DI-SODIUM TETRABORATE DECAHYDRATE

Section 1 - CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME

DI-SODIUM TETRABORATE DECAHYDRATE

OTHER NAMES

Na2-B4-O7.10H2O, "CAS RN 12447-40-4", "CAS RN 12447-40-4", "CAS RN 61028-24-8", "CAS RN 61028-24-8", "disodium tetraborate decahydrate", "sodium biborate decahydrate", "sodium pyroborate, decahydrate", "sodium tetraborate, decahydrate", Antipyonin, Borascu, Borax , "Borax decahydrate",

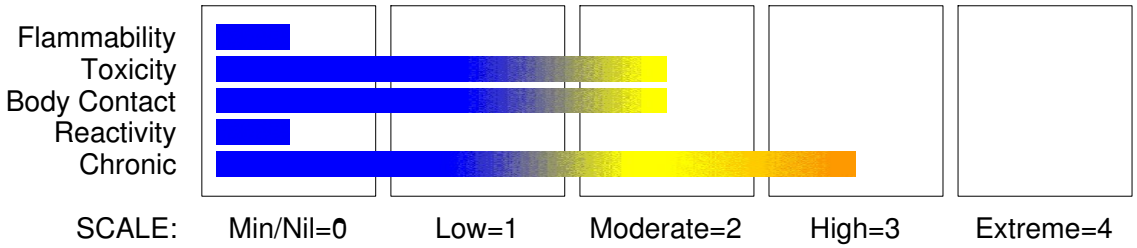
PRODUCT USE

Soldering metals; in the manufacture of glazes and enamels; tanning; in cleaning compounds; corrosion inhibitors; artificially aging wood; as a preservative, either alone or with other antiseptics against wood fungus; fireproofing fabrics.
Also used for curing and preserving skins; in cockroach control.

SUPPLIER

Company: S D FINE- CHEM LIMITED
Address:
315- 317, T.V. INDUSTRIAL ESTATE,
248, WORLI,
MUMBAI- 400030.INDIA.
technical@sdfine.com
Telephone: 91- 22- 24959898
Telephone: 91- 22- 24959899
Fax: 91- 22- 24937232

HAZARD RATINGS



Section 2 - HAZARDS IDENTIFICATION

GHS Classification

Acute Toxicity (Oral) Category 4
Reproductive Toxicity Category 1B
Respiratory Irritation Category 3

continued...

EMERGENCY OVERVIEW

HAZARD

DANGER
Determined by using GHS criteria:
H335 H302 H360 H360
May cause respiratory irritation
Harmful if swallowed
May damage fertility
May damage the unborn child

PRECAUTIONARY STATEMENTS

Prevention

Do not handle until all safety precautions have been read and understood.
Use personal protective equipment as required.
Wash hands thoroughly after handling.
Obtain special instructions before use.
Do not eat, drink or smoke when using this product.

Response

If exposed or concerned: Get medical attention advice.
Specific treatment: refer to Label or MSDS.

Storage

Store locked up.

Disposal

Dispose of contents and container in accordance with relevant legislation.

Section 3 - COMPOSITION / INFORMATION ON INGREDIENTS

NAME	CAS RN	%
sodium borate, decahydrate	1303-96-4	>98

Section 4 - FIRST AID MEASURES

SWALLOWED

· IF SWALLOWED, REFER FOR MEDICAL ATTENTION, WHERE POSSIBLE, WITHOUT DELAY.
· For advice, contact a Poisons Information Centre or a doctor.
Where Medical attention is not immediately available or where the patient is more than 15 minutes from a hospital or unless instructed otherwise:
· Induce vomiting with fingers down the back of the of the throat, ONLY IF CONSCIOUS.
· Lean patient forward or place on left side (head-down position if possible) to maintain open airway and prevent aspiration.
NOTE: Wear a protective glove when inducing vomiting by mechanical means.

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· In the mean time, qualified first-aid personnel should treat the patient following observation and employing supportive measures as indicated by the patient's condition.
· If the services of a medical officer or medical doctor are readily available, the patient should be placed in his/her care and a copy of the MSDS should be provided. Further action will be the responsibility of the medical specialist.
· If medical attention is not available on the worksite or surroundings send the patient to a hospital together with a copy of the MSDS.

