

# POWERS POWERSTICK

Chemwatch Material Safety Data Sheet  
Issue Date: 4-Jun-2007  
NC317ECP

CHEMWATCH 4724-14  
Version No:4  
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## Section 1 - CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

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### PRODUCT NAME

POWERS POWERSTICK

### SYNONYMS

### PRODUCT USE

Sealant.

### SUPPLIER

Company: Powers Fasteners Australasia Pty Ltd  
Address:  
Factory 3, 205 Abbots Road  
Dandenong South  
VIC, 3175  
AUS  
Telephone: +61 3 878 5888  
Telephone: 1800 677 872  
Fax: +61 3 9878 5899

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## Section 2 - HAZARDS IDENTIFICATION

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### STATEMENT OF HAZARDOUS NATURE

NON-HAZARDOUS SUBSTANCE. NON-DANGEROUS GOODS. According to the Criteria of NOHSC, and the ADG Code.

### POISONS SCHEDULE

None

### RISK

In use, may form flammable/ explosive vapour-air mixture.

Inhalation may produce health damage\*.

Cumulative effects may result following exposure\*.

May produce discomfort of the eyes, respiratory tract and skin\*.

Limited evidence of a carcinogenic effect\*.

Vapours potentially cause drowsiness and dizziness\*.

\* (limited evidence).

### SAFETY

Wear eye/face protection.

Use only in well ventilated areas.

Keep container in a well ventilated place.

Take off immediately all contaminated clothing.

In case of contact with eyes, rinse with plenty of water and contact Doctor or Poisons Information Centre.

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## Section 3 - COMPOSITION / INFORMATION ON INGREDIENTS

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NAME	CAS RN	%
trimethoxyvinylsilane	2768-02-7	1-20
bis(2, 2, 6, 6-tetramethyl-4-piperidinyl)sebacate	52829-07-9	0.1-1
dibutyltin bis(acetylacetonate)	22673-19-4	0.1-1

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## Section 3 - COMPOSITION / INFORMATION ON INGREDIENTS

## Section 4 - FIRST AID MEASURES

### SWALLOWED

- Immediately give a glass of water.
- First aid is not generally required. If in doubt, contact a Poisons Information Centre or a doctor.

### 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.
  - 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.
- Transport to hospital, or doctor.

### NOTES TO PHYSICIAN

For acute and short term repeated exposures to methanol:

- Toxicity results from accumulation of formaldehyde/formic acid.
- Clinical signs are usually limited to CNS, eyes and GI tract. Severe metabolic acidosis may produce dyspnea and profound systemic effects which may become intractable. All symptomatic patients should have arterial pH measured. Evaluate airway, breathing and circulation.
- Stabilise obtunded patients by giving naloxone, glucose and thiamine.
- Decontaminate with Ipecac or lavage for patients presenting 2 hours post-ingestion. Charcoal does not absorb well; the usefulness of cathartic is not established.
- Forced diuresis is not effective; haemodialysis is recommended where peak methanol levels exceed 50 mg/dL (this correlates with serum bicarbonate levels below 18 mEq/L).
- Ethanol, maintained at levels between 100 and 150 mg/dL, inhibits formation of toxic metabolites and may be indicated when peak methanol levels exceed 20 mg/dL. An intravenous solution of ethanol in D5W is optimal.
- Folate, as leucovorin, may increase the oxidative removal of formic acid. 4-methylpyrazole may be an effective adjunct in the treatment. 8-Phenytoin may be preferable to diazepam for controlling seizure.

[Ellenhorn Barceloux: Medical Toxicology]

BIOLOGICAL EXPOSURE INDEX - BEI

Determinant	Index	Sampling Time	Comment
1. Methanol in urine	15 mg/l	End of shift	B, NS
2. Formic acid in	80 mg/gm creatinine	Before the shift at	B, NS

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Section 4 - FIRST AID MEASURES

urine

end of workweek

B: Background levels occur in specimens collected from subjects NOT exposed.

NS: Non-specific determinant - observed following exposure to other materials.

