Potassium Pentaborate

Safety Data Sheet PPB2022

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

Date of issue: 11/01/2022 Version: 1.0

SECTION 1: Identification

1.1. Identification

Product form	:	Powder
Substance name	:	Potassium Pentaborate
CAS No	:	12229-13-9
Product code	:	BORA-ESP-000
Formula	:	$K_2B_5O_5$-$4H_2O$
Synonyms	:	Potassium Pentaborate
Other means of identification	:	Dipotassium decaborate octahydrate

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

Use of the substance/mixture	:	Laboratory chemicals Manufacture of substances Industrial Manufacturing

1.3. Details of the supplier of the safety data sheet

Laboratorios Hersol SA de CV
Niños Héroes #116, Bo. La Concepción
San Mateo Atenco, Estado de México. CP.52100
Tel: +52 (728) 287 1981
contacto@labhersol.com.mx, www.labhersol.com.mx

1.4. Emergency telephone number

Emergency number : México:SETIQ +52-55-5559-1588. NCEC (+1) 202 464 2554 (24h) (USA, Canada)

SECTION 2: Hazard(s) identification

2.1. Classification of the substance or mixture

Classification (GHS-US)

Reproductive Toxicity Category 2

2.2. Label elements

GHS-US labeling

Hazard pictograms (GHS-US) :

GHS08

Signal word (GHS-US) : Danger

Hazard statements (GHS-US) : H361 - Suspected of damaging fertility or the unborn child.

Precautionary statements (GHS-US) : P202 - Do not handle until all safety precautions have been read and understood.
P308+P313 - IF exposed or concerned: Get medical advise/attention.
P501 - Dispose of contents/container in accordance with local regulation.

2.3. Other hazards

No additional information available

2.4. Unknown acute toxicity (GHS US)

Not applicable

SECTION 3: Composition/information on ingredients

3.1. Substance

Name	Product identifier	%	
Dipotassium decaborate octahydrate (Main constituent)	(CAS No) 12229-13-9	> 99.5%	See Section 8 for Occupational Exposure Limits.

3.2. Mixture

Not applicable

SECTION 4: First aid measures

4.1. Description of first aid measures

First-aid measures general : **Protection for first-aiders**: No special protective clothing is required.

Inhalation: If symptoms such as nose or throat irritation are observed, remove to fresh air.

Eye contact: Use eye wash fountain or fresh water to cleanse eye. If irritation persists for more than 30 minutes, seek medical attention.

Skin contact: No treatment necessary.

Ingestion: Swallowing small quantities (one teaspoon) will cause no harm to healthy adults. If larger amounts are swallowed, give two glasses of water to drink and seek medical attention.

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

Symptoms of accidental over-exposure to high doses of inorganic borate salts have been associated with ingestion or absorption through large areas of severely damaged skin. These may include nausea, vomiting, and diarrhoea, with delayed effects of skin redness and peeling (see Section 11)

4.3. Indication of any immediate medical attention and special treatment needed

Note to physicians: Supportive care only is required for adult ingestion of less than a few grams of the product. For ingestion of larger amounts, maintain fluid and electrolyte balance and maintain adequate kidney function. Gastric lavage is only recommended for heavily exposed, symptomatic patients in whom emesis has not emptied the stomach. Hemodialysis should be reserved for patients with massive acute absorption, especially for patients with compromised renal function. Boron analyses of urine or blood are only useful for verifying exposure and are not useful for evaluating severity of poisoning or as a guide in treatment1

SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media : Use extinguishing media that are appropriate to local circumstances and the surrounding environment.

5.2. Special hazards arising from the substance or mixture

Fire hazard : Special hazards arising from the chemical:
None. The product is not flammable, combustible or explosive.

5.3. Advice for firefighters

Firefighting instructions : Not applicable. The product is itself a flame retardant.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

6.1.1. For non-emergency personnel

Emergency procedures : Eye goggles and gloves are not required for normal industrial exposures, but eye protection according to ANSI Z.87.1 or other national standard. Respirators should be considered if environment is excessively dusty.

6.1.2. For emergency responders

Protective equipment : Eye goggles and gloves are not required for normal industrial exposures, but eye protection according to ANSI Z.87.1 or other national standard. Respirators should be considered if environment is excessively dusty.

6.2. Environmental precautions

Avoid release to the environment. Notify authorities if product enters sewers or public waters.

6.3. Methods and material for containment and cleaning up

For containment : Avoid spillage into water and cover drains.

Methods for cleaning up : Sweep or shovel spills into appropriate container for disposal. Minimize generation of dust.

Other information : For disposal of solid materials or residues refer to section 13 : "Disposal considerations".

6.4. Reference to other sections

Refer to sections 8, 12 and 13.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Precautions for safe handling : Good housekeeping procedures should be followed to minimise dust generation and accumulation. Avoid spills. Do not eat, drink and smoke in work areas. Wash hands after use. Remove contaminated clothing and protective equipment before entering eating areas.

