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THE POWER OF THREE³
PHARMCO-AAPER
AND COMMERCIAL ALCOHOLS

Product Information (203) 740-3471 / Emergency Assistance CHEMTREC 1-800-424-9300

MATERIAL SAFETY DATA SHEETS

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PRODUCT IDENTIFICATION

PRODUCT NAME: DENATONIUM BENZOATE

MATERIAL SAFETY DATA SHEET

IDENTIFICATION OF THE SUBSTANCE

Name of product DENATONIUM BENZOATE
Application Bittering agent and Denaturant.
COMPOSITION/INFORMATION ON INGREDIENTS

CHEMICAL DESCRIPTION

Denatonium Benzoate > 99.5%
Formula: C₂₁ H₂₉ N₂ O₇ H₅ O₂
White granules with an extremely bitter taste.

HAZARDOUS INGREDIENTS

Name of Substance: Denatonium Benzoate (Bitrex)
CAS Number: 373433-6
Classification for Supply: Xn
Risk Phrases: 20/22.
Safety Phrases: 36/37, 46.

HAZARDS IDENTIFICATION

Harmful if ingested in large amounts but see toxicological information.

FIRST AID MEASURES

EYE CONTACT

Flush with plenty of gently flowing clean water for at least 15 minutes.
Keep eyelids wide open and apart.
Obtain medical attention if eyes are irritated.

SKIN CONTACT

Remove contaminated clothing.
Wash affected areas with plenty of soap and water preferably under a shower.
Thoroughly wash contaminated clothing.
Obtain medical attention if the skin is irritated or if any symptoms develop.

INHALATION

Remove from exposure.

INHALATION

Obtain medical attention if any symptoms occur.

INGESTION

Wash out mouth. Give plenty of clean water to drink.

Obtain medical attention if large quantities have been ingested or if you feel unwell.

Never attempt to give anything by mouth to a semi-conscious or unconscious person.

FIRE FIGHTING MEASURES

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Fireproof overalls/suit boots and gloves should be worn with self contained breathing apparatus.

FIRE FIGHTING

This product does not pose a particular fire hazard.

Products of decomposition may include Nitrogen Oxides.

EXTINGUISHING MEDIA

Water spray or dry chemical powder or Carbon Dioxide or foam fire extinguishers should be used.

ACCIDENTAL RELEASE MEASURES

SPILLAGE

A spill of Bitrex powder or granules should be dealt with in such a way that any Bitrex particles (either in water droplets or as dust after the water has evaporated) are prevented from being spread in the air and thus causing the unpleasant taste.

Steps to be taken:

1. Try to minimise air flows which might spread dust around. Switch off extraction systems. Please ensure that this does not create hazards in any area.
2. Wear disposable gloves and possibly disposable overalls. Carefully collect the spill and put it in a sealable container.
3. After as much as possible has been collected the area should be washed using a soft spray of water. Do not use a vacuum cleaner to suck up the water but allow it to drain.

Refer to information provided in Disposal section.

SPILLAGE PPE

Wear an airhood or approved respirator, disposable overalls, boots and rubber gloves.

STORAGE AND HANDLING

HANDLING

Whilst handling manually avoid contact with the skin, eyes and clothing.

HANDLING

Wash hands and arms thoroughly after handling.

Handle using techniques which minimise the risk of raising dust.

STORAGE

This material should be kept in clearly labelled airtight containers and stored in a dry area.

Store in a well ventilated area

EXPOSURE CONTROLS/PERSONAL PROTECTION

OCCUPATIONAL EXPOSURE LIMITS

TWA (8 hr) 0.1 mg/m³ (In-house).

ENGINEERING MEASURES

This product should preferably be used in enclosed plant fitted with suitable extraction ventilation. PERSONAL PROTECTIVE EQUIPMENT

RESPIRATORY PROTECTION

Where only small quantities are being handled an airhood or suitable dust mask should be worn.

If dust concentrations are high an airhood or airtight suit are recommended.