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## Section 5 - FIRE FIGHTING MEASURES

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### EXTINGUISHING MEDIA

- Foam.
- Dry chemical powder.
- BCF (where regulations permit).
- Carbon dioxide.
- Water spray or fog - Large fires only.

### FIRE FIGHTING

- 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 courses.
- Use water delivered as a fine spray to control fire and cool adjacent area.
- DO NOT approach containers suspected to be hot.
- Cool fire exposed containers with water spray from a protected location.
- If safe to do so, remove containers from path of fire.
- Equipment should be thoroughly decontaminated after use.

### FIRE/EXPLOSION HAZARD

WARNING: In use may form flammable/ explosive vapour-air mixtures.

- 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).
- May emit acrid smoke.

· Mists containing combustible materials may be explosive., silicon dioxide (SiO<sub>2</sub>).

Combustion products include: carbon monoxide (CO), carbon dioxide (CO<sub>2</sub>), hydrogen chloride, other pyrolysis products typical of burning organic material.

May emit poisonous fumes.

May emit corrosive fumes., sulfur oxides (SO<sub>x</sub>), phosgene.

### FIRE INCOMPATIBILITY

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

**HAZCHEM: None**

### Personal Protective Equipment

Breathing apparatus.

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## Section 6 - ACCIDENTAL RELEASE MEASURES

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### EMERGENCY PROCEDURES

#### MINOR SPILLS

- Clean up all spills immediately.
- Avoid contact with skin and eyes.
- Wear impervious gloves and safety goggles.
- Trowel up/scrape up.

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## Section 6 - ACCIDENTAL RELEASE MEASURES

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- Place spilled material in clean, dry, sealed container.
- Flush spill area with water.

### MAJOR SPILLS

- 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.
- Stop leak if safe to do so.
- Contain spill with sand, earth or vermiculite.
- Collect recoverable product into labelled containers for recycling.
- Neutralise/decontaminate residue.
- Collect solid residues and seal in labelled drums for disposal.
- Wash area and prevent runoff into drains.
- After clean up operations, decontaminate and launder all protective clothing and equipment before storing and re-using.
- If contamination of drains or waterways occurs, advise emergency services.

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

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## Section 7 - HANDLING AND STORAGE

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### PROCEDURE FOR HANDLING

- 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.
- DO NOT enter confined spaces until atmosphere has been checked.
- DO NOT allow material to contact humans, exposed food or food utensils.
- 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. Launder contaminated clothing before re-use.
- 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

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

### STORAGE INCOMPATIBILITY

Avoid reaction with oxidising agents.

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## Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

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### EXPOSURE CONTROLS

The following materials had no OELs on our records

- trimethoxyvinylsilane: CAS:2768- 02- 7
- bis(2, 2, 6, 6- tetramethyl- 4-

CAS:52829- 07- 9

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Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

piperidinyl)sebacate:

• dibutyltin bis(acetylacetonate):

CAS:22673- 19- 4

## MATERIAL DATA

Sensory irritants are chemicals that produce temporary and undesirable side-effects on the eyes, nose or throat. Historically occupational exposure standards for these irritants have been based on observation of workers' responses to various airborne concentrations. Present day expectations require that nearly every individual should be protected against even minor sensory irritation and exposure standards are established using uncertainty factors or safety factors of 5 to 10 or more. On occasion animal no-observable-effect-levels (NOEL) are used to determine these limits where human results are unavailable. An additional approach, typically used by the TLV committee (USA) in determining respiratory standards for this group of chemicals, has been to assign ceiling values (TLV C) to rapidly acting irritants and to assign short-term exposure limits (TLV STELs) when the weight of evidence from irritation, bioaccumulation and other endpoints combine to warrant such a limit. In contrast the MAK Commission (Germany) uses a five-category system based on intensive odour, local irritation, and elimination half-life. However this system is being replaced to be consistent with the European Union (EU) Scientific Committee for Occupational Exposure Limits (SCOEL); this is more closely allied to that of the USA.

OSHA (USA) concluded that exposure to sensory irritants can:

- cause inflammation
- cause increased susceptibility to other irritants and infectious agents
- lead to permanent injury or dysfunction
- permit greater absorption of hazardous substances and
- acclimate the worker to the irritant warning properties of these substances thus increasing the risk of overexposure.