7.2. Conditions for safe storage, including any incompatibilities

No special handling precautions are required, but dry, indoor storage is recommended. To maintain package integrity and to minimise caking of the product, bags should be handled on a first-in first-out basis.

Storage temperature: Ambient
Storage pressure: Atmospheric
Special sensitivity: Moisture (Caking)

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

No additional information available

8.2. Exposure controls

Appropriate engineering controls : Use local exhaust ventilation to keep airborne concentrations of dust below permissible exposure limits.

Personal protection equipment : Eye and face protection: Eye protection according to ANSI Z.87.1 or other national standards may be warranted if environment is excessively dusty.

Skin protection : Standard work gloves (cotton, canvas or leather) may be warranted if environment is excessively dusty.

Respiratory protection : Where airborne concentrations are expected to exceed exposure limits, respirators should be used.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state : Solid.

Color : White

Odor : Odourless

Odor threshold : Not applicable: Odourless

pH @20ºC : Aci

Melting point : >300ºC

Freezing point	:	No data available
Boiling point	:	No data available
Flash point	:	No data available
Relative evaporation rate (butyl acetate=1)	:	No data available
Flammability (solid, gas)	:	No data available
Explosion limits	:	No data available
Explosive properties	:	No data available
Oxidizing properties	:	No data available
Vapor pressure	:	No data available
Relative density	:	No data available
Relative vapor density at 20 °C	:	No data available
Specific gravity / density	:	2.37 g/ml (@ 25 °C)
Molecular mass	:	78.10 g/mol
Solubility	:	No data available
Log Pow	:	No data available
Auto-ignition temperature	:	No data available
Decomposition temperature	:	No data available
Viscosity	:	No data available
Viscosity, kinematic	:	No data available
Viscosity, dynamic	:	No data available

9.2. Other information

No additional information available

SECTION 10: Stability and reactivity

10.1. Reactivity

No additional information available

10.2. Chemical stability

Under normal ambient temperatures (-40 °C to +40°C), the product is stable product. When heated it loses water, first forming metaboric acid (HBO2), and on further heating it is converted into boric oxide (B2O3).

10.3. Possibility of hazardous reactions

Boric acid is a weak acid that may cause corrosion of base metals. 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

Avoid contact with strong reducing agents by storing according to good industrial practice.

10.5. Incompatible materials

Strong reducing agents.

10.6. Hazardous decomposition products

None.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Information on the likely routes of exposure (inhalation, ingestion, skin and eye contact)
Inhalation is the most significant route of exposure in occupational and other settings. Dermal exposure is not usually a concern because product is poorly absorbed through intact skin. Product is not intended for ingestion.
(a) Acute toxicity
Method: Acute Oral Toxicity Study – OECD Guideline 401 equivalent
Species: Rat
Dose: 0.46; 1.00; 2.15; 4.64 and 10.0 g potassium pentaborate tetrahydrate/kg bw
Routes of Exposure: Oral
Results: Low acute oral toxicity. LD50 rats is 3,690 mg/kg of body weight. Based on the available data, the classification criteria are not met.
(b) Skin corrosion / irritation: No data on the product itself.
(c) Serious eye damage / irritation: No data on the product itself. Fifty years of occupational exposure indicate no adverse effects on human eye.
(d) Respiratory or skin sensitisation: Not a skin sensitizer.
(e) Germ cell mutagenicity: No data on the product itself. Not mutagenic based on boric acid.

(f) Carcinogenicity: No data on the product itself. Not carcinogenic based on boric acid.
(g) Reproductive toxicity: No data on the product itself. However, animal feeding studies with boric acid and sodium tetraborate in rat, mouse and dog, at high doses, have demonstrated effects on fertility and testes2. Studies with the chemically related boric acid in rat, mouse and rabbit, at high doses, demonstrate developmental effects on the foetus including foetal weight loss and minor skeletal variations. The lowest NOAEL is 9.6 mg B/kg in rats, based on developmental effects. The doses administered were many times in excess of those which humans would normally be exposed to 3,4,5.
(h) STOT-single exposure: No data on the product itself.
(i) STOT-repeated exposure: No data on the product itself.
(j) Aspiration hazard: Physical form of solid powder indicates no aspiration hazard potential.

11.2 Symptoms related to the physical, and chemical and toxicological characteristics:
Products are not intended for ingestion. Small amounts (e.g. a teaspoonful) swallowed accidentally are not likely to cause effects. Symptoms of accidental over-exposure to high doses of inorganic borate salts have been associated with ingestion or absorption through large areas of severely damaged skin. These may include nausea, vomiting, and diarrhoea, with delayed effects of skin redness and peeling.

11.3 Delayed and immediate effects as well as chronic effects from short and long-term exposure:
Human epidemiological studies show no increase in pulmonary disease in occupational populations with chronic exposures to boric acid and sodium borate dust. Human epidemiological studies indicate no effect on fertility in occupational populations with chronic exposures to borate dust and indicate no effect to a general population with high exposures to borates in the environment.

