MATERIAL SAFETY DATA SHEET
MSDS Q-119 REVISION 4

THE DIAL CORPORATION
TECHNICAL AND ADMINISTRATIVE CENTER
15101 NORTH SCOTTSDALE ROAD
SCOTTSDALE, ARIZONA 85254-9934

MEDICAL EMERGENCIES: 1-888-689-9082
CHEMTREC: 1-800-424-9300 (24 Hours Daily)
OTHER INFORMATION: 1-888-468-6673

SUBSTANCE IDENTIFICATION

SUBSTANCE: BORAX

TRADE NAMES/SYNONYMS: **TWENTY MULE TEAM BORAX; BORAX DECAHYDRATE; SODIUM TETRABORATE DECAHYDRATE**

CHEMICAL FAMILY: Inorganic salt

I.D. NUMBERS: 929002

NFPA RATINGS (Scale 0-4, U=Unrated): HEALTH=0 FIRE=0 REACTIVITY=0
HMIS RATINGS (Scale 0-4, where 4=severe hazard): HEALTH=1 FIRE=0 REACTIVITY=0

This product is labeled in accordance with regulations administered by the Consumer Product Safety Commission. The use pattern and exposure in the workplace are generally not consistent with those experienced by consumers. The requirements of the Occupational Safety and Health Administration applicable to this Material Safety Data Sheet differ from the requirements of the CPSC and as a result, this MSDS may contain additional health hazard information not pertinent to consumer use and not found on the product label.

HAZARDOUS INGREDIENTS INFORMATION

COMPONENT: SODIUM BORATE DECAHYDRATE (BORAX) CAS# 1303-96-4
10 mg/m^3 OSHA TWA
5 mg/m^3 ACGIH TWA

NOTE: OSHA revokes the final rule exposure limits of January 19, 1989 in response to the 11th Circuit Court of Appeals decision (AFL-CIO v. OSHA) effective June 30, 1993. See CFR 1910.1000 (58 FR 35338).

Carcinogen status of component: Not listed as a carcinogen by NTP, IARC, or OSHA.

PHYSICAL AND CHEMICAL DATA

DESCRIPTION: White, odorless, crystalline powder.

DENSITY: 780 - 900 g/l

pH: 9.25 @ 20 °C (3% solution)

MELTING POINT: 144 °F (62 °C)

SOLUBILITY IN WATER: 5.8% @ 20 °C

VAPOR PRESSURE: Negligible @ 20 °C

SOLVENT SOLUBILITY: Soluble in glycerol; very slightly soluble in alcohol; insoluble in acids.

FIRE AND EXPLOSION DATA

FIRE AND EXPLOSION HAZARD - Product is not flammable, combustible or explosive.

FIRE FIGHTING MEDIA - Extinguish using agent suitable for type of surrounding fire. Product is fire retardant.

FIRE FIGHTING - No acute hazard.

HEALTH HAZARD DATA

NOTE: The acute health effects described below are those which could potentially occur for the finished product. They are based on the toxicology information available for the finished product and/or each hazardous ingredient, and are consistent with the product type and the likelihood of a specific route of exposure. Known chronic health effects related to exposure to a specific ingredient are indicated.

ACUTE HEALTH EFFECTS:

INHALATION: Dust may cause mucous membrane irritation with coughing, dryness and sore throat.

SKIN CONTACT: Non irritating to intact skin. Absorption through large areas of damaged skin may produce symptoms similar to those following ingestion.

EYE CONTACT: Direct contact with powder or dusts may cause irritation with redness, pain, blurred vision, and possibly corneal injury.

INGESTION: May cause gastrointestinal disturbances such as headache nausea, vomiting, abdominal pain, and diarrhea, with delayed effects of skin redness and peeling.

CHRONIC HEALTH EFFECTS:

No chronic health effects are expected from the intended use of these products or from foreseeable handling of them in the workplace. Nonetheless, the following effects have been reported for a component, sodium borate, and boric acid. Sodium borate upon entry into the body becomes boric acid.

