

# (-)-Isopinocampheylborane TMEDA complex

sc-252921



The Power is Question

Material Safety Data Sheet

Hazard Alert Code Key:

EXTREME

HIGH

MODERATE

LOW

## Section 1 - CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

### PRODUCT NAME

(-)-Isopinocampheylborane TMEDA complex

### STATEMENT OF HAZARDOUS NATURE

CONSIDERED A HAZARDOUS SUBSTANCE ACCORDING TO OSHA 29 CFR 1910.1200.

### NFPA



### SUPPLIER

Company: Santa Cruz Biotechnology, Inc.

Address:

2145 Delaware Ave

Santa Cruz, CA 95060

Telephone: 800.457.3801 or 831.457.3800

Emergency Tel: CHEMWATCH: From within the US and Canada:  
877-715-9305

Emergency Tel: From outside the US and Canada: +800 2436 2255  
(1-800-CHEMCALL) or call +613 9573 3112

### PRODUCT USE

Chiral hydroboration reagent. Derived from (+)-alpha-pinene.

### SYNONYMS

C26-H54-B2-N2, "N, N' -bis(monoisopinocampheylborane)-N, N, N' , N' -", tetramethylethylenediamine, "N, N' -bis(monoisopinocampheylborane)-N, N, N' , N' -", tetramethylethylenediamine, "R or S Alpine-Boramine", "R or S Alpine-Borane-TMEDA complex"

## Section 2 - HAZARDS IDENTIFICATION

### CANADIAN WHMIS SYMBOLS



### EMERGENCY OVERVIEW

#### RISK

Contact with water liberates extremely flammable gases.  
Irritating to eyes and skin.

### POTENTIAL HEALTH EFFECTS

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### ACUTE HEALTH EFFECTS

#### SWALLOWED

■ The material has NOT been classified 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 (death) rather than those producing morbidity (disease, ill-health). Gastrointestinal tract discomfort may produce nausea and vomiting. In an occupational setting however, unintentional ingestion is not thought to be cause for concern.

#### EYE

■ This material can cause eye irritation and damage in some persons.

#### SKIN

■ This material can cause inflammation of the skin oncontact in some persons.

■ The material may accentuate any pre-existing dermatitis condition.

■ Skin contact is not thought to have harmful health effects, however the material may still produce health damage following entry through wounds, lesions or abrasions.

#### INHALED

■ The material is not thought to produce adverse health effects or irritation of the respiratory tract (as classified using animal models). Nevertheless, good hygiene practice requires that exposure be kept to a minimum and that suitable control measures be used in an occupational setting.

■ 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.

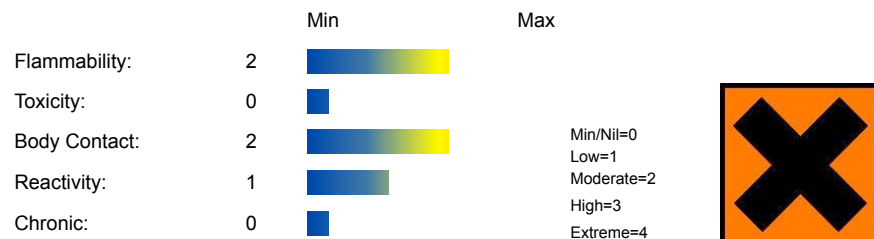
### CHRONIC HEALTH EFFECTS

■ Long-term exposure to the product is not thought to produce chronic effects adverse to the health (as classified using animal models); nevertheless exposure by all routes should be minimized as a matter of course.

Long term exposure to high dust concentrations may cause changes in lung function i.e. pneumoconiosis; caused by particles less than 0.5 micron penetrating and remaining in the lung. Prime symptom is breathlessness; lung shadows show on X-ray.

## Section 3 - COMPOSITION / INFORMATION ON INGREDIENTS

### HAZARD RATINGS



NAME	CAS RN	%
isopinocampheylborane TMEDA complex	67826-92-0	>98

## 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 Center 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.

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- 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 dust is inhaled, remove from contaminated area.
  - Encourage patient to blow nose to ensure clear passage of breathing.
  - If irritation or discomfort persists seek medical attention.