## INGREDIENT DATA

BIS(2,2,6,6-TETRAMETHYL-4-PIPERIDINYL)SEBACATE:

DIBUTYLTIN BIS(ACETYLACETONATE):

Sensory irritants are chemicals that produce temporary and undesirable side-effects on the eyes, nose or throat. Historically occupational exposure standards for these irritants have been based on observation of workers' responses to various airborne concentrations. Present day expectations require that nearly every individual should be protected against even minor sensory irritation and exposure standards are established using uncertainty factors or safety factors of 5 to 10 or more. On occasion animal no-observable-effect-levels (NOEL) are used to determine these limits where human results are unavailable. An additional approach, typically used by the TLV committee (USA) in determining respiratory standards for this group of chemicals, has been to assign ceiling values (TLV C) to rapidly acting irritants and to assign short-term exposure limits (TLV STELs) when the weight of evidence from irritation, bioaccumulation and other endpoints combine to warrant such a limit. In contrast the MAK Commission (Germany) uses a five-category system based on intensive odour, local irritation, and elimination half-life. However this system is being replaced to be consistent with the European Union (EU) Scientific Committee for Occupational Exposure Limits (SCOEL); this is more closely allied to that of the USA.

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- lead to permanent injury or dysfunction
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- acclimate the worker to the irritant warning properties of these substances thus increasing the risk of overexposure.

TRIMETHOXYVINYL SILANE:

No exposure limits set by NOHSC or ACGIH.

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## Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

### BIS(2,2,6,6-TETRAMETHYL-4-PIPERIDINYL)SEBACATE:

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). Airborne concentrations must be maintained as low as is practically possible and occupational exposure must be kept to a minimum.

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

CEL TWA: 0.1 mg/m<sup>3</sup>

[Ciba-Geigy]

### DIBUTYLTIN BIS(ACETYLACETONATE):

Exposure limits with "skin" notation indicate that vapour and liquid may be absorbed through intact skin. Absorption by skin may readily exceed vapour inhalation exposure. Symptoms for skin absorption are the same as for inhalation. Contact with eyes and mucous membranes may also contribute to overall exposure and may also invalidate the exposure standard.

The no/lowest-observed-adverse-effect levels (NOAELs or LOAELs) in inhalation studies involving tri-n-butyltin chloride and bromide are 0.3-0.4 ppm (2-4 mg/m<sup>3</sup>) based on changes in the lungs, heart, liver, kidneys, nervous system and reproductive system in rodents. Oral administration of organotin compounds has induced toxicity in a number of differing organ systems, organs and lungs. The LOAEL for triethyltin bromide was 0.4 mg triethyltin/kg/day as 5 ppm in drinking water. The LOAELs for the most critical organ sites in rats (i.e. the cellular immune response and CNS effects) are 0.15 and 0.23 mg/tin/kg body weight/day. Experience with ingested tri- and diethyltins in the treatment of staphylococcal infections, osteomyelitis, anthrax and acne suggests that humans react in a manner similar to rodents, but that the human is more sensitive to absorbed organic tin. The recommended TLV-TWA is thought to minimise the potential for adverse effects on immune function and the central nervous system. A STEL is also recommended to minimise acute symptoms such as eye and respiratory tract irritation, headaches and/or nausea. Based on an exposure to 0.1 mg/m<sup>3</sup>, a 70-kg worker breathing 10 m<sup>3</sup> of air/8hr workday and assuming complete retention of the inhaled dose, would receive a daily exposure of 14.3 ug tin/kg body weight of an organotin compound. A skin notation was recommended based on animal data and the potential danger of enhanced absorption due to damaged skin present in many exposed workers.

Exposure limits with "skin" notation indicate that vapour and liquid may be absorbed through intact skin. Absorption by skin may readily exceed vapour inhalation exposure. Symptoms for skin absorption are the same as for inhalation. Contact with eyes and mucous membranes may also contribute to overall exposure and may also invalidate the exposure standard.