Sodium Borate: Sodium borate and boric acid interfere with sperm production, damage the testes and interfere with male fertility when given to animals by mouth at high doses. Boric acid produces developmental effects, including reduced body weight, malformations and death, in the offspring of pregnant animals given boric acid by mouth.

The above mentioned animal studies were conducted under exposure conditions leading to doses many times in excess of those that could occur through product use or inhalation of dust in occupational settings. Moreover, a human study of occupational exposure to sodium borate and boric acid dusts showed no adverse effect on fertility.

MEDICAL CONDITIONS GENERALLY RECOGNIZED AS BEING AGGRAVATED BY EXPOSURE: Pre-existing skin conditions and respiratory illnesses (such as asthma).

EMERGENCY AND FIRST AID PROCEDURES

INHALATION: Immediately remove from exposure area to fresh air . Keep affected person warm and at rest. Treat symptomatically and supportively. Contact physician or local poison control center. If breathing has stopped, give artificial respiration, and get medical attention immediately.

SKIN CONTACT: Remove contaminated clothing and shoes. Rinse affected area with soap or a mild detergent and plenty of water until no evidence of product remains.

EYE CONTACT: Immediately rinse eyes with plenty of water, occasionally lifting upper and lower lids, until no evidence of product remains. Get medical attention if pain or irritation persist.

INGESTION: Treat symptomatically and supportively. Maintain airway and respiration. If vomiting occurs, keep head in a position to prevent aspiration of vomitus. Dilution by rinsing the mouth and giving water or milk to drink is generally recommended. If unconscious, the victim should not be given anything to drink. Contact physician or local poison control center.

REACTIVITY

REACTIVITY - Stable under normal temperatures and pressures.

INCOMPATIBILITIES: Strong oxidizers, acids, zirconium.

DECOMPOSITION - Thermal decomposition products may include toxic oxides of sodium and boron.

POLYMERIZATION - Hazardous polymerization has not been reported to occur under normal temperatures and pressures.

STORAGE AND DISPOSAL

Store away from incompatible substances. Store in a cool dry place. Keep container tightly closed when not in use. Observe all federal, state and local regulations when storing or disposing of this substance.

CONDITIONS TO AVOID

Avoid generation of dust. If material is involved in a fire, it may melt to a glassy material which can flow in large quantities and ignite surrounding combustible materials.

SPILL AND LEAK PROCEDURES

OCCUPATIONAL SPILL - Sweep up and place in suitable clean, dry containers for reclamation or later disposal. Small residual amounts of material may be flushed with water to the sewer. Keep unnecessary people away.

OCCUPATIONAL PROTECTIVE EQUIPMENT

VENTILATION - Provide local exhaust ventilation system to meet permissible exposure limits, where dusts are likely to be generated.

RESPIRATOR - Air contamination monitoring should be carried out, where dusts are likely to be generated, to assure that the employees are not exposed to harmful concentrations the above permissible exposure limits. If respiratory protection is required, it must be based on the contamination levels found in the workplace, must not exceed the working limits of the respirator and be jointly approved by the National Institute for Occupational Safety and Health and the Mine Safety and Health Administration (NIOSH-MSHA).

FOR FIRE FIGHTING AND OTHER IMMEDIATELY DANGEROUS TO LIFE OR HEALTH CONDITIONS - Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode. Any supplied-air respirator that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained breathing apparatus operated in pressure-demand or other positive-pressure mode.

CLOTHING - Protective (impervious) clothing is required where repeated or prolonged skin contact may occur.

GLOVES - Chemical-resistant gloves are required where repeated or prolonged skin contact may occur.

EYE PROTECTION - Dust-proof safety glasses are required to prevent eye contact where dusty conditions are anticipated.

REGULATORY INFORMATION

DOT FLAMMABILITY CLASSIFICATION:	Not applicable.
EPA - SARA TITLE III SECTION 313:	Toxic chemical - None.
TSCA:	All components of this product are listed or are exempted or excluded from listing on the U.S. Toxic Substances Control Act (TSCA) chemical substance inventory.

