SI Group

SAFETY DATA SHEET

1. Identification

Product identifier

ETHANOX® 4702

Other means of identification

Product Code

N/A

Synonyms

2,2',6,6'-TETRA-TERT-BUTYL-4,4'-METHYLENEDIPHENOL

Recommended use

Industrial uses: Uses of substances as such or in preparations at industrial sites

Recommended restrictions

For industrial use only.

Manufacturer/Importer/Supplier/Distributor information

Manufacturer

Company name

SI Group®

Address

P.O. Box 1046

Schenectady, NY 12301

United States

Telephone

General

+1 (518)-887-2400

E-mail

number

sds.info@siigroup.com

Emergency phone

EMERGENCY: USA --

1-(800)-424-9300;

CHEMTREC

International [Call Collect]

+1 (703)-741-5970

Other information

The material, or components, is either on the TSCA inventory list or is exempt from the

requirement to be listed.

Not classified as dangerous in the meaning of transport regulations.

2. Hazard(s) identification

Physical hazards

Not classified.

Health hazards

Not classified.

Environmental hazards

Not classified.

OSHA defined hazards

Combustible dust

Label elements

Hazard symbol

None.

Signal word

Warning

Hazard statement

May form combustible dust concentrations in air.

Precautionary statement

Prevention

Avoid breathing dust/fume/gas/mist/vapors/spray. Wash thoroughly after handling. Wear

protective gloves/protective clothing/eye protection/face protection.

Response

IF exposed or concerned: Get medical advice/attention. IF IN EYES: Rinse cautiously with water

for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. IF ON

SKIN: Wash with plenty of soap and water.

Storage

Store in accordance with local regulations.

Disposal

Dispose of contents/container in accordance with local regulation.

Hazard(s) not otherwise

classified (HNOC)

None known.

Supplemental information

None.

3. Composition/information on ingredients

Substances

Chemical name	Common name and synonyms	CAS number	%
2,2',6,6'-TETRA-TERT-BUTYL-4,4'-M ETHYLENEDIPHENOL	2,2',6,6'-TETRA-TERT-BUTYL-4,4'- METHYLENEDIPHENOL	118-82-1	>99

4. First-aid measures

Inhalation

Move to fresh air. For breathing difficulties, oxygen may be necessary. Induce artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device. Do not use mouth-to-mouth method if victim inhaled the substance. Get medical attention if symptoms occur. The signs and symptoms that may result from an emergency or an unexpected acute overexposure include: irritation -- respiratory tract

Skin contact

Remove and isolate contaminated clothing and shoes. Wash off with warm water and soap. For minor skin contact, avoid spreading material on unaffected skin. Get medical attention if irritation develops and persists. The signs and symptoms that may result from an emergency or an unexpected acute overexposure include: irritation

Eye contact

Immediately flush eyes with plenty of water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Get medical attention if symptoms occur. The signs and symptoms that may result from an emergency or an unexpected acute overexposure include: irritation

Ingestion

IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician. Never give anything by mouth to a victim who is unconscious or is having convulsions. If swallowed, rinse mouth with water (only if the person is conscious). Do not induce vomiting without advice from poison control center. If vomiting occurs, keep head low so that stomach content doesn't get into the lungs. The signs and symptoms that may result from an emergency or an unexpected acute overexposure include: nausea; vomiting; diarrhea; gastritis

Most important symptoms/effects, acute and delayed

Exposure to powder or dusts may be irritating to eyes, nose and throat.

Indication of immediate medical attention and special treatment needed

In case of shortness of breath, give oxygen. Keep victim warm. Keep victim under observation. Symptoms may be delayed. Provide general supportive measures and treat symptomatically. Please consider other resources such as a regional Poison Control Center or web sites like the National Library of Medicine TOXNET @ http://toxnet.nlm.nih.gov. A specific antidote is not known. Some of the symptoms presented may become life threatening if the exposure is a result of an emergency or an unexpected acute overexposure. Additionally, some workers with certain pre-existing medical conditions such as: asthma, allergies, or impaired pulmonary and/or liver functions, or who may be particularly susceptible to this material, may be affected by exposure to this material.

General information

Take off contaminated clothing and shoes immediately. In the case of accident or if you feel unwell, seek medical advice immediately (show the label where possible). In case of shortness of breath, give oxygen. Keep victim warm. Keep victim under observation. Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves.

5. Fire-fighting measures

Suitable extinguishing media Unsuitable extinguishing media

Water fog. Foam. Dry chemical powder. Carbon dioxide (CO2). Do not use water jet as an extinguisher, as this will spread the fire.

Specific hazards arising from the chemical

Fire may produce irritating, corrosive and/or toxic gases.

Auto-ignition point - not known

Not flammable but will support combustion

High concentration of airborne dust may form explosive mixture with air. Ensure that good housekeeping practices are followed as well as applicable guidelines such as the National Fire Protection Association [NFPA] 654, "Prevention of Fire and Dust Explosions from the Manufacturing, Processing, and Handling of Combustible Particulate Solids".

Special protective equipment and precautions for firefighters

Firefighters must use standard protective equipment including flame retardant coat, helmet with face shield, gloves, rubber boots, and in enclosed spaces, SCBA. Structural firefighters protective clothing will only provide limited protection.

Fire fighting equipment/instructions Cool containers exposed to heat with water spray and remove container, if no risk is involved. Firefighters must use standard protective equipment including flame retardant coat, helmet with face shield, gloves, rubber boots, and in enclosed spaces, SCBA. Vapors are heavier than air and may travel along the ground to some distant source of ignition and flash back.