## PERSONAL PROTECTION

### 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].

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## Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

### HANDS/FEET

Wear chemical protective gloves, eg. PVC.

Wear safety footwear or safety gumboots, eg. Rubber.

### OTHER

- Overalls.
- P.V.C. apron.
- Barrier cream.
- Skin cleansing cream.
- Eye wash unit.

### RESPIRATOR

Selection of the Class and Type of respirator will depend upon the level of breathing zone contaminant and the chemical nature of the contaminant. Protection Factors (defined as the ratio of contaminant outside and inside the mask) may also be important.

Breathing Zone Level ppm (volume)	Maximum Protection Factor	Half- face Respirator	Full- Face Respirator
1000	10	A- AUS P	-
1000	50	-	A- AUS P
5000	50	Airline *	-
5000	100	-	A- 2 P
10000	100	-	A- 3 P
	100+		Airline**

\* - Continuous Flow

\*\* - Continuous-flow or positive pressure demand.

The local concentration of material, quantity and conditions of use determine the type of personal protective equipment required.

For further information consult site specific CHEMWATCH data (if available), or your Occupational Health and Safety Advisor.

### ENGINEERING CONTROLS

Local exhaust ventilation usually required. If risk of overexposure exists, wear approved respirator. Correct fit is essential to obtain adequate protection. Supplied-air type respirator may be required in special circumstances. Correct fit is essential to ensure adequate protection.

An approved self contained breathing apparatus (SCBA) may be required in some situations.

Provide adequate ventilation in warehouse or closed storage area.

## Section 9 - PHYSICAL AND CHEMICAL PROPERTIES

### APPEARANCE

Coloured almost odourless paste ; insoluble in water.

### PHYSICAL PROPERTIES

Does not mix with water.

Sinks in water.

Molecular Weight: Not Applicable

Melting Range (°C): Not Available

Solubility in water (g/L): Immiscible

pH (1% solution): Not Applicable

Volatile Component (%vol): Not Available

Relative Vapour Density (air=1): Not Available

Lower Explosive Limit (%): Not Available

Boiling Range (°C): Not Available

Specific Gravity (water= 1): 1.7

pH (as supplied): Not Applicable

Vapour Pressure (kPa): Not Available

Evaporation Rate: Not Available

Flash Point (°C): Not Available

Upper Explosive Limit (%): Not Available

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## Section 9 - PHYSICAL AND CHEMICAL PROPERTIES

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Autoignition Temp (°C): Not Available  
State: Non Slump Paste

Decomposition Temp (°C): Not Available  
Viscosity: Not Available

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## Section 10 - CHEMICAL STABILITY AND REACTIVITY INFORMATION

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### CONDITIONS CONTRIBUTING TO INSTABILITY

Product is considered stable and hazardous polymerisation will not occur.

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## Section 11 - TOXICOLOGICAL INFORMATION

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### POTENTIAL HEALTH EFFECTS

#### ACUTE HEALTH EFFECTS

##### SWALLOWED

The material has NOT been classified by EC Directives or other classification systems as "harmful by ingestion". This is because of the lack of corroborating animal or human evidence. 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 concern.

##### EYE

The material may be irritating to the eye, with prolonged contact causing inflammation. Repeated or prolonged exposure to irritants may produce conjunctivitis.

##### SKIN

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. The material may cause skin irritation after prolonged or repeated exposure and may produce a contact dermatitis (nonallergic). This form of dermatitis is often characterised by skin redness (erythema) and swelling epidermis. Histologically there may be intercellular oedema of the spongy layer (spongiosis) and intracellular oedema of the epidermis.

##### INHALED

Inhalation of vapours may cause drowsiness and dizziness. This may be accompanied by narcosis, reduced alertness, loss of reflexes, lack of coordination and vertigo. Limited evidence or practical experience suggests that the material may produce irritation of the respiratory system, in a significant number of individuals, following inhalation. In contrast to most organs, the lung is able to respond to a chemical insult by first removing or neutralising the irritant and then repairing the damage. The repair process, which initially evolved to protect mammalian lungs from foreign matter and antigens, may however, produce further lung damage resulting in the impairment of gas exchange, the primary function of the lungs. Respiratory tract irritation often results in an inflammatory response involving the recruitment and activation of many cell types, mainly derived from the vascular system.