EYE

If this product comes in contact with the eyes:
· Immediately hold eyelids apart and flush the eye continuously with 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.
· Continue flushing until advised to stop by the Poisons Information Centre or a doctor, or for at least 15 minutes.
· Transport to hospital or doctor without delay.
· Removal of contact lenses after an eye injury should only be undertaken by skilled personnel.

SKIN

If skin or hair contact occurs:
· 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.
· Transport to hospital, or doctor.

NOTES TO PHYSICIAN

For acute or repeated short term exposures to boron and its compounds:
· Nausea, vomiting, diarrhoea and epigastric pain, haematemesis and blue-green discolouration of both faeces and vomitus characterise adult boron intoxication.
· Access and correct any abnormalities found in airway and circulation.
· A tidal volume of 10-15 mg/kg should be maintained.
· Emesis should be induced unless the patient is in coma, is experiencing seizures or has lost the gag reflex. If any of these are present, gastric lavage should be performed with a large-bore tube after endotracheal intubation or in the presence of continuous respiratory action.
· Activated charcoal is probably not of value though its use might be indicated following gastric evacuation. Catharsis might be useful to eliminate any borates remaining in the gastro-intestinal tract (magnesium sulfate: adults, 30 gms: children 250 mg/kg).
· Peritoneal dialysis and haemodialysis remove some borates.
[Ellenhorn and Barceloux: Medical Toxicology].

Section 5 - FIRE FIGHTING MEASURES

EXTINGUISHING MEDIA

· There is no restriction on the type of extinguisher which may be used.

FIRE FIGHTING

Alert Fire Brigade and tell them location and nature of hazard.

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· Wear breathing apparatus plus protective gloves.
· Prevent, by any means available, spillage from entering drains or water courses.
Cool fire exposed containers with water spray from a protected location.
If safe to do so, remove containers from path of fire.

FIRE/EXPLOSION HAZARD
· Non combustible.
· Not considered a significant fire risk, however containers may burn.
Decomposition may produce toxic fumes of:.
caustic compounds.

FIRE INCOMPATIBILITY
None known.

Section 6 - ACCIDENTAL RELEASE MEASURES

EMERGENCY PROCEDURES

MINOR SPILLS
Clean up all spills immediately.
Wear impervious gloves and safety glasses.
Avoid contact with skin and eyes.
Use dry clean up procedures and avoid generating dust.
Place in suitable containers for disposal.
Flush residue away with large quantities of water.

MAJOR SPILLS
· Clear area of personnel and move upwind.
· Alert Fire Brigade and tell them location and nature of hazard.
· Control personal contact by using protective equipment and dust respirator.
· Prevent spillage from entering drains, sewers or water courses.
· Recover product wherever possible. Avoid generating dust.
· Sweep / shovel up.
· If required, wet with water to prevent dusting.
· Put residues in labelled plastic bags or other containers for disposal.
· Wash area down with large quantity of water and prevent runoff into drains.
· If contamination of drains or waterways occurs, advise emergency services.

EMERGENCY RESPONSE PLANNING GUIDELINES (ERPG)
The maximum airborne concentration below which it is believed that nearly all individuals could be exposed for up to one hour WITHOUT experiencing or developing

life-threatening health effects is:
sodium borate, decahydrate 25 mg/m³

irreversible or other serious effects or symptoms which could impair an individual's ability to take protective action is:
sodium borate, decahydrate 5 mg/m³

other than mild, transient adverse effects without perceiving a clearly defined odour is:
sodium borate, decahydrate 3 mg/m³

The threshold concentration below which most people will experience no appreciable risk of health effects:
sodium borate, decahydrate 3 mg/m³

American Industrial Hygiene Association (AIHA)

continued...

Ingredients considered according to the following cutoffs

Very Toxic (T+)	>= 0.1%	Toxic (T)	>= 3.0%
R50	>= 0.25%	Corrosive (C)	>= 5.0%
R51	>= 2.5%		
else	>= 10%		

where percentage is percentage of ingredient found in the mixture

Personal Protective Equipment advice is contained in Section 8 of the MSDS.