### NOTES TO PHYSICIAN

- Treat symptomatically.

for pentaborane(9) intoxication:

Pentaborane(9) forms a nonvolatile hydrolysis intermediate in the bloodstream of rats with the evolution of molecular hydrogen. Histidine seems to stabilize the intermediate and its disappearance seems to be enzymatically mediated. Hyperglycemia, apparently caused by the action of this intermediate, may result in nervous tissue disability and thus produces the CNS response noted in experimental intoxication. Pentaborane resembles decaborane in producing CNS problems. The toxicity of decaborane may involve inhibition of pyridoxal phosphate-requiring enzymes (three decarboxylases and one transaminase) which produce noradrenaline (norepinephrine), dopamine and serotonin in rat brain and histamine in several rat tissues. This is thought to be mediated by the non-enzymatic formation of B10H13<sup>-</sup> anion from decaborane which reduces phosphate. Methylene blue, a stable oxidizing agent, infused into rabbits, continuously for two days, produced a vastly improved survival rate in animals injected with potentially lethal doses of decaborane. An impressive feature of methylene blue therapy was the prevention of brain and heart noradrenaline depletion following decaborane intoxication. Respiratory stimulants (atropine), depressants (pentobarbital) and adrenal stimulatory agents (cortisone), did not appear to be effective in experimental diborane poisonings. Methylene blue therapies have had some success.

## Section 5 - FIRE FIGHTING MEASURES

Vapour Pressure (mmHG):	Not available.
Upper Explosive Limit (%):	Not available.
Specific Gravity (water=1):	Not available
Lower Explosive Limit (%):	Not available.

### EXTINGUISHING MEDIA

- DO NOT USE WATER, CO2 OR FOAM ON SUBSTANCE ITSELF

For SMALL FIRES:

- Dry chemical, soda ash or lime.

For LARGE FIRES:

- DRY sand, dry chemical, soda ash;
- OR withdraw and allow fire to burn itself out.

### FIRE FIGHTING

- - Alert Emergency Responders and tell them location and nature of hazard.
  - May be violently or explosively reactive.
  - Wear full protective clothing plus breathing apparatus.
  - Prevent, by any means available, spillage from entering drains or water course.
  - Consider evacuation (or protect in place)
  - DO NOT use water on fires.

CAUTION: If only water available, use flooding quantities of water or withdraw personnel.

- DO NOT allow water to enter containers.
- DO NOT approach containers suspected to be hot.
- Cool fire exposed containers with flooding quantities of water from a protected location until well after fire is out.
- If safe to do so, remove undamaged containers from path of fire.
- If fire gets out of control withdraw personnel and warn against entry.
- Equipment should be thoroughly decontaminated after use.

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- Fight fire from a protected position or use unmanned hose holders or monitor nozzles.
- Withdraw immediately in case of rising sound from venting safety devices or discolouration of tanks.
- ALWAYS stay away from tank ends.

### GENERAL FIRE HAZARDS/HAZARDOUS COMBUSTIBLE PRODUCTS

- 
- May ignite on contact with air, moist air or water.
- May react vigorously or explosively on contact with water.
- May decompose explosively when heated or involved in fire.
- May REIGNITE after fire is extinguished.
- Gases generated after contact with water or moist air may be poisonous, corrosive or irritating.
- Gases generated in fire may be poisonous, corrosive or irritating.
- Containers may explode on heating.
- Runoff may create multiple fire or explosion hazard.

Combustion products include:.

Decomposition may produce toxic fumes of: carbon monoxide (CO), carbon dioxide (CO<sub>2</sub>), nitrogen oxides (NO<sub>x</sub>), other pyrolysis products typical of burning organic material.

