details of the supplier of the safety data sheet

Manufacturer/Supplier:

Alfa Aesar

Thermo Fisher Scientific Chemicals, Inc.

30 Bond Street

Ward Hill, MA 01835-8099

Tel: 800-343-0660

Fax: 800-322-4757

Email: tech@alfa.com

www.alfa.com

Information Department: Health, Safety and Environmental Department

Emergency telephone number:

During normal business hours (Monday-Friday, 8am-7pm EST), call (800) 343-0660. After normal business hours, call Carechem 24 at (866) 928-0789.

2 Hazard(s) identification

Classification of the substance or mixture in accordance with 29 CFR 1910 (OSHA HCS)



GHS02 Flame

Water-react. 2 H261 In contact with water releases flammable gas.



GHS06 Skull and crossbones

Acute Tox. 3 H301 Toxic if swallowed.

Acute Tox. 3 H311 Toxic in contact with skin.

Acute Tox. 3 H331 Toxic if inhaled.



GHS05 Corrosion

Skin Corr. 1B H314 Causes severe skin burns and eye damage.

Eye Dam. 1 H318 Causes serious eye damage.

Hazards not otherwise classified No information known.

Label elements

GHS label elements The product is classified and labeled in accordance with 29 CFR 1910 (OSHA HCS)

Hazard pictograms



GHS02 GHS05 GHS06

Signal word Danger

Hazard statements

H261 In contact with water releases flammable gas.

H301+H311+H331 Toxic if swallowed, in contact with skin or if inhaled.

H314 Causes severe skin burns and eye damage.

Precautionary statements

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

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

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

P310 Immediately call a POISON CENTER or doctor/physician.

P370+P378 In case of fire: Use for extinction: Fire-extinguishing powder.

P402+P404 Store in a dry place. Store in a closed container.

WHMIS classification

B6 - Reactive flammable material

D1A - Very toxic material causing immediate and serious toxic effects

D2B - Toxic material causing other toxic effects

E - Corrosive material



Classification system

HMIS ratings (scale 0-4)

(Hazardous Materials Identification System)

HEALTH 3 Health (acute effects) = 3

FIRE 3 Flammability = 3

REACTIVITY 3 Physical Hazard = 3

Other hazards

Results of PBT and vPvB assessment

PBT: Not applicable.

vPvB: Not applicable.

Product name: Potassium borohydride

(Contd. of page 1)

3 Composition/information on ingredients

Chemical characterization: Substances
CAS# Description:
13762-51-1 Potassium borohydride
Identification number(s):
EC number: 237-360-5

4 First-aid measures

Description of first aid measures
General information
Immediately remove any clothing soiled by the product.
Remove breathing apparatus only after contaminated clothing has been completely removed.
In case of irregular breathing or respiratory arrest provide artificial respiration.
After inhalation
Supply fresh air. If required, provide artificial respiration. Keep patient warm.
Seek immediate medical advice.
After skin contact
Immediately wash with water and soap and rinse thoroughly.
Seek immediate medical advice.
After eye contact Rinse opened eye for several minutes under running water. Then consult a doctor.
After swallowing Do not induce vomiting; immediately call for medical help.
Information for doctor
Most important symptoms and effects, both acute and delayed
Causes severe skin burns.
Toxic in contact with skin.
Toxic if inhaled.
Toxic if swallowed.
Causes serious eye damage.
Indication of any immediate medical attention and special treatment needed No further relevant information available.

5 Fire-fighting measures

Extinguishing media
Suitable extinguishing agents In case of fire, use sand, carbon dioxide or powdered extinguishing agent. Never use water.
For safety reasons unsuitable extinguishing agents Water
Special hazards arising from the substance or mixture
Reacts violently with water
If this product is involved in a fire, the following can be released:
Potassium oxide
Boron oxide
Advice for firefighters
Protective equipment:
Wear self-contained respirator.
Wear fully protective impervious suit.

6 Accidental release measures

Personal precautions, protective equipment and emergency procedures
Wear protective equipment. Keep unprotected persons away.
Ensure adequate ventilation
Keep away from ignition sources
Environmental precautions: Do not allow product to reach sewage system or any water course.
Methods and material for containment and cleaning up:
Use neutralizing agent.
Dispose of contaminated material as waste according to section 13.
Ensure adequate ventilation.
Do not flush with water or aqueous cleansing agents
Prevention of secondary hazards: Keep away from ignition sources.
Reference to other sections
See Section 7 for information on safe handling
See Section 8 for information on personal protection equipment.
See Section 13 for disposal information.

7 Handling and storage

Handling
Precautions for safe handling
Handle under dry protective gas.
Keep container tightly sealed.
Store in cool, dry place in tightly closed containers.
Ensure good ventilation at the workplace.
Open and handle container with care.
Information about protection against explosions and fires: Protect against electrostatic charges.
Conditions for safe storage, including any incompatibilities
Storage
Requirements to be met by storerooms and receptacles: No special requirements.
Information about storage in one common storage facility:
Store away from water/moisture.
Store away from strong bases.
Store away from oxidizing agents.
Further information about storage conditions:
Store under dry inert gas.
This product is moisture sensitive.
Protect from humidity and water.
Keep container tightly sealed.
Store in cool, dry conditions in well sealed containers.
Specific end use(s) No further relevant information available.

