MATERIAL SAFETY DATA SHEET

SECTION 1. PRODUCT AND COMPANY IDENTIFICATION

Chemical Product
MONTEREY BORO-FLO™ DF
Common Name: Fertilizing compound, dry.
Chemical Description: Inorganic borates
TSCA/CAS No.: This product is a mixture — there is no specific CAS number.

Manufactured For
Monterey AgResources
P. O. Box 35000
Fresno, CA 93745-5000

Emergency Phone Numbers
Emergency Telephone: DAYS: (559) 499-2100 EVES: (559) 994-9144
CHEMTREC (24-Hour Emergency Number): (800) 424-9300
EPA National Response Center: (800) 424-8802

SECTION 2. HAZARDOUS INGREDIENTS

CHEMICAL	CAS NO.	%	TLV OR PEL	RQ (lbs)
Boric acid	10043-35-3	45.0	Collectively classified as	N.P.*
Sodium tetraborate pentahydrate	12179-04-3	35.0	"Nuisance Dust" (OSHA)	
Sodium pentraborate decahydrate	12631-71-9	20.0	15 mg/m^3 (total)	
			5 mg/m^3 (respirable);	
			2 mg/m3 (TWA) & 6 mg/m3 (STEL)	
			ACGIH (Borate compounds, inorganic)	

*N.P. - Not Pertinent.

SECTION 3. EMERGENCY/HAZARDS OVERVIEW

White, odorless crystalline solid. Avoid strong reducing agents; reaction will generate hydrogen gas, which could create an explosive hazard. Not D.O.T. regulated.

HEALTH: 1 REACTIVITY: 0 FLAMMABILITY: 0 ENVIRONMENT: 1
(0=Insignificant 1=Slight 2=Moderate 3=High 4=Extreme)

SECTION 4. FIRST AID

Eyes: Hold eye open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eyes. Get medical attention if irritation persists.

Skin: No treatment necessary as product is non-irritating.

SECTION 4. FIRST AID (continued)

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. Do not induce vomiting unless told to do so by a poison control center or doctor. Do not give anything by mouth to an unconscious person.

Inhalation: Move person to fresh air. Blow nose to remove dust. If person is not breathing, call 911 or ambulance, then give artificial respiration, preferably mouth-to-mouth if possible.

Note to Physicians: Observation only is required for adult ingestion in the range of 4-8 grams. For ingestion of larger amounts, maintain adequate kidney function and force fluids. Gastric lavage is recommended for symptomatic patients only. Hemodialysis should be reserved for massive acute ingestion or patients with renal failure. Boron analyses of urine or blood are only useful for documenting exposure and should not be used to evaluate severity of poisoning or to guide treatment.

SECTION 5. FIRE AND EXPLOSION HAZARDS

Flash Point:	Noncombustible.
Test Method:	Not pertinent.
LEL Flammable Limits:	Not pertinent.
UEL Flammable Limits:	Not pertinent.
Autoignition Temperature:	Not pertinent.
Flammability Classification:	Noncombustible.
Known Hazardous Products of Combustion:	None known.
Properties that Initiate/Contribute to Intensity of Fire:	None identified.
Potential for Dust Explosion:	None identified.
Reactions that Release Flammable Gases or Vapors:	None identified.
Potential for Release of Flammable Vapors:	None identified.
Unusual Fire & Explosion Hazards:	None identified.
Extinguishing Media:	Use agents appropriate to surrounding fire.
Special Firefighting Procedures:	Stay upwind of smoke. Wear positive pressure, self-contained breathing apparatus and goggles. Contain any liquid runoff.

SECTION 6. SPILLS AND LEAKS

General: Product is a water-soluble white granular product that may, at high concentrations, cause damage to trees or vegetation by root absorption. Product is a non-hazardous waste when spilled or disposed of, as defined by the Resource Conservation and Recovery Act (RCRA) regulations (40 CFR 261).

Land spill: Vacuum, shovel, or sweep up and use according to labeling or package for disposal in accordance with applicable local regulations. Avoid contamination of water bodies during cleanup and disposal. Personal protective equipment is not needed to clean up land spills.

Water spill: Where possible, remove any intact containers from the water. Advise local water authority that none of the affected water should be used for irrigation or for abstraction of potable water until natural dilution returns boron values to normal environmental background level.