### FIRE INCOMPATIBILITY

- Avoid contamination with oxidizing agents i.e. nitrates, oxidizing acids, chlorine bleaches, pool chlorine etc. as ignition may result.
- Keep dry
- NOTE: May develop pressure in containers; open carefully. Vent periodically.

### PERSONAL PROTECTION

Glasses:

Chemical goggles.

Gloves:

Respirator:

Particulate

## Section 6 - ACCIDENTAL RELEASE MEASURES

### MINOR SPILLS

- 
- Material from spill may be contaminated with water resulting in generation of gas which subsequently may pressure closed containers.
- Hold spill material in vented containers only and plan for prompt disposal.
- Eliminate all ignition sources.
- Cover with DRY earth, sand or other non-combustible material.
- Then cover with plastic sheet to minimize spreading and to prevent exposure to rain or other sources of water.
- Use clean, non-sparking tools to collect absorbed material and place into loosely-covered metal or plastic containers ready for disposal.
- Wear gloves and safety glasses as appropriate.

### MAJOR SPILLS

- 
- Clear area of personnel and move upwind.
- Alert Emergency Responders and tell them location and nature of hazard.
- Eliminate all ignition sources (no smoking, flares, sparks or flames)
- Stop leak if safe to do so; prevent entry into waterways, drains or confined spaces.
- May be violently or explosively reactive.
- DO NOT walk through spilled material.
- Wear full protective clothing plus breathing apparatus.
- DO NOT touch damaged containers or spilled material unless wearing appropriate protective clothing.
- Water spray may be used to knock down vapors or divert vapor clouds; DO NOT allow water to enter container or come into contact with the material.
- Cover with DRY earth, sand, vermiculite or other non-combustible material.
- Then cover with plastic sheet to minimize spreading and to prevent exposure to rain or other sources of water.
- Use clean, non-sparking tools to collect absorbed material and place into loosely-covered metal or plastic containers ready for disposal.
- Alternately, the spill may be contained using DRY earth, sand, or vermiculite and then covered with a high boiling point mineral oil.
- Recover the liquid using non-sparking appliances and place in labeled, sealable container.
- Wash spill area with detergent and water and dike for later disposal.



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- 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 and before re-use
- Use good occupational work practice.
- Observe manufacturer's storing/handling recommendations.
- Atmosphere should be regularly checked against established exposure standards to ensure safe working conditions are maintained.

Empty containers may contain residual dust which has the potential to accumulate following settling. Such dusts may explode in the presence of an appropriate ignition source.

- Do NOT cut, drill, grind or weld such containers.
- In addition ensure such activity is not performed near full, partially empty or empty containers without appropriate workplace safety authorisation or permit.

### RECOMMENDED STORAGE METHODS

■ For low viscosity materials and solids: Drums and jerricans must be of the non-removable head type. Where a can is to be used as an inner package, the can must have a screwed enclosure. For materials with a viscosity of at least 2680 cSt. (23 deg. C):

- Removable head packaging and
- cans with friction closures may be used.

Where combination packages are used, there must be sufficient inert absorbent material to absorb completely any leakage that may occur, unless the outer packaging is a close fitting molded plastic box and the substances are not incompatible with the plastic. All combination packages for Packing group I and II must contain cushioning material.

### STORAGE REQUIREMENTS

■ KEEP DRY! Packages must be protected from water ingress.

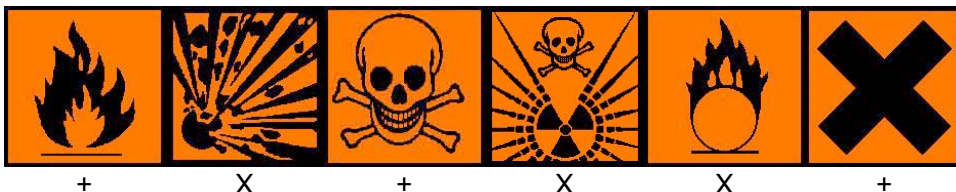
FOR MINOR QUANTITIES:

- Store in an indoor fireproof cabinet or in a room of noncombustible construction and
- provide adequate portable fire-extinguishers in or near the storage area.

