MATERIAL SAFETY DATA SHEET

SECTION I. MATERIAL IDENTIFICATION

MATERIAL NAME: BORIC ACID
OTHER DESIGNATIONS: Orthoboric Acid, Boracic Acid, Hydrogen Borate, \( \text{H}_3\text{BO}_3 \),
GE Material D4A6, CAS #010 043 353

MANUFACTURER: Available from several suppliers, including:
Kerr-McGee Center P.O. Box 2219 3075 Wilshire Blvd.
Oklahoma City, OK 73125 Columbus, OH 43216 Los Angeles, CA 90010

SECTION II. INGREDIENTS AND HAZARDS

Boric Acid

*Control as a Nuisance. Particulate has been recommended: 10 mg/m³ total dust, or 5 mg/m³ respirable dust.

Animal studies (dog and rat) have shown infertility and damage to testes can result from acute or chronic ingestion of boric acid. Evidence on reproductive toxic effects in humans is inadequate.

Mage: ca 100

HAZARD DATA:

No TLV Established*
Infant, Oral
LDLo 934 mg/kg
Man, Inhalation
TCLo 22 mg/m³
(10-yr intermittent)
Toxic glandular effects

Rat, Oral
LD50 2660 mg/kg

SECTION III. PHYSICAL DATA

Vapor pressure, 21C, mm Hg --- 15 (due to water) Specific gravity, 20/4C ------- 1.435
Solubility in water, g/100g @ 0C --------- 2.6 pH @ 20C, 1% aqueous soln --- ca 5.2
@ 20C --------- 4.9 4% aqueous soln --- ca 3.9
@ 100C --------- 28 Molecular weight ----------- 61.84
Melting point, deg C --------------- 170-180

Appearance & Odor: Colorless crystals or a fine or granular white powder. No odor.

SECTION IV. FIRE AND EXPLOSION DATA

Flash Point and Method Autogenous Temp. Flammability Limits in Air
Non-combustible

Extinguishing media: Use that which is most appropriate for the surrounding fire. Boric acid does not support combustion and is non-combustible. Material decomposes on heating, giving off water (see Sect V); used as fire retardant.

SECTION V. REACTIVITY DATA

This is a stable material in closed containers at room temperature under normal storage and handling conditions. It does not polymerize.

A weak acid. Loses chemically combined water upon heating, forming metaboric acid (\( \text{HBO}_2 \)) at 100-105C, then pyroboric acid (\( \text{H}_2\text{BO}_3 \)) at 140-160C, and at higher temperatures, boric anhydride (\( \text{B}_2\text{O}_3 \)).

Reacts with basic materials such as alkali carbonates and hydroxides to form borate salts. A mixture of potassium and boric acid may explode on impact. Mixture with acetic anhydride can react violently when heated to 58-60C. If moisture is present boric acid can be corrosive to iron.
SECTION VI. HEALTH HAZARD INFORMATION

Excessive inhalation of dust can cause irritation to mucous membranes of the respiratory tract. Not significantly absorbed through intact skin. Readily absorbed through damaged, abraded and burned skin, or open wounds and areas of active dermatitis when exposed to dry materials or aqueous solutions. Ingestion or absorption may cause nausea, vomiting, anuria, erythematous lesions on skin and mucous membranes, abdominal cramps, circulatory failure, and coma. Chronic exposures may cause dry skin, eruptions, and gastric disturbances. Poisoning can be acute or chronic. Adult acute fatal dose reported at 5 to >30g.

FIRST AID:

Eye Contact: Flush thoroughly with running water for 15 min. including under eyelids.
Skin Contact: Remove grossly contaminated clothing under safety shower. Flush affected area well with water.
Inhalation: Remove to fresh air. Restore and/or support breathing as required.
Ingestion: If conscious, rinse mouth with water. Give several glasses of water to drink to dilute. Induce vomiting.
Seek medical assistance for further treatment, observation and support after first aid.

SECTION VII. SPILL, LEAK, AND DISPOSAL PROCEDURES

Provide adequate ventilation. Clean-up personnel need protection to avoid inhalation of dust. Keep airborne particulate at a minimum when sweeping up. Collect solid spills and place in appropriate containers for reclaim or disposal. Liquid spills can be absorbed with inert solid. Residue and traces can be flushed to sewer with high dilution.

DISPOSAL: Reclaim dry material for salvage or reuse. Unsalvageable waste may be buried in approved landfill. (Note that this material can have herbicidal properties.)
Follow Federal, State, and Local regulations.

SECTION VIII. SPECIAL PROTECTION INFORMATION

Provide sufficient ventilation in the workplace to keep airborne particulate at a low level. Dust respirators should be available for dusty conditions.
Use protection (rubber gloves, aprons, etc) appropriate for work situation to minimize skin contact. Avoid eye contact by use of chemical safety goggles where dusty conditions occur or solution splashing is possible.
Provide periodic medical examinations to those regularly exposed to boric acid with emphasis on liver and kidney function.
Eyewash stations and safety showers should be accessible to areas of large quantity use or handling especially if splashing is possible.

SECTION IX. SPECIAL PRECAUTIONS AND COMMENTS

Store in closed containers in a cool, dry area. Storage bins should have a 60° sloping cone bottom with provision to prevent ingress of water. Carbon steel or aluminum containers are suitable for this dry storage. (Stainless steel needed for moist conditions.) Use good housekeeping practices to prevent accumulation of dust and follow sound cleaning techniques that will keep airborne particulate at a low level.
Avoid breathing dust. Do not ingest. Avoid contact, especially when skin is cut or abraded or active dermatitis is present. Wash hands and face before eating, drinking or smoking after handling this material.

DATA SOURCE(S) CODE: 1, 4-11, 14, 25, 26, 34, 37, 48, 49

APPROVALS: MIS/CRD INDUST. HYGIENE/Safety
MEDICAL REVIEW: 21 March 1983