##### CHRONIC HEALTH EFFECTS

Limited evidence suggests that repeated or long-term occupational exposure may produce cumulative health effects involving organs or biochemical systems. On the basis, primarily, of animal experiments, concern has been expressed by at least

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## Section 11 - TOXICOLOGICAL INFORMATION

one classification body that the material may produce carcinogenic or mutagenic effects; in respect of the available information, however, there presently exists inadequate data for making a satisfactory assessment.

Clinical symptoms and signs of intoxication following occupational exposure to pyridine, its homologues and derivatives include gastrointestinal disturbance with diarrhoea, abdominal pain and nausea, weakness, headache, insomnia and nervousness. Exposures less than those which produce overt clinical signs may produce varying levels of liver damage with central lobular fatty degeneration, congestion and cellular infiltration; repeated low level exposures may produce cirrhosis. The kidney is less sensitive to pyridine-induced damage than is the liver. Pyridine, like primidone, phenobarbitol and oxazepam induces liver neoplasms in mice, but not in rats, even though in rats these chemicals cause a spectrum of toxic liver lesions. The mouse, an animal with a high background rate of liver neoplasms, is particularly sensitive to the development of malignant liver neoplasms following chemical exposure. There is equivocal evidence (1) that pyridine is carcinogenic in male F344/N rats (based on an increased incidence of renal tubule neoplasms), in female rats of the same species (based on increases in mononuclear cell leukaemia), in male Wistar rats (based on an increased incidence of mono-nuclear cell leukaemia), and clear evidence of carcinogenicity (1) in male and female B6C3F1 mice (based on increased incidences of malignant hepatocellular neoplasms). 1: National Toxicology Program Technical Report Series No. 470, March 2000.

### TOXICITY AND IRRITATION

Not available. Refer to individual constituents.

#### TRIMETHOXYVINYL SILANE:

##### TOXICITY

Oral (rat) LD50: 10920 mg/kg

Dermal (rabbit) LD50: 3423 mg/kg

Manufacturers Data:

Oral (rat) LD50: 7100 mg/kg

Dermal (rabbit) LD50: 3540 mg/kg

Inhalation (rat) LC50: 17 mg/l/4 hours [OSI]

##### IRRITATION

Skin (rabbit): 500 mg/24h Mild

Eye (rabbit): 500 mg/24h Mild

Skin (rabbit): 500 mg/24h - Mild

Eye (rabbit): 500 mg/24h - Mild

#### BIS(2,2,6,6-TETRAMETHYL-4-PIPERIDINYL)SEBACATE:

##### TOXICITY

Oral (rat) LD50: 3700 mg/kg

Dermal (rabbit) LD50: >3100 mg/kg

Inhalation (rat) LCLo: 0.96 mg/L

##### IRRITATION

Skin (rabbit): Irritant

Eye (rabbit): SEVERE

Skin sensitisation: Negative

[Ciba-Geigy]

#### DIBUTYL TIN BIS(ACETYLACETONATE):

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. Key criteria for the diagnosis of RADS include the absence of preceding respiratory disease, in a non-atopic individual, with abrupt onset of persistent asthma-like symptoms within minutes to hours of a documented exposure to the irritant. A reversible airflow pattern, on spirometry, with the presence of moderate to severe bronchial hyperreactivity on methacholine challenge testing and the lack of minimal lymphocytic inflammation, without eosinophilia, have also been included in the criteria for diagnosis of RADS. RADS (or asthma) following an irritating inhalation is an infrequent disorder with rates related to the concentration of and duration of exposure to the irritating substance. Industrial bronchitis, on the other hand, is a disorder that occurs as result of exposure due to high concentrations of irritating substance (often particulate in nature) and is completely reversible after exposure ceases. The disorder is characterised by dyspnea, cough and mucus production.

The material may produce moderate eye irritation leading to inflammation. Repeated or prolonged exposure to irritants may produce conjunctivitis.