FOR PACKAGE STORAGE:

- Store in original containers in approved flame-proof area.
- No smoking, naked lights, heat or ignition sources.
- DO NOT store in pits, depressions, basements or areas where vapors may be trapped.
- Keep containers securely sealed.
- Store away from incompatible materials in a cool, dry well ventilated area.
- Protect containers against physical damage and check regularly for leaks.
- Protect containers from exposure to weather and from direct sunlight unless: (a) the packages are of metal or plastic construction; (b) the packages are securely closed are not opened for any purpose while in the area where they are stored and (c) adequate precautions are taken to ensure that rain water, which might become contaminated by the dangerous goods, is collected and disposed of safely.
- Ensure proper stock-control measures are maintained to prevent prolonged storage of dangerous goods.
- Automatic fire-sprinklers MUST NOT be installed in room or space.
- The room or space must be located at least five meters from the boundaries of the premises and from other buildings unless separated by a wall with a fire resistance of at least four hours.
- Observe manufacturer's storing and handling recommendations.

### SAFE STORAGE WITH OTHER CLASSIFIED CHEMICALS



X: Must not be stored together

O: May be stored together with specific preventions

+: May be stored together

## Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

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## EXPOSURE CONTROLS

Source	Material	TWA ppm	TWA mg/m <sup>3</sup>	STEL ppm	STEL mg/m <sup>3</sup>	Peak ppm	Peak mg/m <sup>3</sup>	TWA F/CC	Notes
US - Oregon Permissible Exposure Limits (Z3)	isopinocampheylborane TMEDA complex (Inert or Nuisance Dust: (d) Total dust)		10						*
US OSHA Permissible Exposure Levels (PELs) - Table Z3	isopinocampheylborane TMEDA complex (Inert or Nuisance Dust: (d) Respirable fraction)		5						
US OSHA Permissible Exposure Levels (PELs) - Table Z3	isopinocampheylborane TMEDA complex (Inert or Nuisance Dust: (d) Total dust)		15						
US - Hawaii Air Contaminant Limits	isopinocampheylborane TMEDA complex (Particulates not other wise regulated - Total dust)		10						
US - Hawaii Air Contaminant Limits	isopinocampheylborane TMEDA complex (Particulates not other wise regulated - Respirable fraction)		5						
US - Oregon Permissible Exposure Limits (Z3)	isopinocampheylborane TMEDA complex (Inert or Nuisance Dust: (d) Respirable fraction)		5						*
Canada - Quebec Permissible Exposure Values for Airborne Contaminants (English)	isopinocampheylborane TMEDA complex (Particulates Not Otherwise Classified (PNOC))		10						
Canada - Prince Edward Island Occupational Exposure Limits	isopinocampheylborane TMEDA complex (Particles (Insoluble or Poorly Soluble) [NOS] Respirable particles)		3						See Appendix B current TLV/BEI Book
US ACGIH Threshold Limit Values (TLV)	isopinocampheylborane TMEDA complex (Particles (Insoluble or Poorly Soluble) [NOS] Inhalable particles)		10						See Appendix B current TLV/BEI Book
Canada - British Columbia Occupational Exposure Limits	isopinocampheylborane TMEDA complex (Particles (Insoluble or Poorly Soluble) Not Otherwise Classified (PNOC))		10 (N)						
US ACGIH Threshold Limit Values (TLV)	isopinocampheylborane TMEDA complex (Particles (Insoluble or Poorly Soluble) [NOS] Respirable particles)		3						See Appendix B current TLV/BEI Book
US - Washington Permissible exposure limits of air contaminants	isopinocampheylborane TMEDA complex (Particulates not otherwise regulated - Respirable fraction)		5		10				
US - Washington Permissible exposure limits of air contaminants	isopinocampheylborane TMEDA complex (Particulates not otherwise regulated - Total particulate)		10		20				
Canada - Nova Scotia Occupational Exposure Limits	isopinocampheylborane TMEDA complex (Particles (Insoluble or Poorly Soluble) [NOS] Inhalable particles)		10						See Appendix B current TLV/BEI Book
Canada - Prince Edward Island Occupational Exposure Limits	isopinocampheylborane TMEDA complex (Particles (Insoluble or Poorly Soluble) [NOS] Inhalable particles)		10						See Appendix B current TLV/BEI Book
Canada - Nova Scotia Occupational Exposure Limits	isopinocampheylborane TMEDA complex (Particles (Insoluble or Poorly Soluble) [NOS] Respirable particles)		3						See Appendix B current TLV/BEI Book