11.4 Numerical measures of toxicity (such as acute toxicity)
None. This product is a substance.

SECTION 12: Ecological information

12.1. Toxicity

Ecotoxicity (aquatic and terrestrial, where available)
Boron occurs naturally in sea water at a nearly uniform average concentration of 5 mg B/l and fresh water between 0.01 and 0.4 mg B/l. In diluted aqueous solutions the predominant boron species is undissociated boric acid. Note that the data values are expressed as boron equivalents. To convert to this product divide the boron equivalent by 0.1843.

Algal toxicity 6:
Green algae, Scenedesmus subspicatus
96-hr EC10=24 mg B/l†

Invertebrate toxicity:
Daphnids, Daphnia magna Straus7
48-hr LC50 = 133mg B/l†
21-day NOEC-LOEC = 6-13 mg B/l†

Fish toxicity:
Sea water8:
Dab, Limanda limanda
96-hr LC50 = 40 mg B/l‡

Fresh water9 :
Rainbow trout, Oncorhynchus mykiss (embryo-larval stage)
24-day LC50 = 150 mg B/l‡
32-day LC50 = 100 mg B/l‡

Goldfish, Carassius auratus (embryo-larval stage)
7-day LC50 = 46 mg B/l†
3-days LC50 = 178 mg B/l†

Test substance: † Sodium tetraborate
‡ Boric acid
Phytotoxicity: Boron is an essential micronutrient for healthy growth of plants. It can be harmful to boron sensitive plants in higher quantities. Care should be taken to minimise the amount of borate product released to the environment.

12.2 Persistence and Degradability
Biodegradation is not an applicable endpoint since the product is an inorganic substance.

12.3 Bioaccummulative potential
This product will undergo hydrolysis in water to form undissociated boric acid. Boric acid will not biomagnify through the foodchain.
Octanol/Water partition coefficient: Log Pow = -0.7570 @ 25°C (based on boric acid).

12.4 Mobility in soil
The product is soluble in water and is leachable through normal soil. Adsorption to soils or sediments is insignificant.

12.5 Other adverse effects
None

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Disposal methods
Product packaging should be recycled where possible.
Local authorities should be consulted about any specific local requirements
Such product should, if possible, be used for an appropriate application.

SECTION 14: Transport information

Transport Classification for Road (ADR/DOT/TDG) / Rail (RID); Inland waterways (ADN); Sea (IMDG); Air (ICAO/IATA)

14.1 UN Number:	**Not Regulated**
14.2 UN Proper Shipping Name:	**Not Regulated**
14.3 Transport hazard class(es):	**Not Regulated**
14.4 Packing Group:	**Not Regulated**
14.5 Environmental Hazards (e.g. marine pollutant):	**Not Regulated**
14.6 Special precautions for user:	**Not Regulated**
14.7 Transport in bulk according to Annex II of Marpol 73/78 and the IBC code:	**Not Regulated**

SECTION 15: Regulatory information

15.1. US Federal regulations

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

Clean Air Act (Montreal Protocol) - Substances that deplete the ozone layer: Not manufactured with and does not contain any Class I or Class II ozone depleting substances.

Regulation (EC) No 689/2008 - Export and Import of Dangerous Chemicals: Not listed.

National Regulations: Ensure all national/local regulations are observed.

Chemical inventory listing: The listing is sometimes under the Inventory number of the anhydrous form of this inorganic salt.

U.S. EPA TSCA Inventory:	11128-29-3
Canada DSL:	11128-29-3
EINECS:	234-371-1
Australia AICS:	11128-29-3
China IECSC:	11128-29-3
Japanese METI & ISHL:	(1) - 66
South Korea KECI:	KE-29171

SECTION 16: Other information

None.

References:

1. Litovitz T L, Norman S A, Veltri J C, Annual Report of the American Association of Poison Control Centers Data Collection System. Am. J. Emerg. Med. (1986), 4, 427-458
2. National Toxicology Program (NTP) – Technical Report Series No. TR324, NIH Publication No. 88-2580 (1987), PB88 213475/XAB
3. Fail et al., Fund. Appl. Toxicol. (1991) 17, 225-239
4. Heindel et al., Fund. Appl. Toxicol. (1992) 18, 266-267
5. Guhl W, SÖFW-Journal (1992) 181 (18/92), 1159-1168
6. Schöberl P, Marl and Huber L (1988) Tenside Surfactants Detergents 25, 99-107
7. Birge W J, Black J A, EPA-560/-76-008 (April 1977) PB 267 085

For general information on the toxicology of borates see Patty's Toxicology, 6th Edition Vol. I, (2012) Chap. 23, 'Boron'.

Abbreviations and acronyms:

EC: Effect concentration
GHS: Global Harmonised System for classification and labelling of chemicals LC: Lethal Concentration
LD: Lethal Dose
STOT: Specific Target Organ Toxicity
LOEC: Lowest Observed Effect Concentration
NA: Not applicable.
NOAEL: No observed adverse effect level
NOEC: No Observed Effect Concentration
STP: Sewage Treatment Plant

Precautionary Phrases:

KEEP OUT OF REACH OF CHILDREN. Do not ingest.
Not for use in food, drugs or pesticides. Refer to safety data sheet.