1. CHEMICAL PRODUCT

1.- Product Identification

Product Name : Technical Boric Acid - Granular
Product Use : Industrial Production
Chemical Name : Boric Acid - Orthoboric Acid
Chemical Family : Inorganic Borates
Number of CAS registration : 10043-35-3

2. Enterprise Identification

Issued by :
INKABOR S.A.C.
Av. Italia 101 P.I. Rio Seco
Arequipa - PERU
Tel : + 51 (054) 444400
Fax : + 51 (054) 444010
Email : info@inkabor.com
Website : www.inkabor.com

This product contains between 99.9 - 100.20 per cent (%) of boric acid.
Molecular Formula : H₃BO₃

2. COMPOSITION / INFORMATION ABOUT THE ELEMENTS

According to the directive 67/548/CEE and successive amendments, boric acid isn’t classified as dangerous.

EMERGENCY PROCEDURES REVIEW

Boric Acid is a white, odorless granular compound, that present a very low subcutaneous and oral toxicity

Potential Health hazard:

Inhalation: After inhalation of boric acid at superior levels of 10 mg/m³, symptoms such as wheezing, coughing, shortness of breath, or burning in the mouth, throat, or chest can occasionally be developed.
Eye Contact: Boric Acid is a low irritating for human eyes.
Skin Contact: Boric Acid does not cause irritation. Avoid contact to abraded skin.
Ingestion: The products containing boric acid are not toxic when ingested. The accidental ingestion of small quantities of boric acid may not cause any effects, but the ingestion of large quantities of this compound may cause adverse effects on the gastrointestinal tract.
Cancer: Boric acid is not carcinogen.
Reproduction and Growth: Studies about the ingestion of excessive doses of borates have effects in reproduction and growth.
Occupational, accidental, or therapeutic exposure to borates has no dangerous effects in humans reproduction.
EMERGENCY AND FIRST AID PROCEDURES

1. Inhalation:
   If symptoms such as wheezing, coughing, shortness of breath, or burning in the mouth, throat, or chest occur, leave the contaminated area; take deep breaths of fresh air and if the symptoms persist call a physician.

2. Eye Contact:
   Flush victim's eyes with water or normal saline solution for 20 to 30 minutes. Do not put any ointments, oils, or medication in the victim's eyes without specific instructions from a physician.

3. Skin Contact:
   Gently wash all affected skin areas thoroughly with soap and water, if symptoms such as redness or irritation occur.

4. Ingestion:
   Induce vomiting. Give 1 or 2 glasses of water to dilute the chemical, ensure that the victim's airway is open, and call a physician.

FIRE FIGHTING PROCEDURES

1. Fire:
   Literature sources indicate that this compound is nonflammable or explosive.
   Fires involving this compound can be controlled with any extinguisher containing, dry chemical, carbon dioxide or halon.

PROCEDURES FOR ACCIDENTAL RELEASED OR SPILLED MATERIAL

Wear appropriate personal protective equipment.

1. Spills over soil:
   Sweep or vacuum the spill material and transfer it to a suitable container for further reclamation or disposal, using a method that does not generate dust.
   Flush all contaminated areas with abundance water.
   Avoid the contamination of any water supplies.

2. Spills into water:
   Immediately stop using the water until the Safety Officer (or other competent authority) has verified that the area has been properly cleaned. The contaminated water must not be used for irrigation or human consume.
   Dispose in accordance with environmental local regulations.

HANDLING AND STORAGE

There are no particular conditions for its handling and storage. Suitable store the product in closed containers in a cool, dry indoor area.
For maintaining the characteristics of the product, and minimize the possible aglomeration, the bags should be use in FIFO rotation.
Sensibility: humidity (aglomeration)

EXPOSURE CONTROLS / PERSONAL PROTECTION

1. Air-borne Exposure Limits:
   - OSHA Permissible Exposure Limit (PEL):
     15 mg/m$^3$ total dust, 5 mg/m$^3$ respirable fraction for nuisance dusts.
   - ACGIH Threshold Limit Value (TLV):
     10 mg/m$^3$ total dust containing no asbestos and < 1% crystalline silica for Particulates Not Otherwise Classified (PNOC).
2. - Technical Control

A ventilation system of local and/or general exhaust is recommended to keep employee exposures below the Airborne Exposure Limits.

3. - Respirators, Skin and Eye Protection

Respirators, gloves and safety goggles must be used in case of employee exposure over the Airborne Exposure Limits or if the environment is particulary dusty.