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US - Tennessee Occupational Exposure Limits - Limits For Air Contaminants	isopinocampheylborane TMEDA complex (Particulates not otherwise regulated Respirable fraction)	5		
US - Wyoming Toxic and Hazardous Substances Table Z1 Limits for Air Contaminants	isopinocampheylborane TMEDA complex (Particulates not otherwise regulated (PNOR)(f)- Respirable fraction)	5		
US - Michigan Exposure Limits for Air Contaminants	isopinocampheylborane TMEDA complex (Particulates not otherwise regulated, Respirable dust)	5		

## MATERIAL DATA

### ISOPINOCAMPHEYLBORANE TMEDA COMPLEX:

■ 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
- accclimate the worker to the irritant warning properties of these substances thus increasing the risk of overexposure.

## PERSONAL PROTECTION



Consult your EHS staff for recommendations

### EYE

- 
- Safety glasses with side shields.
- Chemical goggles.
- Contact lenses pose a special hazard; soft lenses may absorb irritants and all lenses concentrate them. DO NOT wear contact lenses.

### HANDS/FEET

■ Wear chemical protective gloves, eg. PVC.

Wear safety footwear or safety gumboots, eg. Rubber.

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

- frequency and duration of contact,
- chemical resistance of glove material,
- glove thickness and
- dexterity

Select gloves tested to a relevant standard (e.g. Europe EN 374, US F739).

- When prolonged or frequently repeated contact may occur, a glove with a protection class of 5 or higher (breakthrough time greater than 240 minutes according to EN 374) is recommended.
- When only brief contact is expected, a glove with a protection class of 3 or higher (breakthrough time greater than 60 minutes according

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to EN 374) is recommended.

- Contaminated gloves should be replaced.

Gloves must only be worn on clean hands. After using gloves, hands should be washed and dried thoroughly. Application of a non-perfumed moisturiser is recommended.

### OTHER

- Overalls.
- Eyewash unit.
- Barrier cream.
- Skin cleansing cream.
- Some plastic personal protective equipment (PPE) (e.g. gloves, aprons, overshoes) are not recommended as they may produce static electricity.
- For large scale or continuous use wear tight-weave non-static clothing (no metallic fasteners, cuffs or pockets), non sparking safety footwear.
- Respirators may be necessary when engineering and administrative controls do not adequately prevent exposures.
- The decision to use respiratory protection should be based on professional judgment that takes into account toxicity information, exposure measurement data, and frequency and likelihood of the worker's exposure - ensure users are not subject to high thermal loads which may result in heat stress or distress due to personal protective equipment (powered, positive flow, full face apparatus may be an option).
- Published occupational exposure limits, where they exist, will assist in determining the adequacy of the selected respiratory . These may be government mandated or vendor recommended.
- Certified respirators will be useful for protecting workers from inhalation of particulates when properly selected and fit tested as part of a complete respiratory protection program.
- Use approved positive flow mask if significant quantities of dust becomes airborne.
- Try to avoid creating dust conditions.

### RESPIRATOR

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

\* - Negative pressure demand \*\* - Continuous flow

Explanation of Respirator Codes:

Class 1 low to medium absorption capacity filters.

Class 2 medium absorption capacity filters.

Class 3 high absorption capacity filters.

PAPR Powered Air Purifying Respirator (positive pressure) cartridge.

Type A for use against certain organic gases and vapors.

