TRI-n-BUTYLBORATE

GHS Safety Data Sheet

Section 1 - CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME
TRI-n-BUTYL BORATE

OTHER NAMES
C12-H27-B-O3, (C4H9O)B, B(OC4H9)3, "boric acid, tributyl ester", "borane, tributoxy-", "butyl borate", "n-butyl borate", "butyl borate, tri-", tributoxyborane, tri-n-butoxyborane, "tri-n-butyl borate", "Borester 2"

PRODUCT USE
Welding fluxes, intermediate in the production of borohydrides, flame retardant for textiles (with boric acid).

SUPPLIER
Company: S D FINE- CHEM LIMITED
Address:
315- 317, T.V.Ind.Estate,
248, Worli Road,
Mumbai- 400030, India
www.sdfine.com
Telephone: 91- 22 24959898/99
Fax: 91- 22 2493 7232
Email: technical@sdfine.com

Section 2 - HAZARDS IDENTIFICATION

GHS Classification
Acute Toxicity Category 4
Aspiration Hazard Category 1
Eye Irritation Category 2A
Skin Corrosion/Irritation Category 2
STOT - SE Category 3

EMERGENCY OVERVIEW

HAZARD
DANGER

Determined by using GHS criteria

H302	Harmful if swallowed.
H304	May be fatal if swallowed and enters airways.
H315	Causes skin irritation.
H319	Causes serious eye irritation.
H335	May cause respiratory irritation.

PRECAUTIONARY STATEMENTS
Prevention

Code	Phrase
P261	Avoid breathing dust/ fume/ gas/ mist/ vapours/ spray.
P264	Wash ... thoroughly after handling.
P270	Do not eat, drink or smoke when using this product.
P271	Use only outdoors or in a well- ventilated area.
P280	Wear protective gloves/protective clothing/eye protection/face protection.

Response

continued...

Code	**Phrase**
P301+P310	IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician.
P301+P312	IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell.
P302+P352	IF ON SKIN: Wash with plenty of soap and water.
P304+P340	IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
P305+P351+P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P312	Call a POISON CENTER or doctor/physician if you feel unwell.
P330	Rinse mouth.
P331	Do NOT induce vomiting.
P332+P313	If skin irritation occurs: Get medical advice/attention.
P337+P313	If eye irritation persists: Get medical advice/attention.
P362	Take off contaminated clothing and wash before re- use.

Storage

Code	**Phrase**
P403+P233	Store in a well- ventilated place. Keep container tightly closed.
P405	Store locked up.

Disposal

Code	**Phrase**
P501	Dispose of contents/container to ...

Section 3 - COMPOSITION / INFORMATION ON INGREDIENTS

NAME	CAS RN	%
tributyl borate	688-74-4	>99
NOTE: In presence of water decomposes to form		
n- butanol	71-36-3	
boric acid	10043-35-3	

Section 4 - FIRST AID MEASURES

SWALLOWED
- If swallowed do NOT induce vomiting.
- If vomiting occurs, lean patient forward or place on left side (head-down position, if possible) to maintain open airway and prevent aspiration.
- Observe the patient carefully.
- Never give liquid to a person showing signs of being sleepy or with reduced awareness; i.e. becoming unconscious.
- Avoid giving milk or oils.
- Avoid giving alcohol.
- If spontaneous vomiting appears imminent or occurs, hold patient's head down, lower than their hips to help avoid possible aspiration of vomitus.

EYE
■ If this product comes in contact with the eyes:
- Wash out immediately with fresh running water.
- Ensure complete irrigation of the eye by keeping eyelids apart and away from eye and moving the eyelids by occasionally lifting the upper and lower lids.
- Seek medical attention without delay; if pain persists or recurs seek medical attention.
- Removal of contact lenses after an eye injury should only be undertaken by skilled personnel.

SKIN
■ If skin contact occurs:
- Immediately remove all contaminated clothing, including footwear.
- Flush skin and hair with running water (and soap if available).
- Seek medical attention in event of irritation.

INHALED
- If fumes or combustion products are inhaled remove from contaminated area.
- Lay patient down. Keep warm and rested.
- Prostheses such as false teeth, which may block airway, should be removed, where possible, prior to initiating first aid procedures.
- Apply artificial respiration if not breathing, preferably with a demand valve resuscitator, bag-valve mask device, or pocket mask as trained. Perform CPR if necessary.

continued...

