

2-Benzotriazole-2-yl-4,6-di-tert-butylphenol

sc-352212



The Power to Question

Material Safety Data Sheet

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

Section 1 - CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

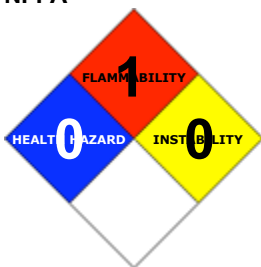
PRODUCT NAME

2-Benzotriazole-2-yl-4,6-di-tert-butylphenol

STATEMENT OF HAZARDOUS NATURE

CONSIDERED A HAZARDOUS SUBSTANCE ACCORDING TO OSHA 29 CFR 1910.1200.

NFPA



SUPPLIER

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EMERGENCY:

ChemWatch
Within the US & Canada: 877-715-9305
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(1-800-CHEMCALL) or call +613 9573 3112

SYNONYMS

C20-H25-N3-O, "phenol, 2-(2H-benzotriazol-2-yl)-4, 6-bis(1, 1-dimethylethyl)-", "2-(2'-hydroxy-3', 5' -di-tert-butylphenyl)benzotriazole", "2-(2H-benzotriazol-2-yl)-4, 6-di-tert-butylphenol 2-(3, 5-di-tert-, butyl-2-hydroxyphenyl)-2H-benzotriazole, UV-320, "Tinuvin 320", "Irganox 1076"

Section 2 - HAZARDS IDENTIFICATION

CHEMWATCH HAZARD RATINGS

	Min	Max
Flammability:	1	
Toxicity:	2	
Body Contact:	0	
Reactivity:	1	
Chronic:	2	

Min/Nil=0
Low=1
Moderate=2
High=3
Extreme=4



CANADIAN WHMIS SYMBOLS



EMERGENCY OVERVIEW

RISK

Harmful: danger of serious damage to health by prolonged exposure if swallowed.

Toxic to soil organisms.

May cause long-term adverse effects in the environment.

Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

POTENTIAL HEALTH EFFECTS

ACUTE HEALTH EFFECTS

SWALLOWED

- Accidental ingestion of the material may be damaging to the health of the individual.

EYE

- Although the material is not thought to be an irritant, direct contact with the eye may cause transient discomfort characterized by tearing or conjunctival redness (as with windburn).

Slight abrasive damage may also result.

SKIN

- The material is not thought to produce adverse health effects or skin irritation following contact (as classified 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.

- Open cuts, abraded or irritated skin should not be exposed to this material.

- Entry into the blood-stream, through, for example, cuts, abrasions or lesions, may produce systemic injury with harmful effects.

Examine the skin prior to the use of the material and ensure that any external damage is suitably protected.

INHALED

- The material is not thought to produce either adverse health effects or irritation of the respiratory tract following inhalation (as classified using animal models).

Nevertheless, adverse effects have been produced following exposure of animals by at least one other route and 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

- Harmful: danger of serious damage to health by prolonged exposure if swallowed.

This material can cause serious damage if one is exposed to it for long periods. It can be assumed that it contains a substance which can produce severe defects.

There has been some concern that this material can cause cancer or mutations but there is not enough data to make an assessment.

Speculative discussion surrounds the use of sunscreens and a possible rise in the incidence of melanoma. One mechanism proposed involves the development of free radicals following UVB absorption by the chemical agent; free radicals are potentially damaging to DNA. A further mechanism involves the inhibition of Vitamin D production; low levels of Vitamin D have been associated with an increased risk of the development of breast and colon cancer and may also accelerate the growth of melanoma.

Section 3 - COMPOSITION / INFORMATION ON INGREDIENTS

NAME	CAS RN	%
2-benzotriazol-2-yl-4,6-di-tert-butylphenol	3846-71-7	>98

Section 4 - FIRST AID MEASURES

SWALLOWED

· If swallowed do NOT induce vomiting. · If vomiting occurs, lean patient forward or place on left side (head-down position, if possible) to maintain open airway and prevent aspiration.

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.

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. · Other measures are usually unnecessary.

NOTES TO PHYSICIAN

- Treat symptomatically.

Section 5 - FIRE FIGHTING MEASURES

Vapor Pressure (mmHg):	54.004 E-9
Upper Explosive Limit (%):	Not Available
Specific Gravity (water=1):	1.18 (20 C)
Lower Explosive Limit (%):	Not Available

EXTINGUISHING MEDIA

- Foam.
- Dry chemical powder.

FIRE FIGHTING

- Alert Emergency Responders and tell them location and nature of hazard.
- Wear breathing apparatus plus protective gloves.

When any large container (including road and rail tankers) is involved in a fire, consider evacuation by 100 metres in all directions.