Type AX for use against low boiling point organic compounds (less than 65°C).

Type B for use against certain inorganic gases and other acid gases and vapors.

Type E for use against sulfur dioxide and other acid gases and vapors.

Type K for use against ammonia and organic ammonia derivatives

Class P1 intended for use against mechanically generated particulates of sizes most commonly encountered in industry, e.g. asbestos, silica.

Class P2 intended for use against both mechanically and thermally generated particulates, e.g. metal fume.

Class P3 intended for use against all particulates containing highly toxic materials, e.g. beryllium.

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

Use appropriate NIOSH-certified respirator based on informed professional judgement. In conditions where no reasonable estimate of exposure can be made, assume the exposure is in a concentration IDLH and use NIOSH-certified full face pressure demand SCBA with a minimum service life of 30 minutes, or a combination full facepiece pressure demand SAR with auxiliary self-contained air supply. Respirators provided only for escape from IDLH atmospheres shall be NIOSH-certified for escape from the atmosphere in which they will be used.

### ENGINEERING CONTROLS

- For large scale or continuous use:
  - Spark-free, earthed ventilation system, venting directly to the outside and separate from usual ventilation systems
  - Provide dust collectors with explosion vents

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- 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:
  - particle dust respirators, if necessary, combined with an absorption cartridge;
  - filter respirators with absorption cartridge or canister of the right type;
  - 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 favorable 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 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 meters 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

### PHYSICAL PROPERTIES

Solid.

Does not mix with water.

State	Divided solid	Molecular Weight	416.36
Melting Range (°F)	289.4- 291.2	Viscosity	Not Applicable
Boiling Range (°F)	Not available	Solubility in water (g/L)	Immiscible
Flash Point (°F)	Not available	pH (1% solution)	Not applicable
Decomposition Temp (°F)	Not Available	pH (as supplied)	Not applicable
Autoignition Temp (°F)	Not available.	Vapour Pressure (mmHG)	Not available.
Upper Explosive Limit (%)	Not available.	Specific Gravity (water=1)	Not available
Lower Explosive Limit (%)	Not available.	Relative Vapor Density (air=1)	>1
Volatile Component (%vol)	Not available.	Evaporation Rate	Not available

### APPEARANCE

White crystalline solid; does not mix with water.

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## Section 10 - CHEMICAL STABILITY

### CONDITIONS CONTRIBUTING TO INSTABILITY

- 
- May heat spontaneously
- Identify and remove sources of ignition and heating.
- Incompatible material, especially oxidizers, and/or other sources of oxygen may produce unstable product(s).
- Avoid sources of water contamination (e.g. rain water, moisture, high humidity).
- Avoid contact with oxygenated solvents/ reagents such as alcohols.

### STORAGE INCOMPATIBILITY

- Avoid reaction with oxidizing agents.
- Keep dry
- NOTE: May develop pressure in containers; open carefully. Vent periodically.

For incompatible materials - refer to Section 7 - Handling and Storage.

## Section 11 - TOXICOLOGICAL INFORMATION

isopinocampheylborane TMEDA complex

### TOXICITY AND IRRITATION

- No significant acute toxicological data identified in literature search.

## Section 12 - ECOLOGICAL INFORMATION

Refer to data for ingredients, which follows:  
ISOPINOCAMPHEYLBORANE TMEDA COMPLEX:

## Section 13 - DISPOSAL CONSIDERATIONS

### US EPA Waste Number & Descriptions

A. General Product Information

Ignitability characteristic: use EPA hazardous waste number D001 (waste code I)

Reactivity characteristic: use EPA hazardous waste number D003 (waste code R).

### Disposal Instructions

All waste must be handled in accordance with local, state and federal regulations.

! Legislation addressing waste disposal requirements may differ by country, state and/ or territory. Each user must refer to laws operating in their area. In some areas, certain wastes must be tracked.