NOTES TO PHYSICIAN
■ Any material aspirated during vomiting may produce lung injury. Therefore emesis should not be induced mechanically or pharmacologically.
To treat poisoning by the higher aliphatic alcohols (up to C7):
• Gastric lavage with copious amounts of water.
• It may be beneficial to instill 60 ml of mineral oil into the stomach.
• Oxygen and artificial respiration as needed.
• Electrolyte balance: it may be useful to start 500 ml. M/6 sodium bicarbonate intravenously but maintain a cautious and conservative attitude toward electrolyte replacement unless shock or severe acidosis threatens.

Section 5 - FIRE FIGHTING MEASURES

EXTINGUISHING MEDIA
• Alcohol stable foam.
• Dry chemical powder.
• BCF (where regulations permit).
• Carbon dioxide.

FIRE FIGHTING
• Alert Fire Brigade and tell them location and nature of hazard.
• Wear full body protective clothing with breathing apparatus.
• Prevent, by any means available, spillage from entering drains or water course.
• Use water delivered as a fine spray to control fire and cool adjacent area.

FIRE/EXPLOSION HAZARD
• Combustible.
• Slight fire hazard when exposed to heat or flame.
• Heating may cause expansion or decomposition leading to violent rupture of containers.
• On combustion, may emit toxic fumes of carbon monoxide (CO).
Combustion products include: carbon dioxide (CO_2), metal oxides, other pyrolysis products typical of burning organic material.
May emit poisonous fumes.
May emit corrosive fumes.

FIRE INCOMPATIBILITY
• Avoid contamination with oxidising agents i.e. nitrates, oxidising acids, chlorine bleaches, pool chlorine etc. as ignition may result.

Section 6 - ACCIDENTAL RELEASE MEASURES

MINOR SPILLS
• Remove all ignition sources.
• Clean up all spills immediately.
• Avoid breathing vapours and contact with skin and eyes.
• Control personal contact with the substance, by using protective equipment.

MAJOR SPILLS
■ Moderate hazard.
• Clear area of personnel and move upwind.
• Alert Fire Brigade and tell them location and nature of hazard.
• Wear breathing apparatus plus protective gloves.
• Prevent, by any means available, spillage from entering drains or water course.
Personal Protective Equipment advice is contained in Section 8 of the MSDS.

Section 7 - HANDLING AND STORAGE

PROCEDURE FOR HANDLING
• DO NOT allow clothing wet with material to stay in contact with skin.
• Avoid all personal contact, including inhalation.
• Wear protective clothing when risk of exposure occurs.
• Use in a well-ventilated area.
• Prevent concentration in hollows and sumps.

continued...

SUITABLE CONTAINER
• Metal can or drum
• Packaging as recommended by manufacturer.
• Check all containers are clearly labelled and free from leaks.

STORAGE INCOMPATIBILITY
■ Alcohols
• are incompatible with strong acids, acid chlorides, acid anhydrides, oxidising and reducing agents.
• reacts, possibly violently, with alkaline metals and alkaline earth metals to produce hydrogen
• react with strong acids, strong caustics, aliphatic amines, isocyanates, acetaldehyde, benzoyl peroxide, chromic acid, chromium oxide, dialkylzincs, dichlorine oxide, ethylene oxide, hypochlorous acid, isopropyl chlorocarbonate, lithium tetrahydroaluminate, nitrogen dioxide, pentafluoroguanidine, phosphorus halides, phosphorus pentasulfide, tangerine oil, triethylaluminium, triisobutylaluminium
• should not be heated above 49 deg. C. when in contact with aluminium equipment.
• Segregate from alcohol, water.
• NOTE: May develop pressure in containers; open carefully. Vent periodically.
• Organoborane or organoboron compounds are chemical compounds that are organic derivatives of BH3, for example trialkyl boranes.
• The C-B bond has low polarity (the difference in electronegativity 2.55 for carbon and 2.04 for boron) and therefore alkyl boron compounds are in general stable though easily oxidized. Vinyl groups and aryl groups donate electrons and make boron less electrophilic and the C-B bond gains some double bond character. Like the parent borane, organoboranes are classified as strong electrophiles because boron is unable to gain a full octet of electrons. Unlike diborane, however, organoboranes do not form dimers.
• Carbon-boron bonds are generally easily oxidised and some organoboranes may be spontaneously flammable when exposed to air. the less volatile organoboranes generally do not behave in this manner but nevertheless are readily oxidised by oxygen and a number of other reagents. Consequently it is normally necessary to carry out organoborane reactions in an inert atmosphere.
• The organoboranes are remarkably stable to water, aqueous bases, and aqueous mineral acids. However, they are susceptible to protonolysis by carboxylic acids.