GENERAL FIRE HAZARDS/HAZARDOUS COMBUSTIBLE PRODUCTS

- Combustible solid which burns but propagates flame with difficulty.
 - Avoid generating dust, particularly clouds of dust in a confined or unventilated space as dusts may form an explosive mixture with air, and any source of ignition, i.e. flame or spark, will cause fire or explosion. Dust clouds generated by the fine grinding of the solid are a particular hazard; accumulations of fine dust may burn rapidly and fiercely if ignited.
- Combustion products include: carbon monoxide (CO), carbon dioxide (CO₂), nitrogen oxides (NO_x), 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.

PERSONAL PROTECTION

Glasses:
Chemical goggles.
Gloves:
Respirator:
Particulate

Section 6 - ACCIDENTAL RELEASE MEASURES

MINOR SPILLS

- Environmental hazard - contain spillage.
- Remove all ignition sources.
- Clean up all spills immediately.
- Avoid contact with skin and eyes.
- Control personal contact by using protective equipment.
- Use dry clean up procedures and avoid generating dust.
- Place in a suitable, labelled container for waste disposal.

MAJOR SPILLS

- Environmental hazard - contain spillage.
- Moderate hazard.
- CAUTION: Advise personnel in area.
 - Alert Emergency Responders and tell them location and nature of hazard.

Section 7 - HANDLING AND STORAGE

PROCEDURE FOR HANDLING

- Avoid all personal contact, including inhalation.
 - Wear protective clothing when risk of exposure occurs.
- 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

- Polyethylene or polypropylene container.
- Check all containers are clearly labelled and free from leaks.

STORAGE REQUIREMENTS

- Observe manufacturer's storing and handling recommendations.

Section 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

EXPOSURE CONTROLS

The following materials had no OELs on our records

- 2-benzotriazol-2-yl-4,6-di-tert-butylphenol: CAS:3846-71-7

PERSONAL PROTECTION



RESPIRATOR

- particulate.

EYE

- Safety glasses with side shields
- Chemical goggles.

HANDS/FEET

- 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 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.

Wear chemical protective gloves, eg. PVC.

OTHER

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

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.

Section 9 - PHYSICAL AND CHEMICAL PROPERTIES

PHYSICAL PROPERTIES

State	Divided Solid	Molecular Weight	323.437
Melting Range (°F)	306- 311	Viscosity	Not Applicable
Boiling Range (°F)	>662	Solubility in water (g/L)	Partly Miscible
Flash Point (°F)	419 (DIN 51584)	pH (1% solution)	6.2 (suspension)
Decomposition Temp (°F)	>662	pH (as supplied)	Not Applicable

Autoignition Temp (°F)	770	Vapor Pressure (mmHg)	54.004 E-9
Upper Explosive Limit (%)	Not Available	Specific Gravity (water=1)	1.18 (20 C)
Lower Explosive Limit (%)	Not Available	Relative Vapor Density (air=1)	Not Applicable
Volatile Component (%vol)	Negligible	Evaporation Rate	Not Applicable

APPEARANCE

Yellow solid; does not mix well with water.

Section 10 - CHEMICAL STABILITY

CONDITIONS CONTRIBUTING TO INSTABILITY

- Presence of incompatible materials.
- Product is considered stable.

STORAGE INCOMPATIBILITY

- Avoid reaction with oxidizing agents.

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

Section 11 - TOXICOLOGICAL INFORMATION

2-benzotriazol-2-yl-4,6-di-tert-butylphenol

TOXICITY AND IRRITATION

2-BENZOTRIAZOL-2-YL-4,6-DI-TERT-BUTYLPHENOL:

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

TOXICITY	IRRITATION
Oral (Rat) LD50: >2000 mg/kg *	Skin : Not irritating
	Eye : Not irritating

A single dose oral toxicity test of 2-(2'-hydroxy-3',5'-di-tert-butylphenyl)benzotriazole was conducted at doses of 0 and 2000 mg/kg using male and female rats. No deaths were observed in the 0 or 2000 mg/kg groups in either sex, pointing to an LD50 value higher than 2000 mg/kg in both sexes.

A repeated dose toxicity test was conducted at doses of 0, 0.5, 2.5, 12.5 and 62.5 mg/kg/day using male and female rats. No deaths of either sex were observed in any of the treatment groups.

The hematocrit value, hemoglobin concentration, and red blood cell count were lowered in males of the 2.5 mg/kg or higher dose groups. The MCHC was lowered in males of the 12.5 and 62.5 mg/kg groups and the fibrinogen concentration was reduced in males of the 2.5 mg/kg or higher dose groups and in females of the 62.5 mg/kg group.

The serum level of glucose was higher in males of the 2.5 mg/kg or higher dose groups and in females of the 62.5 mg/kg group. The total cholesterol and triglyceride levels were elevated in females of the 62.5 mg/kg group.