8 Exposure controls/personal protection

Additional information about design of technical systems:
Properly operating chemical fume hood designed for hazardous chemicals and having an average face velocity of at least 100 feet per minute.

(Contd. on page 3)
USA

Product name: Potassium borohydride

(Contd. of page 2)

Control parameters

Components with limit values that require monitoring at the workplace:

The product does not contain any relevant quantities of materials with critical values that have to be monitored at the workplace.

Additional information: No data

Exposure controls

Personal protective equipment

General protective and hygienic measures

The usual precautionary measures for handling chemicals should be followed.

Keep away from foodstuffs, beverages and feed.

Remove all soiled and contaminated clothing immediately.

Wash hands before breaks and at the end of work.

Store protective clothing separately.

Avoid contact with the eyes and skin.

Maintain an ergonomically appropriate working environment.

Breathing equipment: Use self-contained respiratory protective device in emergency situations.

Recommended filter device for short term use:

Use a respirator with type P100 (USA) or P3 (EN 143) cartridges as a backup to engineering controls. Risk assessment should be performed to determine if air-purifying respirators are appropriate. Only use equipment tested and approved under appropriate government standards.

Protection of hands:

Impervious gloves

Check protective gloves prior to each use for their proper condition.

The selection of suitable gloves not only depends on the material, but also on quality. Quality will vary from manufacturer to manufacturer.

Material of gloves Nitrile rubber, NBR

Penetration time of glove material (in minutes) 480

Glove thickness 0.11 mm

Eye protection:

Tightly sealed goggles

Full face protection

Body protection: Protective work clothing.

9 Physical and chemical properties

Information on basic physical and chemical properties

General Information

Appearance:

Form:	Powder
Odor:	Odorless
Odor threshold:	Not determined.

pH-value:	Not applicable.
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Change in condition

Melting point/Melting range:	>400 °C (>752 °F) (dec)
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Boiling point/Boiling range:	Not determined
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Sublimation temperature / start:	Not determined
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Flammability (solid, gaseous)	Contact with water liberates extremely flammable gases.
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Ignition temperature:	Not determined
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Decomposition temperature:	Not determined
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Auto igniting:	Not determined.
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Danger of explosion:	Not determined.
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Explosion limits:

Lower:	Not determined
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Upper:	Not determined
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Vapor pressure:	Not applicable.
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Density at 20 °C (68 °F):	1.17 g/cm ³ (9.764 lbs/gal)
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Relative density	Not determined.
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Vapor density	Not applicable.
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Evaporation rate	Not applicable.
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Solubility in / Miscibility with	
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Water at 20 °C (68 °F):	193 g/l
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	Reacts violently
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	Contact with water releases flammable gases
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Partition coefficient (n-octanol/water):	Not determined.
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Viscosity:

dynamic:	Not applicable.
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kinematic:	Not applicable.
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Other information	No further relevant information available.
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10 Stability and reactivity

Reactivity

Reacts violently with water.

In contact with water releases flammable gases which may ignite spontaneously.

Chemical stability Stable under recommended storage conditions.

Thermal decomposition / conditions to be avoided: Decomposition will not occur if used and stored according to specifications.

Possibility of hazardous reactions

Reacts with strong oxidizing agents

Contact with water releases flammable gases

Reacts violently with water

Conditions to avoid No further relevant information available.

Incompatible materials:

Bases

Oxidizing agents

Water/moisture

Hazardous decomposition products:

Potassium oxide

Boron oxide

11 Toxicological information

Information on toxicological effects

Acute toxicity:

Toxic in contact with skin.