STORAGE REQUIREMENTS
• Store in original containers.
• Keep containers securely sealed.
• No smoking, naked lights or ignition sources.
• Store in a cool, dry, well-ventilated area.

Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

EXPOSURE CONTROLS

Source	Material	Peak ppm	Peak mg/m³	Notes
India Permissible Levels of Certain Chemical Substances in Work Environment	n- butanol (n- Butyl alcohol)	50	150	Skin

The following materials had no OELs on our records
• tributyl borate: CAS:688- 74- 4
• boric acid: CAS:10043- 35- 3 CAS:11113- 50- 1 CAS:41685- 84- 1

MATERIAL DATA
N-BUTANOL:
TRIBUTYL BORATE:
■ For n-butanol:
Odour Threshold Value: 0.12-3.4 ppm (detection), 1.0-3.5 ppm (recognition)
NOTE: Detector tubes for n-butanol, measuring in excess of 5 ppm are commercially available.
Exposure at or below the TLV-TWA is thought to provide protection against hearing loss due to vestibular and auditory nerve damage in younger workers and to protect against the significant risk of headache and irritation.
25 ppm may produce mild irritation of the respiratory tract 50 ppm may produce headache and vertigo.
Higher concentrations may produce marked irritation, sore throat, coughing, nausea, shortness of breath, pulmonary injury and central nervous system depression characterised by headache, dizziness, dullness and drowsiness.

TRIBUTYL BORATE:
■ No exposure limits set by NOHSC or ACGIH.

N-BUTANOL:
■ Exposed individuals are reasonably expected to be warned, by smell, that the Exposure Standard is being exceeded.
Odour Safety Factor (OSF) is determined to fall into either Class A or B.
The Odour Safety Factor (OSF) is defined as:
OSF= Exposure Standard (TWA) ppm/ Odour Threshold Value (OTV) ppm

continued...

Classification into classes follows:

Class	OSF	Description
A	550	Over 90% of exposed individuals are aware by smell that the Exposure Standard (TLV- TWA for example) is being reached, even when distracted by working activities
B	26- 550	As " A" for 50- 90% of persons being distracted
C	1- 26	As " A" for less than 50% of persons being distracted
D	0.18- 1	10- 50% of persons aware of being tested perceive by smell that the Exposure Standard is being reached
E	<0.18	As " D" for less than 10% of persons aware of being tested

.

BORIC ACID:

■ It is the goal of the ACGIH (and other Agencies) to recommend TLVs (or their equivalent) for all substances for which there is evidence of health effects at airborne concentrations encountered in the workplace.

At this time no TLV has been established, even though this material may produce adverse health effects (as evidenced in animal experiments or clinical experience).

NOTE: The ACGIH occupational exposure standard for Particles Not Otherwise Specified (P.N.O.S) does NOT apply.

PERSONAL PROTECTION

RESPIRATOR

•Type A-P Filter of sufficient capacity. (AS/NZS 1716 & 1715, EN 143:2000 & 149:2001, ANSI Z88 or national equivalent)

EYE

- Safety glasses with side shields.
- Chemical goggles.
- Contact lenses may pose a special hazard; soft contact lenses may absorb and concentrate irritants. A written policy document, describing the wearing of lens or restrictions on use, should be created for each workplace or task. This should include a review of lens absorption and adsorption for the class of chemicals in use and an account of injury experience. Medical and first-aid personnel should be trained in their removal and suitable equipment should be readily available. In the event of chemical exposure, begin eye irrigation immediately and remove contact lens as soon as practicable. Lens should be removed at the first signs of eye redness or irritation - lens should be removed in a clean environment only after workers have washed hands thoroughly. [CDC NIOSH Current Intelligence Bulletin 59], [AS/NZS 1336 or national equivalent].