The liver weights were increased in males of the 0.5 mg/kg or higher dose groups and in females receiving 12.5 mg/kg or higher. The kidney weights were elevated in males of the 62.5 mg/kg group.

Macroscopically, enlarged livers with white patch zones were observed. Histopathologically, the following were noted: degeneration of the myocardium, with cellular infiltration and hypertrophy, extramedullary hematopoiesis of the spleen, vacuolar degeneration, hypertrophy of hepatocytes, increase in mitosis, proliferation of bile ducts and focal necrosis in the liver, basophilic tubules and dilatation of tubules, hypertrophy of tubular epithelium of collecting tubules in the kidney, and follicular cell hyperplasia in the thyroid gland.

These changes were observed in all the treated groups except females dosed 0.5 mg/kg.

The NOEL for repeated dose toxicity is considered to be less than 0.5 mg/kg/day for males and 2.5 mg/kg/day for females.

Genotoxicity of 2-(2'-hydroxy-3',5'-di-tert-butylphenyl)benzotriazole was studied by a reverse mutation test in bacteria. This substance was not mutagenic in *Salmonella typhimurium* TA100, TA1535, TA98, TA1537 or *Escherichia coli* WP2 uvrA, with or without an exogenous metabolic activation system.

Genotoxicity of 2-(2'-hydroxy-3',5'-di-tert-butylphenyl)benzotriazole was studied by chromosomal aberration test in cultured Chinese hamster lung (CHL/IU) cells.

2-(2'-Hydroxy-3',5'-di-tert-butylphenyl)benzotriazole did not induce structural chromosomal aberrations or polyploidy up to 3.2 mg/mL (10 mmol/L) under the present test conditions.

CARCINOGEN

PBIT_(PERS~	US - Maine Chemicals of High Concern List	Carcinogen
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Section 12 - ECOLOGICAL INFORMATION

May cause long-term adverse effects in the environment.

Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

Toxic to soil organisms.
 This material and its container must be disposed of as hazardous waste.
 Avoid release to the environment.
 Refer to special instructions/ safety data sheets.

Ecotoxicity

Ingredient	Persistence: Water/Soil	Persistence: Air	Bioaccumulation	Mobility
2-benzotriazol-2-yl-4,6-di-tert-butylphenol	HIGH	No Data Available	MED	LOW

Section 13 - DISPOSAL CONSIDERATIONS

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.

Section 14 - TRANSPORTATION INFORMATION



DOT:

Symbols: G Hazard class or Division: 9
 Identification Numbers: UN3077 PG: III
 Label Codes: 9 Special provisions: 8, 146, 335, B54, IB8, IP3, N20, T1, TP33

Packaging: Exceptions: 155 Packaging: Non- bulk: 213
 Packaging: Exceptions: 155 Quantity limitations: No limit
 Passenger aircraft/rail:

Quantity Limitations: Cargo No limit Vessel stowage: Location: A aircraft only:

Vessel stowage: Other: None

Hazardous materials descriptions and proper shipping names:
 Environmentally hazardous substance, solid, n.o.s

Air Transport IATA:

UN/ID Number: 3077 Packing Group: III
 Special provisions: A97

Cargo Only

Packing Instructions: 400 kg Maximum Qty/Pack: 956

Passenger and Cargo Passenger and Cargo

Packing Instructions: 400 kg Maximum Qty/Pack: 956

Passenger and Cargo Limited Quantity Passenger and Cargo Limited Quantity

Packing Instructions: 30 kg G Maximum Qty/Pack: Y956

Shipping Name: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID,

N.O.S. *(CONTAINS 2-BENZOTRIAZOL-2-YL-4,6-DI-TERT-BUTYLPHENOL)

Maritime Transport IMDG:

IMDG Class: 9 IMDG Subrisk: None

UN Number: 3077 Packing Group: III

EMS Number: F-A , S-F Special provisions: 179 274 335 909

Limited Quantities: 5 kg Marine Pollutant: Yes

Shipping Name: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S.(contains 2-benzotriazol-2-yl-4,6-di-tert-butylphenol)

Section 15 - REGULATORY INFORMATION

2-benzotriazol-2-yl-4,6-di-tert-butylphenol (CAS: 3846-71-7) is found on the following regulatory lists;

"Canada Domestic Substances List (DSL)", "OSPAR List of Substances of Possible Concern", "US - Maine Chemicals of High Concern List", "US Toxic Substances Control Act (TSCA) - Chemical Substance Inventory"

Section 16 - OTHER INFORMATION

LIMITED EVIDENCE

- Ingestion may produce health damage*.
- Limited evidence of a carcinogenic effect*.

* (limited evidence).

Denmark Advisory list for selfclassification of dangerous substances

Substance CAS Suggested codes 2- benzotriazol- 2- yl- 4, 6- di- tert- 3846- 71- 7 Xi; R38 butylphenol

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- Classification of the preparation 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.

- 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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