The information contained herein is provided in good faith and is believed to be correct as of the date hereof. However, the Dial Corporation makes no representation as to the comprehensiveness or accuracy of the information. It is expected that individuals receiving the information will exercise their independent judgment in determining its appropriateness for a particular purpose. Accordingly, the Dial Corporation will not be responsible for damages of any kind resulting from the use of or reliance upon such information. No representations, or warranties, either expressed or implied of merchantability, fitness for a particular purpose or of any other nature are made hereunder with respect to the information set forth herein or to the product to which the information refers.

MSDS CREATION DATE: 03/13/89
SUPERSEDES: Rev. 3; 12/18/97
REVISION DATE: 07/05/01
REVISION: Updated Revision Date

MATERIAL SAFETY DATA SHEET

NFPA RATING: Health = 2 Flammability = 0 Reactivity = 0
HMIS RATING: Health = / 2 Flammability = 0 Reactivity = 0

SECTION I -- IDENTITY AND MANUFACTURER'S INFORMATION (502N-42G)

Manufacturer's Name: HILLYARD INDUSTRIES
Address: 302 North Fourth Street, St. Joseph, MO 64501
Product Name: TYPHOON
Date Prepared: September 18, 2001
Prepared by: Regulatory Affairs Department
Emergency Telephone No.: (800) 424-9300 (Only in the event of chemical emergency involving a spill, leak, fire, exposure or accident involving chemicals.)
Other information calls: (816) 233-1321 (Ext. 8285)

SECTION II -- INGREDIENTS/IDENTITY INFORMATION

Components

(Specific Chemical Identity: Common Name(s))	CAS#	OSHA PEL	ACGIH TLV	OTHER LIMITS RECOMMENDED	%
Dipropylene glycol methyl ether	34590-94-8	100ppm	100 ppm	STEL-150 ppm	8-13%
Water	7732-18-5	not established	not established	N/A	---
Linear primary alcohol ethoxylate	68439-46-3	not established	not established	N/A	---
Propylene glycol butyl ether	5131-66-8	not established	not established	N/A	---
Propylene Glycol N-Propyl Ether	1569-01-3	not established	not established	N/A	---
Didecyl dimethyl ammonium chloride	7173-51-5	not established	not established	N/A	---
n-Alkyl (C_{14} 50%, C_{12} 40%, C_{16} 10%) dimethyl benzyl ammonium chloride	8001-54-5	not established	not established	N/A	---
Lauramine oxide	1643-20-5	not established	not established	N/A	---
Tetrasodium Salt of EDTA	64-02-8	not established	not established	N/A	---

VOS (Concentrate) = 20% or 1.7 lbs./gallon; VOS (Diluted 1:12) = 1.54%

SECTION III -- PHYSICAL / CHEMICAL CHARACTERISTICS

Boiling Point: corrected 206°F
Specific Gravity (H_2O = 1): 25°C = 0.99 & 39°C = 0.99
Vapor Pressure (mm Hg.): 16.9
Percent Volatile by Volume (%): 86.54%
Vapor Density (AIR = 1): 1.6
Evaporation Rate (ethyl ether = 1): slower than 1
Solubility in Water: Complete
Appearance and Odor: clear orange liquid; fresh & clean mint odor
pH (concentrate) = 10.74 – 11.74

SECTION IV -- FIRE AND EXPLOSION HAZARD DATA

Flash point: None (Tag Closed Cup) **Flammable Limits:** LEL = N/A UEL = N/A
Extinguishing Media: Foam, carbon dioxide, dry chemical, water spray.
Special Fire Fighting Procedures: Self-contained breathing apparatus and protective clothing should be worn in fighting fires involving chemicals.
Unusual Fire and Explosion Hazards: None known to manufacturer.