HANDS/FEET

- Wear chemical protective gloves, e.g. PVC.
- Wear safety footwear or safety gumboots, e.g. Rubber.

The selection of the suitable gloves does not only depend on the material, but also on further marks of quality which vary from manufacturer to manufacturer. Where the chemical is a preparation of several substances, the resistance of the glove material can not be calculated in advance and has therefore to be checked prior to the application.

The exact break through time for substances has to be obtained from the manufacturer of the protective gloves and has to be observed when making a final choice.

Suitability and durability of glove type is dependent on usage. Important factors in the selection of gloves include:.

- Neoprene gloves.

OTHER

- Overalls.
- P.V.C. apron.
- Barrier cream.
- Skin cleansing cream.

ENGINEERING CONTROLS

■ Engineering controls are used to remove a hazard or place a barrier between the worker and the hazard. Well-designed engineering controls can be highly effective in protecting workers and will typically be independent of worker interactions to

continued...

provide this high level of protection.
The basic types of engineering controls are:
Process controls which involve changing the way a job activity or process is done to reduce the risk.
Enclosure and/or isolation of emission source which keeps a selected hazard "physically" away from the worker and ventilation that strategically "adds" and "removes" air in the work environment.

Section 9 - PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE
Colorless liquid. Soluble in alcohol, ether, benzene.

PHYSICAL PROPERTIES
Liquid.

State	Liquid	Molecular Weight	230.16
Melting Range (°C)	- 70	Viscosity	Not Available
Boiling Range (°C)	230- 235	Solubility in water (g/L)	Reacts
Flash Point (°C)	93.33	pH (1% solution)	Not applicable
Decomposition Temp (°C)	Not available.	pH (as supplied)	Not applicable
Autoignition Temp (°C)	Not available.	Vapour Pressure (kPa)	Not available
Upper Explosive Limit (%)	Not available.	Specific Gravity (water=1)	0.853
Lower Explosive Limit (%)	Not available.	Relative Vapour Density (air=1)	7.95
Volatile Component (%vol)	Not available.	Evaporation Rate	Not available

Material	Value
log Kow	0.88

Section 10 - CHEMICAL STABILITY AND REACTIVITY INFORMATION

CONDITIONS CONTRIBUTING TO INSTABILITY
• Presence of incompatible materials.
• Product is considered stable.
• Hazardous polymerisation will not occur.
For incompatible materials - refer to Section 7 - Handling and Storage.

Section 11 - TOXICOLOGICAL INFORMATION

Health hazard summary table:

Acute toxicity	Acute Tox. (oral) 4
Skin corrosion/irritation	Skin Irrit. 2
Serious eye damage/irritation	Eye Irrit. 2A
Respiratory or skin sensitization	Not applicable
Germ cell mutagenicity	Not applicable
Carcinogenicity	Not applicable
Reproductive toxicity	Not applicable
STOT- single exposure	STOT SE 3
STOT- repeated exposure	Not applicable
Aspiration hazard	Asp. Tox. 1

POTENTIAL HEALTH EFFECTS

ACUTE HEALTH EFFECTS

SWALLOWED
■ Accidental ingestion of the material may be harmful; animal experiments indicate that ingestion of less than 150 gram may be fatal or may produce serious damage to the health of the individual.
■ Swallowing of the liquid may cause aspiration into the lungs with the risk of chemical pneumonitis; serious consequences may result.
(ICSC13733).
■ Ingestion or skin absorption of boric acid causes nausea, abdominal pain, diarrhoea and profuse vomiting which may be blood stained, headache, weakness, reddened lesions on the skin.
In severe cases, it may cause shock, with fall in blood pressure, increase in heart rate, blue skin colour, brain and nervous

continued...

irritation, reduced urine volume or even absence of urine.
■ Borate poisoning causes nausea, vomiting, diarrhoea and pain in the upper abdomen.
Often persistent vomiting occurs, and there may be blood in the faeces.
■ Overexposure to non-ring alcohols causes nervous system symptoms.
These include headache, muscle weakness and inco-ordination, giddiness, confusion, delirium and coma.

EYE
■ This material may produce eye irritation in some persons and produce eye damage 24 hours or more after instillation.
Moderate inflammation may be expected with redness; conjunctivitis may occur with prolonged exposure.