(Contd. on page 4)
USA

Product name: Potassium borohydride			(Contd. of page 3)
Toxic if inhaled. Toxic if swallowed. Danger through skin absorption. Swallowing will lead to a strong corrosive effect on mouth and throat and to the danger of perforation of esophagus and stomach. The Registry of Toxic Effects of Chemical Substances (RTECS) contains acute toxicity data for this substance.			
LD/LC50 values that are relevant for classification:			
Oral	LD50	167 mg/kg (rat)	
Dermal	LD50	230 mg/kg (rabbit)	
Skin irritation or corrosion: Causes severe skin burns. Eye irritation or corrosion: Causes serious eye damage. Sensitization: No sensitizing effects known. Germ cell mutagenicity: No effects known. Carcinogenicity: EPA-I: Data are inadequate for an assessment of human carcinogenic potential. Reproductive toxicity: No effects known. Specific target organ system toxicity - repeated exposure: No effects known. Specific target organ system toxicity - single exposure: No effects known. Aspiration hazard: No effects known. Subacute to chronic toxicity: No effects known. Additional toxicological information: To the best of our knowledge the acute and chronic toxicity of this substance is not fully known. Carcinogenic categories OSHA-Ca (Occupational Safety & Health Administration) Substance is not listed.			
12 Ecological information Toxicity Aquatic toxicity: No further relevant information available. Persistence and degradability No further relevant information available. Bioaccumulative potential No further relevant information available. Mobility in soil No further relevant information available. Additional ecological information: General notes: Do not allow undiluted product or large quantities to reach ground water, water course or sewage system. Avoid transfer into the environment. Results of PBT and vPvB assessment PBT: Not applicable. vPvB: Not applicable. Other adverse effects No further relevant information available.			
13 Disposal considerations Waste treatment methods Recommendation Consult state, local or national regulations to ensure proper disposal. Uncleaned packagings: Recommendation: Disposal must be made according to official regulations.			
14 Transport information			
UN-Number DOT, IMDG, IATA		UN1870	
UN proper shipping name DOT IMDG, IATA		Potassium borohydride POTASSIUM BOROHYDRIDE	
Transport hazard class(es) DOT  Class Label Class Label IMDG, IATA  Class Label		4.3 Substances which, in contact with water, emit flammable gases. 4.3 4.3 (W2) Substances which, in contact with water, emit flammable gases 4.3 4.3 Substances which, in contact with water, emit flammable gases. 4.3	
Packing group DOT, IMDG, IATA		I	
Environmental hazards:		Not applicable.	
Special precautions for user		Warning: Substances which, in contact with water, emit flammable gases	
Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code		Not applicable.	
Transport/Additional information: DOT Marine Pollutant (DOT):			
UN "Model Regulation":		UN1870, Potassium borohydride, 4.3, I	
15 Regulatory information Safety, health and environmental regulations/legislation specific for the substance or mixture GHS label elements The product is classified and labeled in accordance with 29 CFR 1910 (OSHA HCS)			
(Contd. on page 5)			

Product name: Potassium borohydride

(Contd. of page 4)

Hazard pictograms



GHS02 GHS05 GHS06

Signal word *Danger*

Hazard statements

H261 *In contact with water releases flammable gas.*
H301+H311+H331 *Toxic if swallowed, in contact with skin or if inhaled.*
H314 *Causes severe skin burns and eye damage.*

Precautionary statements

P280 *Wear protective gloves/protective clothing/eye protection/face protection.*
P303+P361+P353 *IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.*
P305+P351+P338 *IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.*
P310 *Immediately call a POISON CENTER or doctor/physician.*
P370+P378 *In case of fire: Use for extinction: Fire-extinguishing powder.*
P402+P404 *Store in a dry place. Store in a closed container.*

National regulations

All components of this product are listed in the U.S. Environmental Protection Agency Toxic Substances Control Act Chemical substance Inventory.
All components of this product are listed on the Canadian Non-Domestic Substances List (NDSL).

SARA Section 313 (specific toxic chemical listings) Substance is not listed.

California Proposition 65

Prop 65 - Chemicals known to cause cancer Substance is not listed.

Prop 65 - Developmental toxicity Substance is not listed.

Prop 65 - Developmental toxicity, female Substance is not listed.

Prop 65 - Developmental toxicity, male Substance is not listed.

Information about limitation of use: For use only by technically qualified individuals.

Other regulations, limitations and prohibitive regulations

Substance of Very High Concern (SVHC) according to the REACH Regulations (EC) No. 1907/2006. Substance is not listed.

The conditions of restrictions according to Article 67 and Annex XVII of the Regulation (EC) No 1907/2006 (REACH) for the manufacturing, placing on the market and use must be observed.

Substance is not listed.

Annex XIV of the REACH Regulations (requiring Authorisation for use) Substance is not listed.

Chemical safety assessment: A Chemical Safety Assessment has not been carried out.

16 Other information

Employers should use this information only as a supplement to other information gathered by them, and should make independent judgement of suitability of this information to ensure proper use and protect the health and safety of employees. This information is furnished without warranty, and any use of the product not in conformance with this Material Safety Data Sheet, or in combination with any other product or process, is the responsibility of the user.

Department issuing SDS: Global Marketing Department

Date of preparation / last revision 09/01/2016 / -

Abbreviations and acronyms:

ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)

IMDG: International Maritime Code for Dangerous Goods

DOT: US Department of Transportation

IATA: International Air Transport Association

EINECS: European Inventory of Existing Commercial Chemical Substances

CAS: Chemical Abstracts Service (division of the American Chemical Society)

HMIS: Hazardous Materials Identification System (USA)

WHMIS: Workplace Hazardous Materials Information System (Canada)

LC50: Lethal concentration, 50 percent

LD50: Lethal dose, 50 percent

vPvB: very Persistent and very Bioaccumulative

ACGIH: American Conference of Governmental Industrial Hygienists (USA)

OSHA: Occupational Safety and Health Administration (USA)

NTP: National Toxicology Program (USA)

IARC: International Agency for Research on Cancer

EPA: Environmental Protection Agency (USA)

Water-react. 2: Substances and Mixtures which, in contact with water, emit flammable gases, Hazard Category 2

Acute Tox. 3: Acute toxicity, Hazard Category 3

Skin Corr. 1B: Skin corrosion/irritation, Hazard Category 1B

Eye Dam. 1: Serious eye damage/eye irritation, Hazard Category 1