SECTION V -- PHYSICAL HAZARDS

Stability: Stable **Conditions to Avoid:** N/A
Incompatibility (Materials to Avoid): Do not mix with strong acids.
Hazardous Decomposition Products or Byproducts: As with any organic material, combustion will produce carbon dioxide and carbon monoxide.
Hazardous Polymerization: Will not occur **Conditions to Avoid:** N/A

SECTION VI -- HEALTH HAZARD DATA

Routes of entry: Inhalation? Yes Skin? Yes Ingestion? Yes

HEALTH HAZARDS (1. Acute and 2. Chronic)

1. When tested per the Federal Hazardous Substance Act, the concentrate was found to be a Primary Skin Irritant (concentrate induced crust formation in all six test subjects by day 7) and per this method concentrate was also found to be a primary eye irritant. (neovascularization was observed in all 6 test subjects by day 7). Concentrate induced mortality in one test subject; concentrate was estimated to have an acute oral LD50 of greater than 5 g./kg. When diluted 1:6 product was not acutely toxic to 10 test subjects following a one hour exposure at a nominal concentration of 52.7026 mg./L (actual concentration = 37.7248 mg./L.) This concentration was the maximum that could be generated with this test system. 2. None known to Hillyard.

SECTION VI -- HEALTH HAZARD DATA continued

Chemical listed as Carcinogen or Potential Carcinogen:

National Toxicology Program = No **I.A.R.C. Monographs =** No **OSHA =** No

This product has no carcinogens listed by IARC, NTP, NIOSH, or ACGIH as of this date, greater than or equal to 0.1%.

Signs and Symptoms of Exposure: May cause redness of eyes; prolonged contact may cause skin and eye burns with concentrate. Prolonged breathing of fine fog mist may cause nose, throat, and lung irritation.

Medical Conditions Generally Aggravated by Exposure: Repeated overexposure may cause defatting of skin and dermatitis.

Emergency and First Aid Procedures: In case of contact, immediately flush eyes or skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Remove contact lenses then flush eyes with water again. Get medical attention. Wash clothing before reuse and thoroughly clean contaminated shoes before reuse. If swallowed, do not induce vomiting; immediately give large amounts of water and CALL A PHYSICIAN, hospital emergency room or poison control center. Inhalation -remove victim to fresh air; if respiratory tract remains irritated call a physician.

SECTION VII -- PRECAUTIONS FOR SAFE HANDLING AND USE

Steps To Be Taken In Case Material Is Released Or Spilled: Absorb large spills with floor dry material (see disposal below). Small spills: Flush with water and pick up with mop or wet vacuum.

Waste Disposal Method: Dispose of in accordance with state or local regulations. Do not dispose of in storm drains or streams.

Precautions To Be Taken In Handling And Storing: Keep container closed when not in use. Since empty packages retain product residue, follow label warning even after package is empty. Spray mist may produce respiratory irritation or damage and increase susceptibility to respiratory illness.

Other Precautions: Do not get in eyes, on skin, or on clothing. USE ONLY WITH ADEQUATE VENTILATION. Avoid breathing vapors or spray mist. Open windows and doors, use exhaust fans or other means to insure fresh air entry during application and drying. Refer to OSHA STANDARD 29 CFR 1910.94 for technical guidelines on keeping air contaminates below acceptable exposure limits. Wash thoroughly after handling. Do not take internally. Keep container closed when not in use. In case of spillage, absorb with inert material and dispose of in accordance with applicable regulations.

SECTION VIII -- CONTROL MEASURES

Respiratory Protection (Specify Type): Ventilate to keep air below TLV. A NIOSH approved respirator for organic vapor should be worn if needed to keep level below TLV.

Ventilation:

Local Exhaust = Recommended **Mechanical (General) =** Recommended **Special =** N/A

Other = N/A **Eye Protection:** Chemical safety goggles

Other Protective Clothing or Equipment: Impervious boots and aprons where splashing of concentrate is a problem; otherwise, use uniforms or coveralls.

Work / Hygienic Practices: Wash thoroughly after handling.

SECTION IX - TRANSPORTATION INFORMATION

Applicable regulations: 49 CFR = no; IMCO = no; IATA = no

Proper shipping name: Cleaning compound

UN NO.: not applicable **Limited Qty.:** not applicable **Hazard Class =** not applicable

Labels required: not required **DOT Exception:** not applicable

EPA Hazardous waste number / code: not listed

Hazardous waste characteristics:

Ignitability = not applicable; **Corrosivity =** not applicable; **Reactivity =** not applicable

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