SKIN
■ This material can cause inflammation of the skin on contact in some persons.
■ The material may accentuate any pre-existing dermatitis condition.
■ Repeated exposure may cause skin cracking, flaking or drying following normal handling and use.
■ Skin contact with the material may damage the health of the individual; systemic effects may result following absorption.
■ Most liquid alcohols appear to act as primary skin irritants in humans.
Significant percutaneous absorption occurs in rabbits but not apparently in man.
■ Boric acid is not absorbed via intact skin but absorbed on broken or inflamed skin.
■ Open cuts, abraded or irritated skin should not be exposed to this material.
■ Entry into the blood-stream, through, for example, cuts, abrasions or lesions, may produce systemic injury with harmful effects.
Examine the skin prior to the use of the material and ensure that any external damage is suitably protected.

INHALED
■ The material can cause respiratory irritation in some persons.
The body's response to such irritation can cause further lung damage.
■ Inhalation of vapours may cause drowsiness and dizziness.
This may be accompanied by sleepiness, reduced alertness, loss of reflexes, lack of co-ordination, and vertigo.
■ Inhalation of aerosols (mists, fumes), generated by the material during the course of normal handling, may be damaging to the health of the individual.
■ Aliphatic alcohols with more than 3-carbons cause headache, dizziness, drowsiness, muscle weakness and delirium, central depression, coma, seizures and behavioural changes.
Secondary respiratory depression and failure, as well as low blood pressure and irregular heart rhythms, may follow.
■ Inhalation of high concentrations of gas/vapour causes lung irritation with coughing and nausea, central nervous depression with headache and dizziness, slowing of reflexes, fatigue and inco-ordination.

CHRONIC HEALTH EFFECTS
■ Long-term exposure to respiratory irritants may result in disease of the airways involving difficult breathing and related systemic problems.
Substance accumulation, in the human body, may occur and may cause some concern following repeated or long-term occupational exposure.
Chronic boric acid poisoning is characterized by mild gastrointestinal irritation, loss of appetite, disturbed digestion, nausea, possibly vomiting and a hard irregular and discoloured rash. Dryness of skin, reddening of tongue, loss of hair, inflammation of conjunctiva, and kidney injury have also been reported.
Borate can accumulate in the testes and deplete germ cells and cause withering of the testicles, according to animal testing.
Hair loss, skin inflammation, stomach ulcer and anaemia can all occur. Repeated swallowing or inhalation irritates the stomach, causes a loss of appetite, disturbed digestion, nausea and vomiting, red rash, dry skin and mucous membranes, reddening of the tongue, cracking of the lips, inflamed conjunctiva, swelling of the eyelids and kidney injury. Animal testing revealed prolonged ingestion causes effects to the reproductive system in both males and females.

TOXICITY AND IRRITATION
■ Asthma-like symptoms may continue for months or even years after exposure to the material ceases. This may be due to a non-allergenic condition known as reactive airways dysfunction syndrome (RADS) which can occur following exposure to high levels of highly irritating compound.
The material may produce moderate eye irritation leading to inflammation. Repeated or prolonged exposure to irritants may produce conjunctivitis.

CARCINOGEN

boric acid	International Agency for Research on Cancer (IARC) - Agents Reviewed by the IARC Monographs	Group	2A	Probably carcinogenic to humans

SKIN

n- butanol	India Permissible Levels of Certain Chemical Substances in Work Environment - Skin	Notes	Skin
n- butanol	GESAMP/EHS Composite List - GESAMP Hazard Profiles	D1: skin irritation/corrosion	2
boric acid	GESAMP/EHS Composite List - GESAMP Hazard Profiles	D1: skin irritation/corrosion	1

continued...

Section 12 - ECOLOGICAL INFORMATION

No data

Ecotoxicity

Ingredient	Persistence: Water/Soil	Persistence: Air	Bioaccumulation	Mobility
n- butanol	LOW	MED	LOW	HIGH
boric acid	LOW	No Data Available	LOW	HIGH