SECTION 7. STORAGE AND HANDLING

Storage:	Store in a cool, dry place. Do not store near food or feeds. Do not stack pallets more than two (2) high.
Transfer Equipment:	Transfer solutions of product using chemical-resistant plastic or stainless steel tanks, pumps, valves, etc.
Work/Hygienic Practices:	Keep out of reach of children. Harmful if swallowed or inhaled. Avoid breathing dust. Avoid contact with eyes, skin and clothing. Wash thoroughly with soap and water after handling. Remove contaminated clothing and wash before reuse.

SECTION 8. PERSONAL PROTECTIVE EQUIPMENT

Eyes:	Eye goggles are not required for normal occupational exposures, but may be warranted if environment is excessively dusty. As a general rule, do not wear contact lenses when handling.
Skin:	Gloves are not required for normal occupational exposures, but may be warranted if environment is excessively dusty.
Ventilation:	Provide appropriate ventilation to keep airborne concentrations of dust below permissible levels as stated in Section 2.
Respiratory:	Where airborne concentrations are expected to exceed exposure limits, NIOSH/MSHA-approved respirators (such as 3M #8210 Plus) for toxic dusts and mists should be used.

SECTION 9. PHYSICAL AND CHEMICAL DATA

Appearance:	White, crystalline solid.
Odor:	None.
pH:	7.4 (10% solution) at 20°C..
Vapor Pressure:	Negligible @ 20°C.
Vapor Density (Air=1):	Not pertinent.
Melting Point:	<200°C (heated in closed space).
Freezing Point:	Not pertinent.
Water Solubility:	9.5% @ 20°C..
Bulk Density:	600-650 kg/m^3.
Evaporation Rate (butyl acetate = 1):	Not pertinent.
Viscosity:	Not pertinent.
% Volatile:	Not pertinent.
Octanol/Water Partition Coefficient:	Log Pow: -0.757 (25°C).
Saturated Vapor Concentration:	Not pertinent.

SECTION 10. STABILITY AND REACTIVITY

Stability:	Stable under normal conditions of use. When heated, product loses water, eventually forming anhydrous borates.
Incompatibility/Conditions to Avoid:	Reaction with strong reducing agents, such as metal hydrides or alkali metals, will generate hydrogen gas, which could create an explosive hazard.
Hazardous Decomposition Products:	None known.
Hazardous Polymerization:	Will not occur.

SECTION 11. POTENTIAL HEALTH EFFECTS

Acute Effects:

Eyes:	Causes serious eye irritation (in rabbits). Fifty years of occupational exposure indicate no adverse effects on human eye.
Skin:	Does not cause irritation to intact skin. Low acute dermal toxicity; LD_{50} in rabbits is >2,000 mg/kg of body weight. Poorly absorbed through intact skin. Not a skin sensitizer.
Ingestion:	Small amounts (e.g. a teaspoon) swallowed accidentally are not likely to cause effects; larger amounts may cause gastrointestinal symptoms (nausea, vomiting, diarrhea). LD_{50} is expected to be >3,000 mg/kg of body weight based on results from similar borate chemicals.
Inhalation:	Occasional mild irritation effects to the nose and throat may occur from inhalation of dust at levels greater than 10 mg/m^3. Low acute inhalation toxicity. LC_{50} in rats is >2.0 mg/L (or g/m^3).
Subchronic Effects:	None known.
Chronic Effects:	Not a known carcinogen or mutagen (based on boric acid). Animal ingestion studies in several species, at high doses, indicate that borates cause reproductive and developmental effects. A human study of occupational exposure to borate dust showed no adverse effect on reproduction.

Reproductive/developmental toxicity: Animal feeding studies in rat, mouse and dog, at high doses, have demonstrated effects on fertility and testes. The lowest NOAEL is 9.6 mg B/kg in rats, based on developmental effects. Studies in rat, mouse and rabbit, at high doses, demonstrate developmental effects on the fetus including fetal weight loss and minor skeletal variations. The doses administered were many times in excess of those which humans would normally be exposed to.

Human data: Human epidemiological studies show no increase in pulmonary disease in occupational populations with chronic exposures to boric acid dust and sodium borate dust. A recent epidemiology study under the conditions of normal occupational exposure to borate dusts indicated no effect on fertility.

SECTION 12. ECOLOGICAL INFORMATION

Boron (B) is the element in this product which is used by convention to report borate product ecological effects. It occurs naturally in sea-water at an average concentration of 5 mg B/L and generally occurs in fresh water at concentrations up to 1 mg B/L. In dilute aqueous solutions the predominant boron species present is undissociated boric acid. To convert boric acid into equivalent boron (B) content, multiply by 0.178.