9 PHYSICAL AND CHEMICAL CHARACTERISTICS

Appearance: Granular
Color: White
Odor: Odorless.
Solubility in water at 20°C: 4.65%
Density: 1.51
pH:
  5.1 Aqueous solution: (0.1M)
  6.1 Aqueous solution: (0.01M)
  3.7 Aqueous solution: (0.47M)
Melting Point: 185°C
Molecular Weight: 61.84

10 STABILITY AND REACTIVITY

1. - Stability

Stable under ordinary conditions of use and storage. If moisture is present, boric acid can be corrosive to iron.

2. - Risks of Products Decomposition

By heating, the product loses water, forming metaboric acid (HBO₂) at 100°C; then pyroboric acid (H₃B₄O₇) at 150°C, and Boric anhydride (B₂O₃) at higher temperatures.

3. - Hazardous Polymerization

None occur.

4. - Incompatibilities

Potassium, acetic anhydride, alkalis, carbonates, and hydroxides.

11 TOXICOLOGICAL INFORMATION

1. - Toxicological Data

LD₅₀ oral lethal dose in rats is 3.6 - 4.6 g / kg of corporal weight

2. - Reproductive Toxicity

See Chronic Health Hazards

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<th>Ingredient</th>
<th>IARC Category</th>
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<td>None</td>
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1. ENVIRONMENTAL EFFECTS:

Soil:
Residual Soil Activity: Boron is usually found in the soils, and is an essential plant micronutrient. Boric Acid is generally active in soil and is the form how the plant absorbs from the soil this element. Soil naturally contains boron at concentrations of 0.1 to 100 ppm.

Adsorption in the soil: Boric Acid is absorbed by the mineral portion of the soil.

Persistence and Agents of degradation: Boric Acid maintains in the soil for varying lengths of time, depending on the soils texture and rainfall. The average persistence is one year or more depending on the rainfall. In the case of heavy rainfall the product leaches rapidly.

Metabolites/degradation products and potential environmental effects: The main degradation of Boric Acid in soil is boron. Boron is found in most natural soils.

Water:
Solubility: Boric Acid is partially soluble in water.

Potential for leaching between ground and water: The potential for leaching is medium. Boric Acid is adsorbed in the soil. Boric Acid may leach more rapidly under high rainfall conditions.

Surface waters: The potential for surface water contamination with Boric Acid is very low. Surface waters naturally contain low levels of boron. The average boron concentration in surface waters ranges from 0.001 mg/l to 0.1 mg/l.

Air:
Volatilization: Boric Acid does not evaporate.

Potential for products from burning of treated vegetation: Boric Acid is not considered to be a fire hazard, and is used as a fire retardant.

2. ECOLOGICAL EFFECTS:

Soils and water microorganisms: At high levels, boric acid could be toxic to many microorganisms.

Plants: Boric Acid and other boron compounds at high levels may kill plants. Boric Acid is used in low concentrations as a foliar fertilizer.

Animals: Boric Acid is toxic to birds and mammals if are swallowed in high quantities. It is relative not toxic to bees. However in high pure concentrations is toxic to insects. Boric Acid is used for insect control (ants, cockroaches, silverfish).

Wild life and endangered species: Boric Acid may be hazard to endangered plant species if it is applied to areas where they live.

13 DISPOSAL CONSIDERATIONS

It is not required any special care for disposal, however might be necessary to contact with the local authority in case of disposal of tonnage of material.

14 TRANSPORT INFORMATION

Boric Acid does not have an UN number and is not regulated by any International Code for the railway, roadway, seaway and airway.

15 REGULATORY INFORMATION

Labeled according to the CEE directive:

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Material Safety Data Sheet

BORIC ACID TQ

Chemical Inventory Status

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Federal, State & International Regulations

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This MSDS has been prepared according to the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all of the information required by the CPR.

OTHER INFORMATION

PRODUCT BY : FOR MORE INFORMATION PLEASE CONTACT US AT:

INKABOR S.A.C. 
Av. Italia 101 P.I. Río Seco
Arequipa - PERÚ
Tel : +51 (054) 444400
Fax : +51 (054) 444010
Email : info@inkabor.com
Website : www.inkabor.com

Environmental Department
INKABOR S.A.C.
Av. Italia 101 P.I. Río Seco
Arequipa - PERÚ
Tel : +51 (054) 444400
Fax : +51 (054) 444010
Email : environmental@inkabor.com
Website : www.inkabor.com

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Inkabor SAC will not be responsible for damages resulting from use or reliance upon this information.

SOURCES

- Experiments on Reactivity in the Laboratory of the Quality Control Department of Inkabor