Section 13 - DISPOSAL CONSIDERATIONS

• Containers may still present a chemical hazard/ danger when empty.
• Return to supplier for reuse/ recycling if possible.
Otherwise:
• If container can not be cleaned sufficiently well to ensure that residuals do not remain or if the container cannot be used to store the same product, then puncture containers, to prevent re-use, and bury at an authorised landfill.
• Where possible retain label warnings and MSDS and observe all notices pertaining to the product.
Legislation addressing waste disposal requirements may differ by country, state and/ or territory. Each user must refer to laws operating in their area.
A Hierarchy of Controls seems to be common - the user should investigate:
• Reduction.
• DO NOT allow wash water from cleaning or process equipment to enter drains.
• It may be necessary to collect all wash water for treatment before disposal.
• In all cases disposal to sewer may be subject to local laws and regulations and these should be considered first.
• Where in doubt contact the responsible authority.
• Recycle wherever possible or consult manufacturer for recycling options.
• Consult State Land Waste Authority for disposal.
• Bury or incinerate residue at an approved site.
• Recycle containers if possible, or dispose of in an authorised landfill.

Section 14 - TRANSPORTATION INFORMATION

HAZCHEM:
None

NOT REGULATED FOR TRANSPORT OF DANGEROUS GOODS: UN, IATA, IMDG

Section 15 - REGULATORY INFORMATION

REGULATIONS

tributyl borate (CAS: 688-74-4) is found on the following regulatory lists;
"FisherTransport Information","India Chemical Accidents Rules - Schedule 1: List of Hazardous Chemicals","Sigma-AldrichTransport Information","United Nations Consolidated List of Products Whose Consumption and/or Sale Have Been Banned, Withdrawn, Severely Restricted or Not Approved by Governments"

Regulations for ingredients

n-butanol (CAS: 71-36-3) is found on the following regulatory lists;
"Acros Transport Information","FisherTransport Information","GESAMP/EHS Composite List - GESAMP Hazard Profiles","IMO IBC Code Chapter 17: Summary of minimum requirements","IMO IBC Code Chapter 18: List of products to which the Code does not apply","IMO MARPOL 73/78 (Annex II) - List of Other Liquid Substances","India Chemical Accidents Rules - Schedule 3: Named Chemicals","India Hazardous Wastes (Management, Handling and Transboundary Movement) Rules - Schedule 2: List of Wastes Constituents with Concentration Limits","India Manufacture, Storage and Import of Hazardous Chemical Rules - Schedule 1: List of Hazardous and Toxic Chemicals","India Manufacture, Storage and Import of Hazardous Chemical Rules - Schedule 3: List of Hazardous Chemicals for Application of Rules 5 and 7 to 15","India Permissible Levels of Certain Chemical Substances in Work Environment","International

continued...

Council of Chemical Associations (ICCA) - High Production Volume List","International Fragrance Association (IFRA) Survey: Transparency List","IOFI Global Reference List of Chemically Defined Substances","OECD List of High Production Volume (HPV) Chemicals","OSPAR National List of Candidates for Substitution – Norway","Sigma-AldrichTransport Information"

boric acid (CAS: 10043-35-3,11113-50-1,41685-84-1) is found on the following regulatory lists;
"Acros Transport Information","GESAMP/EHS Composite List - GESAMP Hazard Profiles","India Chemical Accidents Rules - Schedule 1: List of Hazardous Chemicals","India Hazardous Wastes (Management, Handling and Transboundary Movement) Rules - Schedule 2: List of Wastes Constituents with Concentration Limits","International Agency for Research on Cancer (IARC) - Agents Reviewed by the IARC Monographs","International Air Transport Association (IATA) Dangerous Goods Regulations","International Chemical Secretariat (ChemSec) SIN List (*Substitute It Now!)","OECD List of High Production Volume (HPV) Chemicals","Sigma-AldrichTransport Information","United Nations Consolidated List of Products Whose Consumption and/or Sale Have Been Banned, Withdrawn, Severely Restricted or Not Approved by Governments"

Section 16 - OTHER INFORMATION

INGREDIENTS WITH MULTIPLE CAS NUMBERS

Ingredient Name	CAS
boric acid	10043- 35- 3, 11113- 50- 1, 41685- 84- 1

■ Classification of the preparation and its individual components has drawn on official and authoritative sources using available literature references.

■ The (M)SDS is a Hazard Communication tool and should be used to assist in the Risk Assessment. Many factors determine whether the reported Hazards are Risks in the workplace or other settings.

The above information is believed to be accurate and represent the best information currently available to us, but does not represent any warranty expressed or implied of the properties of the product. User should make their own investigation to determine the suitability of the information for their particular purpose.

Issue Date: 7-Nov-2017