The material may produce severe skin irritation after prolonged or repeated exposure, and

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may produce a contact dermatitis (nonallergic). This form of dermatitis is often characterised by skin redness (erythema) thickening of the epidermis.

Histologically there may be intercellular oedema of the spongy layer (spongiosis) and intracellular oedema of the epidermis. Prolonged contact is unlikely, given the severity of response, but repeated exposures may produce severe ulceration.

No significant acute toxicological data identified in literature search.

## Section 12 - ECOLOGICAL INFORMATION

DO NOT discharge into sewer or waterways.

Refer to data for ingredients, which follows:

### TRIMETHOXYVINYL SILANE:

Alkoxysilanes are highly toxic to algae and moderately toxic to aquatic invertebrates.

e.g. the daphnid 48 hour LC50 for dimethyldiethoxysilane is 1.25 mg/l, and the 15-day algal EC50 for a number of alkoxysilanes is approximately 10 mg/l. Alkoxysilanes are used as coupling agents and are designed to hydrolyse.

### BIS(2,2,6,6-TETRAMETHYL-4-PIPERIDINYL)SEBACATE:

Do NOT allow product to come in contact with surface waters or to intertidal areas below the mean high water mark. Do not contaminate water when cleaning equipment or disposing of equipment wash-waters.

Wastes resulting from use of the product must be disposed of on site or at approved waste sites.

DO NOT discharge into sewer or waterways.

Partially but not readily biodegradable.

Fish LC50 (96 h): 7.9 mg/l

Daphnia EC50 (24 h): 20 mg/l

Bacterial EC50 >100 mg/l

### DIBUTYLTIN BIS(ACETYLACETONATE):

Organotin compounds are characterized by a Sn<sup>4+</sup> ion to which one to four organic ligands are attached. They are classified according to the type of organic ligand and the most common are butyltins, octyltins and phenyltins.

A large number of organotin substances are used in the society, and some of these are well-known environmental pollutants. Ecotoxicity increases dramatically in the order MBT < DBT < TBT for certain endpoints.

The use of tributyltin (TBT) in antifouling paints on ships has caused significant harm to the marine environment worldwide. Female molluscs are masculinized by TBT at levels as low as ca 1 ng/l, and this effect has severe consequences for their ability to reproduce.

Most investigations on the environmental occurrence of organotin substances have focused on TBT. However, other substances such as dibutyltin (DBT), dioctyltin and monobutyltin (MBT) are used in the society for other reasons and are found in other applications.

Most industrial organotin chemicals (OTCs) are composed of an organotin cation and one or several ligands, and most of these chemicals are reconverted to the organotin cation compounds in natural waters. The cation may form dissolved complexes with e.g. chloride in seawater.

Therefore, their environmental partitioning properties such as K<sub>d</sub> and K<sub>h</sub> depend in part on

the balancing anion in the environment. Hydrophobicity increases with increasing number of

alkyl groups, and with increasing length of the alkyl chain. Organotins are moderately hydrophobic and associate strongly to particles in natural waters. In harbour sediments, log K<sub>d</sub> in the range 3-4.3 have been measured for various OTCs, and the particle affinity increased in the order MBT < DBT < TBT. In various soils, however, the reverse pattern of K<sub>d</sub> was observed. In organic soils, log K<sub>d</sub> exceeded 4.0, whereas adsorption was less

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Section 12 - ECOLOGICAL INFORMATION

strong in mineral soils. In contrast to hydrophobic pollutants such as PCBs or PAHs (that partition to lipids in organic matter), OTCs are adsorbed to the functional groups of organic matter, e.g. phenolic and carboxylic groups

Because organotins are generally cations, long-range atmospheric transport has generally not been considered as important. It has though been demonstrated that TBT forms highly volatile chloride species in seawater One study has actually demonstrated the presence of organotins in air from rural sites, showing that long-range atmospheric transport of butyltins and octyltins do occur. MBT was the major species in precipitation and deposition. TBT mainly occurred in the gas phase and it is speculated that the source of butyltins may have been volatile TBT species. Subsequent dealkylation in the atmosphere may convert TBT to DBT and MBT.