Section 7 - HANDLING AND STORAGE

PROCEDURE FOR HANDLING

· Limit all unnecessary personal contact.
· Wear protective clothing when risk of exposure occurs.
· Use in a well-ventilated area.
· Avoid contact with incompatible materials.
· When handling, DO NOT eat, drink or smoke.
· Keep containers securely sealed when not in use.
· Avoid physical damage to containers.
· Always wash hands with soap and water after handling.
· Work clothes should be laundered separately.
· Use good occupational work practice.
· Observe manufacturer's storing and handling recommendations.
· Atmosphere should be regularly checked against established exposure standards to ensure safe working conditions are maintained.

SUITABLE CONTAINER

Glass container.
Plastic drum.
Polyethylene or polypropylene container.
Metal can.
Metal drum.
· Check that containers are clearly labelled.

STORAGE INCOMPATIBILITY

Segregate from acids.
Avoid contact finely divided zirconium.

STORAGE REQUIREMENTS

· Store in original containers.
· Keep containers securely sealed.
· Store in a cool, dry, well-ventilated area.
· Store away from incompatible materials and foodstuff containers.
· Protect containers against physical damage and check regularly for leaks.
· Observe manufacturer's storing and handling recommendations.

SAFE STORAGE WITH OTHER CLASSIFIED CHEMICALS

X	X	+	X	X	+

+: May be stored together
O: May be stored together with specific preventions
X: Must not be stored together

continued...

Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

EXPOSURE CONTROLS

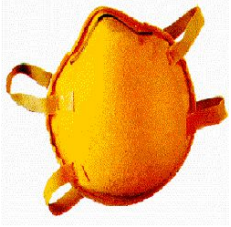
The following materials had no OELs on our records

• sodium borate, decahydrate: CAS:1303- 96- 4 CAS:1344- 90- 7 CAS:12447- 40- 4 CAS:61028- 24- 8 CAS:1330- 43- 4

MATERIAL DATA

No data are currently available to establish a causal link between inhalation exposures to sodium tetraborates and chronic respiratory and/or systemic effects.
An occupationally important toxic effect of the sodium tetraborates is their acute irritant effect when in contact with skin and the mucous membranes of the eyes, nose and other sites of the respiratory tract.
The irritant properties increase with decreasing water of hydration due to the exothermic effect of hydration. The TLV-TWA of 1 mg/m3 for the anhydrous and pentahydrate forms and 5 mg/m3 for the decahydrate is thought to be protective against the acute irritant effects.

PERSONAL PROTECTION



EYE

· Safety glasses with side shields; or as required,
· 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].

HANDS/FEET

Plastic gloves.
Neoprene gloves.
Rubber gloves.

OTHER

Overalls.
· Barrier cream.
· Eyewash unit.

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RESPIRATOR

Protection Factor	Half- Face Respirator	Full- Face Respirator	Powered Air Respirator
10 x ES	P1 Air- line*	- -	PAPR- P1 -
50 x ES	Air- line**	P2	PAPR- P2
100 x ES	-	P3	-
		Air- line*	-
100+ x ES	-	Air- line**	PAPR- P3

* - Negative pressure demand ** - Continuous flow.

The local concentration of material, quantity and conditions of use determine the type of personal protective equipment required.
For further information consult your
Occupational Health and Safety Advisor.

ENGINEERING CONTROLS

· Local exhaust ventilation is required where solids are handled as powders or crystals; even when particulates are relatively large, a certain proportion will be powdered by mutual friction.
· Exhaust ventilation should be designed to prevent accumulation and recirculation of particulates in the workplace.
· If in spite of local exhaust an adverse concentration of the substance in air could occur, respiratory protection should be considered. Such protection might consist of:
(a): particle dust respirators, if necessary, combined with an absorption cartridge;
(b): filter respirators with absorption cartridge or canister of the right type;
(c): fresh-air hoods or masks
· Build-up of electrostatic charge on the dust particle, may be prevented by bonding and grounding.
· Powder handling equipment such as dust collectors, dryers and mills may require additional protection measures such as explosion venting.

Air contaminants generated in the workplace possess varying "escape" velocities which, in turn, determine the "capture velocities" of fresh circulating air required to efficiently remove the contaminant.

Type of Contaminant:	Air Speed:
direct spray, spray painting in shallow booths, drum filling, conveyer loading, crusher dusts, gas discharge (active generation into zone of rapid air motion)	1- 2.5 m/s (200- 500 f/min.)
grinding, abrasive blasting, tumbling, high speed wheel generated dusts (released at high initial velocity into zone of very high rapid air motion).	2.5- 10 m/s (500- 2000 f/min.)