Phytotoxicity: Boron is an essential micronutrient for healthy growth of plants; however, it can be harmful to boron sensitive plants in high quantities. Care should be taken to minimize the amount of product released to the environment.

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

Invertebrate toxicity:
Daphnids, *Daphnia magna straus*
48-hr LC50 = 133 mg B/L‡
21-day NOEC-LOEC = 6-13 mg B/L‡

Test substance: † sodium tetraborate
‡ boric acid

Fish toxicity:
Sea-water:
Dab, *Limanda limanda*
96-hr LC50 = 74 mg B/L†
Fresh water:
Rainbow trout, *S. gairdneri* (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‡

Environmental fate data
Persistence/degradation: Boron is naturally occurring and ubiquitous in the environment. This product decomposes in the environment to natural borate.
Soil mobility: This product is soluble in water and should be considered leachable through normal soil.

SECTION 13. DISPOSAL

Do not contaminate lakes, streams, ponds, estuaries, oceans or other waters by discharge of waste effluents or equipment washwaters. Dispose of waste effluents according to state and local regulations. Also, chemical additions or other alterations of this product may invalidate any disposal information in this MSDS. Therefore, consult local waste regulators for proper disposal. Do not discharge.

SECTION 14. TRANSPORTATION

D.O.T.: Not D.O.T. regulated.
Other Shipping Description: Fertilizing Compounds, Manufactured, Dry, Pkgd.
NMFC Item 68140 Sub 4, LTL Class 60

SECTION 15. REGULATORY INFORMATION

Chemical inventory listing: This product is a mixture of chemicals which appear on several chemical inventory lists sometimes under the CAS No. representing the anhydrous form of this chemical.

U.S. EPA TSCA Inventory:

Boric acid	10043-35-3
Sodium tetraborate pentahydrate	1330-43-4
Sodium pentaborate decahydrate	12007-92-0

U.S. EPA RCRA: This product is a mixture of chemicals which are not listed as a hazardous waste under any sections of the Resource Conservation and Recovery Act (RCRA) or regulations (40 CFR 261 et seq).

Superfund: CERCLA/SARA. This product is a mixture of chemicals which are not listed under CERCLA or its 1986 amendments, SARA, including substances listed under Section 313 of SARA, Toxic Chemicals, 42 USC 11023, 40 CFR 372.65, Section 302 of SARA, Extremely Hazardous Substances, 42 USC 11002, 40 CFR 355, or the CERCLA Hazardous Substances list, 42 USC 9604, 40 CFR 302.

Safe Drinking Water Act (SDWA): This product is a mixture of chemicals which are not regulated under the SDWA, 42 USC 300g-1, 40 CFR 141 et seq. Consult state and local regulations for possible water quality advisories regarding boron compounds

Clean Water Act (CWA) (Federal Water Pollution Control Act): 33 USC 1251 et seq.

a) This product is a mixture of chemicals which are not themselves a discharge covered by any water quality criteria of Section 304 of the CWA, 33 USC 1314.

b) Not on the Section 307 List of Priority Pollutants, 33 USC 1317, 40 CFR 129.

c) Not on the Section 311 List of Hazardous Substances, 33 USC 1321, 40 CFR 116.

IARC: The International Agency for Research on Cancer (IARC) (a unit of the World Health Organization) does not list or categorize the components of this product as carcinogens.

NTP Biennial Report on Carcinogens: This product is a mixture of chemicals which are not listed.

OSHA carcinogen: This product is a mixture of chemicals which are not listed.

California Proposition 65: This product is a mixture of chemicals which are not listed on the Prop. 65 list of carcinogens or reproductive toxicants. However, like all mined minerals, it does contain trace amounts of naturally occurring chemicals which are on the Prop. 65 list.

Clean Air Act (Montreal Protocol): This product was not manufactured with and does not contain any Class I or Class II ozone depleting substances.

SECTION 16. OTHER

While the information contained herein is based on data considered accurate and was compiled to comply with the Federal Hazard Communication Standard and the California Hazardous Substances Information and Training Act, it is provided for guidance only. Monterey AgResources does not guarantee its accuracy or completeness. Health and safety precautions in this data sheet may not be adequate for all individuals and/or situations. It is the user's obligation to evaluate and use this product safely and to comply with all applicable laws and regulations; in so doing, user assumes all risk in use of the material. The information contained herein is not to be taken as a warranty or representation for which Monterey AgResources assumes legal responsibility.