A Hierarchy of Controls seems to be common - the user should investigate:

- Reduction
- Reuse
- Recycling
- Disposal (if all else fails)

This material may be recycled if unused, or if it has not been contaminated so as to make it unsuitable for its intended use. Shelf life considerations should also be applied in making decisions of this type. Note that properties of a material may change in use, and recycling or reuse may not always be appropriate.

DO NOT allow wash water from cleaning equipment to enter drains. Collect all wash water for treatment before disposal.

- Recycle wherever possible.
- Consult manufacturer for recycling options or consult Waste Management Authority for disposal if no suitable treatment or disposal facility can be identified.
- Dispose of by: Burial in a licensed land-fill or Incineration in a licensed apparatus (after admixture with suitable combustible material)
- Decontaminate empty containers. Observe all label safeguards until containers are cleaned and destroyed.

for small quantities: Cautiously make a 5% solution in water, venting because of the vigorous evolution of hydrogen gas. Acidify to pH 1 by adding 1M sulfuric acid dropwise. Acidification also produces vigorous evolution of hydrogen gas. Stand overnight and evaporate to dryness. Dispose of residue to land-fill (subject to local regulation).

# (-)-Isopinocampheylborane TMEDA complex

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The Power is Question

## Material Safety Data Sheet

Hazard Alert Code Key: **EXTREME** **HIGH** **MODERATE** **LOW**

## Section 14 - TRANSPORTATION INFORMATION



DOT:

Symbols:	None	Hazard class or Division:	4.3
Identification Numbers:	UN3132	PG:	III
Label Codes:	4.3, 4.1	Special provisions:	IB6, T1, TP33
Packaging: Exceptions:	151	Packaging: Non-bulk:	213
Packaging: Exceptions:	151	Quantity limitations: Passenger aircraft/rail:	25 kg
Quantity Limitations: Cargo aircraft only:	100 kg	Vessel stowage: Location:	E
Vessel stowage: Other:	None		

Hazardous materials descriptions and proper shipping names:  
Water-reactive solid, flammable, n.o.s.

### Air Transport IATA:

ICAO/IATA Class:	4.3 (4.1)	ICAO/IATA Subrisk:	None
UN/ID Number:	3132	Packing Group:	III
Special provisions:	A3		

- Air transport may be forbidden if this material is flammable, corrosive or toxic gases may be released under normal conditions of transport.

Shipping Name: WATER-REACTIVE SOLID, FLAMMABLE, N.O.S. \*(CONTAINS ISOPINOCAMPEYLBORANE TMEDA COMPLEX)

### Maritime Transport IMDG:

Shipping Name: WATER-REACTIVE SOLID, FLAMMABLE, N.O.S. \*(CONTAINS ISOPINOCAMPEYLBORANE TMEDA COMPLEX)

## Section 15 - REGULATORY INFORMATION

isopinocampheylborane TMEDA complex (CAS: 67826-92-0,68297-74-5) is found on the following regulatory lists;

"US - Hawaii Air Contaminant Limits", "US - Oregon Permissible Exposure Limits (Z3)", "US OSHA Permissible Exposure Levels (PELs) - Table Z3"

## Section 16 - OTHER INFORMATION

### Ingredients with multiple CAS Nos

Ingredient Name	CAS
isopinocampheylborane TMEDA complex	67826-92-0, 68297-74-5

Reasonable care has been taken in the preparation of this information, but the author makes no warranty of merchantability or any other warranty, expressed or implied, with respect to this information. The author makes no

# (-)-Isopinocampheylborane TMEDA complex

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The Power is Question

## Material Safety Data Sheet

Hazard Alert Code Key: **EXTREME** **HIGH** **MODERATE** **LOW**

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■ Classification of the mixture and its individual components has drawn on official and authoritative sources as well as independent review by the Chemwatch Classification committee using available literature references.

A list of reference resources used to assist the committee may be found at:  
[www.chemwatch.net/references](http://www.chemwatch.net/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. Risks may be determined by reference to Exposures Scenarios. Scale of use, frequency of use and current or available engineering controls must be considered.

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