Within each range the appropriate value depends on:

Lower end of the range	Upper end of the range
1: Room air currents minimal or favourable to capture	1: Disturbing room air currents
2: Contaminants of low toxicity or of nuisance value only	2: Contaminants of high toxicity
3: Intermittent, low production.	3: High production, heavy use
4: Large hood or large air mass in motion	4: Small hood- local control only

Simple theory shows that air velocity falls rapidly with distance away from the opening of a simple extraction pipe. Velocity generally decreases with the square of distance

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from the extraction point (in simple cases). Therefore the air speed at the extraction point should be adjusted, accordingly, after reference to distance from the contaminating source. The air velocity at the extraction fan, for example, should be a minimum of 4-10 m/s (800-2000 f/min) for extraction of crusher dusts generated 2 metres distant from the extraction point. Other mechanical considerations, producing performance deficits within the extraction apparatus, make it essential that theoretical air velocities are multiplied by factors of 10 or more when extraction systems are installed or used.

Section 9 - PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE

Hard, odourless crystals, granules or powder.
Soluble in glycerol; very slightly soluble in alcohol; insoluble in acids.
Solubility in water @ 0 deg.C: 2.01 g/100 cc.
@ 100 deg.C: 170 g/100 cc.
Loses water of crystallization when heated: @ 100 deg C. - 5 mols H2O;
@ 150 deg.C. - 9 mols H2O; @ 320 deg. C. -10 mols H2O.

PHYSICAL PROPERTIES

Solid.
Mixes with water.

Molecular Weight: 381.37
Melting Range (°C): 62- 75
Solubility in water (g/L): Miscible
pH (1% solution): 9.2- 9.5
Volatile Component (%vol): Nil @ 38C
Relative Vapour Density (air=1): Not available.
Lower Explosive Limit (%): Not applicable
Autoignition Temp (°C): Not available.
State: Divided solid

Boiling Range (°C): 320 (loses H2O)
Specific Gravity (water=1): 1.71- 1.73
pH (as supplied): Not applicable
Vapour Pressure (kPa): Negligible
Evaporation Rate: Non Volatile
Flash Point (°C): Non Flammable
Upper Explosive Limit (%): Not applicable
Decomposition Temp (°C): 1575
Viscosity: Not available

Section 10 - CHEMICAL STABILITY AND REACTIVITY INFORMATION

CONDITIONS CONTRIBUTING TO INSTABILITY

- Presence of incompatible materials.
- Product is considered stable.
- Hazardous polymerisation will not occur.

Section 11 - TOXICOLOGICAL INFORMATION

POTENTIAL HEALTH EFFECTS

ACUTE HEALTH EFFECTS

SWALLOWED

Although ingestion is not thought to produce harmful effects (as classified under EC Directives), the material may still be damaging to the health of the individual, following ingestion, especially where pre-existing organ (e.g liver, kidney) damage is evident. Present definitions of harmful or toxic substances are generally based on doses producing mortality rather than those producing morbidity (disease, ill-health). Gastrointestinal tract discomfort may produce nausea and vomiting. In an occupational setting however, ingestion of insignificant quantities is not thought to be cause for

continued...

concern.
Considered an unlikely route of entry in commercial/industrial environments.

EYE
Although the material is not thought to be an irritant (as classified by EC Directives), direct contact with the eye may produce transient discomfort characterised by tearing or conjunctival redness (as with windburn).
The dust may produce eye discomfort causing transient smarting, blinking.

SKIN
The material is not thought to produce adverse health effects or skin irritation following contact (as classified by EC Directives using animal models). Nevertheless, good hygiene practice requires that exposure be kept to a minimum and that suitable gloves be used in an occupational setting.
WARNING!
Open cuts, abraded or irritated skin should not be exposed to this material.

INHALED
Inhalation may produce health damage*.
The material is not thought to produce respiratory irritation (as classified by EC Directives using animal models). Nevertheless inhalation, of the material, especially for prolonged periods, may produce respiratory discomfort and occasionally, distress.
Inhalation of small amounts of dust or fume over long periods may cause poisoning.
Persons with impaired respiratory function, airway diseases and conditions such as emphysema or chronic bronchitis, may incur further disability if excessive concentrations of particulate are inhaled.