Organotins are progressively dealkylated in nature, for instance:

TBT-> DBT -> MBT->. Sn4+

Dealkylation proceeds both by photolysis and through enzymatical reactions. This is important to consider when monitoring data are evaluated, since the occurrence of, e.g., DBT may be due to direct release of DBT or to release of TBT that is subsequently dealkylated. Half-lives in soils and sediments are commonly one or a few years, but may be longer under reducing conditions, whereas half-lives in natural waters may range from a few days to several weeks.

Organotin compounds have been detected in various marine organisms, from evertbrates to mammals. In fish and marine mammals, TBT and TPT bioaccumulate more strongly in liver than in muscle. Bioaccumulation is often stronger in bivalves than in fish, a consequence of lower metabolic capacity in bivalves Trisubstituted OTCs are more strongly bioaccumulated than the less lipophilic disubstituted OTCs. Because TBT is dealkylated in many organisms, DBT may be a major species in biota but not necessarily the organotin species that was assimilated. Most studies do not suggest that TBT is biomagnified in aquatic food-chain. However, TPT appears to be biomagnified fairly strongly in the aquatic food chain The trisubstituted substances, TPT and in particular TBT, are widely held as the most toxic organotin substances. Numerous field studies have demonstrated a direct link between TBT and imposex in certain marine organisms, mainly molluscs. Imposex means that females are masculinized and this effect is severe because it directly influences the ability for organisms to reproduce. Imposex has been demonstrated in many coastal areas. These effects occur at very low levels (ca 1 ng/l) for certain organisms. It has been shown in laboratory that TBT causes masculinization also in fish. DBT and MBT does not cause imposex, but both TBT and DBT have negative effects on the reproductive system in mammals. In line with these facts, TBT and TPT were given the highest category in a European review of endocrine disrupting chemicals (BKH, 2000): "Evidence for endocrine disruption in living organisms". TBT was also classified as "Evidence of potential to cause endocrine disruption in humans".

DO NOT discharge into sewer or waterways.

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## Section 13 - DISPOSAL CONSIDERATIONS

- 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.

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## Section 14 - TRANSPORTATION INFORMATION

HAZCHEM: None

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

continued...

# POWERS POWERSTICK

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## Section 15 - REGULATORY INFORMATION

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**POISONS SCHEDULE:** None

### REGULATIONS

trimethoxyvinylsilane (CAS: 2768-02-7) is found on the following regulatory lists;  
Australia Inventory of Chemical Substances (AICS)  
OECD Representative List of High Production Volume (HPV) Chemicals

bis(2,2,6,6-tetramethyl-4-piperidinyl)sebacate (CAS: 52829-07-9) is found on the following regulatory lists;  
Australia Inventory of Chemical Substances (AICS)  
International Council of Chemical Associations (ICCA) - High Production Volume List  
OECD Representative List of High Production Volume (HPV) Chemicals

dibutyltin bis(acetylacetonate) (CAS: 22673-19-4) is found on the following regulatory lists;  
Australia Inventory of Chemical Substances (AICS)

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## Section 16 - OTHER INFORMATION

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### Denmark Advisory list for selfclassification of dangerous substances

Substance	CAS	Suggested codes
bis(2, 2, 6, 6- tetramethyl- 4- piperidinyl)sebacate	52829- 07- 9	N; R51/53

### EXPOSURE STANDARD FOR MIXTURES

"Worst Case" computer-aided prediction of spray/ mist or fume/ dust components and concentration:

Composite Exposure Standard for Mixture (TWA) :0.1 mg/m<sup>3</sup>.

Operations which produce a spray/mist or fume/dust, introduce particulates to the breathing zone.

If the breathing zone concentration of ANY of the components listed below is exceeded, "Worst Case" considerations deem the individual to be overexposed.

Component	Breathing Zone ppm	Breathing Zone mg/m <sup>3</sup>	Mixture Conc (%)
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Component	Breathing Zone (mg/m <sup>3</sup> )	Mixture Conc (%)
bis(2,2,6,6-tetramethyl-4-piperidi	0.1000	1.0

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