HAND PROTECTION Rubber or plastic gloves and sleeving.

EYE PROTECTION

Safety spectacles with side shields

As respiratory protection H concentrations are high.

SKIN PROTECTION

Disposable overalls (dusts and powders)

PHYSICAL/CHEMICAL PROPERTIES Appearance white granules with an extremely bitter taste.

Odour Odourless. pH 6.5 to 7.5.

Boiling point N/A Melting point 163-170 degrees Celsius.

Flash point N/A

Flammability N/A

Auto-flammability N/A

Explosive properties N/A

Oxidising properties

Vapour pressure

Relative density
Solubility in water 1:20 (4.5gm per 100ml at 20 degrees Celsius)
Solubility in fat
Solubility in solvent Soluble in most polar solvents.
Partition coefficient Pow = 0.9 (octanol/water)

Other Data

STABILITY AND REACTIVITY

Stability

Bitrex is heat stable upto 140 degrees Centigrade.

Conditions to avoid

None known.

Materials to avoid

Certain strong oxidising agents such as Sodium Hypochlorite and Hydrogen Peroxide.

Decomposition products

Nitrogen oxides are formed when Bitrex decomposes on heating or when involved in a fire.

TOXICOLOGICAL INFORMATION

Toxicity Data:

Oral LD50 (Female Rat) = 584 mg/kg

Oral LD50 (Male Rat) = 640 mg/kg.

Dermal LD50 (Rat) > 2000 mg/kg.

Short term effects:

Bitrex is perhaps the most bitter substance known to man (1:500,000). The taste of it engenders an immediate desire to cleanse the mouth of any trace of the material. It is therefore considered that the risk to humans is much lower than might be expected by basing the risk solely on the rat oral toxicity data.

There has only been one report of any toxic effect in man; which involved contact urticaria and asthma. People who are allergic to Lignocaine or some similar local anaesthetics may also react to Bitrex and should therefore avoid contact with the material. It has a low skin sensitising potential and may be mildly irritating to the skin.

Long term effects:

Tests on the mutagenicity of Bitrex were all negative (upto 5000mg per plate on the Ames test, upto 1000 mg/ml in the fluctuation test and the yeast gene conversion assay upto 5000 mg/ml. Results were negative in the mouse micronucleus test. No reproductive or carcinogenic effects have been reported.

ECOLOGICAL INFORMATION

Assessment

Bitrex does not bio-accumulate.

Ecotoxicity data

LC50 Rainbow Trout >1000 mg/l 96 hrs in fresh water.

LC50 Shrimp =400 mg/l 96 hrs salt water.

DISPOSAL CONSIDERATIONS

Disposal must conform to relevant legislation.

This material should be incinerated in a licenced facility.

TRANSPORT INFORMATION

UN Number 2811

EEC Regulations EINECS NUMBER:2230952. CUS NO:34421. TARIFF NO:29243000.

IATA/ICAO Non hazardous in transit.

Packaging 5g to 5kg packs.

REGULATORY INFORMATION

CLASSIFICATION OF SUBSTANCE FOR SUPPLY

Xn; Harmful (St Andrew's Cross)

RISK PHRASES

R20/22: Harmful by inhalation and if swallowed.

SAFETY PHRASES

S36/37: Wear suitable protective clothing and gloves.

S46: If swallowed seek medical advice immediately and show this container or label.

CLASSIFICATION OF SUBSTANCE FOR CARRIAGE

Non-hazardous for carriage.

OTHER INFORMATION

MISCELLANEOUS

The information contained herein is based on data considered to be accurate based on the material as packaged. However, no warranty is expressed regarding the accuracy of these data or the results to be obtained from the use thereof. If this product is combined with other materials, deteriorates, or becomes contaminated, it may pose hazards not mentioned in this MSDS. It is the user's obligation to determine the conditions of safe use of the product. While this MSDS is based on technical data judged to be reliable, PHARMCO-AAPER

assumes not responsibility for the completeness or accuracy of the information contained herein.