CHRONIC HEALTH EFFECTS
There is sufficient evidence to provide a strong presumption that human exposure to the material may result in impaired fertility on the basis of: - clear evidence in animal studies of impaired fertility in the absence of toxic effects, or evidence of impaired fertility occurring at around the same dose levels as other toxic effects but which is not a secondary non-specific consequence of other toxic effects.
There is sufficient evidence to provide a strong presumption that human exposure to the material may result in developmental toxicity, generally on the basis of:
- clear results in appropriate animal studies where effects have been observed in the absence of marked maternal toxicity, or at around the same dose levels as other toxic effects but which are not secondary non-specific consequences of the other toxic effects.
Principal routes of exposure are usually by.
inhalation of generated dust and inhalation of fumes from the heated material.
Chronic poisoning is characterised gastrointestinal disturbances and skin rash. Chronic absorption of small amounts of borax causes mild gastroenteritis and dermatitis.

TOXICITY AND IRRITATION
unless otherwise specified data extracted from RTECS - Register of Toxic Effects of Chemical Substances.

TOXICITY	IRRITATION
Oral (rat) LD50: 4500- 5000 mg/kg	Eyes (rabbit) (-) Mild
Dermal (rabbit) LD50: >10, 000 mg/kg	Nil Reported
Inhalation (rat) LC50: >2.0 mg/L	
Oral (man) LDLo: 709 mg/kg	
Oral (rat) LD50: 2660 mg/kg	

[Orica BORAX-Europe]
Reproductive effector in rats
Mutagenic towards bacteria

Section 12 - ECOLOGICAL INFORMATION

For sodium tetraborate:
Algal Toxicity:
EC10: 24 mgB/L/96 Hr (Green algae, Scenedesmus subspicatus) B = boron
Invertebrate Toxicity:
LC50: 242 mgB/L/24Hr (Daphnids, Daphnia magna Straus)
Fish Toxicity:
Sea water- LC50: 74 mgB/L/96Hr (Dab, Limanda limanda)
Fresh water- LC50: 88 mgB/L/24day
LC50: 54 mgB/L/32day (Rainbow trout, Salmo gairdneri embryo-larval stage)
LC50: 65 mgB/L/7day
LC50: 71 mgB/L/3day (Goldfish, Carassius auratus embryo-larval stage)
The product decomposes in the environment to natural borate.
The product is soluble in water and leachable through normal soil.
[Orica Borax Europe Ltd 02/96]

Section 13 - DISPOSAL CONSIDERATIONS

- Recycle wherever possible or consult manufacturer for recycling options.
- Consult State Land Waste Management Authority for disposal.
- Bury residue in an authorised landfill.
- 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

sodium borate, decahydrate (CAS: 1303-96-4) is found on the following regulatory lists;
OECD Representative List of High Production Volume (HPV) Chemicals

sodium borate, decahydrate (CAS: 1344-90-7) is found on the following regulatory lists;
OECD Representative List of High Production Volume (HPV) Chemicals

No data available for sodium borate, decahydrate as CAS: 12447-40-4, CAS: 61028-24-8.

Section 16 - OTHER INFORMATION

INGREDIENTS WITH MULTIPLE CAS NUMBERS

Ingredient Name	CAS

continued...

sodium borate, decahydrate	1303- 96- 4, 1344 - 90- 7, 12447- 40- 4, 61028- 24- 8

MSDS SECTION CHANGES

The following table displays the version number of and date on which each section was last changed.

Section Name	Version	Date	Section Name	Version	Date	Section Name	Version	Date
First Aid (swallowed)	5	9- Nov- 2006	Exposure Standard	4	28- Jun- 2005	Acute Health (skin)	5	9- Nov- 2006
Fire Fighter (fire/explosion hazard)	4	28- Jun- 2005	Appearance	5	9- Nov- 2006	Acute Health (swallowed)	5	9- Nov- 2006
Storage (storage incompatibility)	5	9- Nov- 2006	Acute Health (inhaled)	5	9- Nov- 2006	Chronic Health	5	9- Nov- 2006

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: 9-Nov-2017