Specific methods

In the event of fire and/or explosion do not breathe fumes. Cool containers exposed to flames with water until well after the fire is out.

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General fire hazards

High concentration of airborne dust may form explosive mixture with air. Ensure that good housekeeping practices are followed as well as applicable guidelines such as the National Fire Protection Association [NFPA] 654, "Prevention of Fire and Dust Explosions from the Manufacturing, Processing, and Handling of Combustible Particulate Solids". The Minimum Ignition Energy for some organic solids as a dust may be as low as 3 mJ [millipoules]. The Minimum Explosive Concentration for some organic solids as a dust may be as low as 0.025 oz/ft3 or ~20 g/m3.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures Remove all sources of ignition. Avoid inhalation of vapors and spray mists. Keep out of low areas. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Follow facility/company's emergency plans.

Methods and materials for containment and cleaning up

Eliminate ignition sources including sources of electrical, static or frictional sparks. Ventilate the contaminated area. Avoid dust formation. Wear appropriate protective equipment and clothing during clean-up.

Large Spills: Dike the spilled material, where this is possible. Cover with plastic sheet to prevent spreading. Clean surface thoroughly to remove residual contamination.

Small Spills: Sweep up or vacuum up spillage and collect in suitable container for disposal. Clean surface thoroughly to remove residual contamination.

Environmental precautions

Prevent further leakage or spillage if safe to do so. Eliminate sources of ignition. Ventilate the contaminated area. Prevent spreading over a wide area (e.g. by containment or oil barriers). In the event of a spill or accidental release, notify relevant authorities in accordance with all applicable regulations.

7. Handling and storage

Precautions for safe handling

Do not re-use empty containers. Guard against dust accumulation of this material. Avoid breathing dust/fume/gas/mist/vapors/spray. Avoid contact with skin. Avoid contact with eyes. Avoid prolonged exposure. Do not use in areas without adequate ventilation. Wear personal protective equipment. Wash thoroughly after handling. Use good personal hygiene practices "Empty" containers retain product residue (liquid or vapor) and can be dangerous. As with all chemicals, good industrial hygiene practices should be followed when handling this material. When the container(s) is empty it may retain product residue including vapors which could accumulate. Therefore, do not cut, drill, grind, or weld empty containers. Additionally, do not conduct such activity(ies) near full, partially full, or empty product containers without appropriate workplace safety authorization(s) or permit(s).

Conditions for safe storage, including any incompatibilities

Keep away from heat, sparks and open flame. Prevent electrostatic charge build-up by using common bonding and grounding techniques. Keep containers tightly closed in a dry, cool and well-ventilated place. Guard against dust accumulation of this material. Store away from incompatible materials (see Section 10 of the SDS). Use care in handling/storage.

8. Exposure controls/personal protection

Exposure guidelines

All PPE use is to be determined by a qualified person.

Occupational exposure limits

US. OSHA Table Z-3 (29 CFR 1910.1000)

Components	Туре	Value	Form
DUST TWA	TWA	5 mg/m3	Respirable fraction.
		15 mg/m3	Total dust.
		50 mppcf	Total dust.
		15 mppcf	Respirable fraction.

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Appropriate engineering controls

Good general ventilation (typically 10 air changes per hour) should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level. Ensure adequate ventilation, especially in confined areas. High concentration of airborne dust may form explosive mixture with air. Ensure that good housekeeping practices are followed as well as applicable guidelines such as the National Fire Protection Association [NFPA] 654, "Prevention of Fire and Dust Explosions from the Manufacturing., Processing, and Handling of Combustible Particulate Solids". Ventilation should be sufficient to effectively remove, and prevent buildup of, any vapors, dusts, or fumes that may be generated during handling or thermal processing. In order to ensure appropriate electrical safety practices are followed, consult applicable standards. These may include guidelines such as the National Fire Protection Association [NFPA] 70, "The National Electrical Code" and NFPA 499, "Recommended Practice for the Classification of Combustible Dusts and of Hazardous (Classified) Locations for Electrical Installations in Chemical Process Areas ". NOTE: since this material's vapors, dust or fumes can form explosive mixtures in air, ensure that any potential areas where explosions may occur are designed to minimize potential damage. For recommendations to prevent such explosions and associated damage, consult applicable guidelines such as NFPA 69, "Standard on Explosion Prevention Systems" and/or NFPA 68, "Guide for Venting Deflagrations".

Individual protection measures, such as personal protective equipment

Eye/face protection

Avoid contact with eyes, Wear safety glasses with side shields (or goggles). If splashes are likely to

occur, wear: Face-shield. Eye wash fountain is recommended.

Skin protection

Hand protection

Wear protective gloves.

Other

Avoid contact with the skin. Wear suitable protective clothing. Wear impervious gloves for

prolonged contact.

Respiratory protection

Do not breathe dust/fume/gas/mist/vapors/spray. If engineering controls do not maintain airborne concentrations below recommended exposure limits (where applicable) or to an acceptable level (in countries where exposure limits have not been established), an approved respirator must be worn. Dust safety masks are recommended when the dust concentration is more than 10 mg/m3. A respiratory protection program that meets OSHA's 29 CFR 1910.134 and ANSI Z88.2 requirements must be followed whenever work place conditions warrant a respirator's use.

Thermal hazards

Wear appropriate thermal protective clothing, when necessary.

General hygiene considerations

Do not get in eyes, on skin, on clothing. Wash hands after handling and before eating. Handle in accordance with good industrial hygiene and safety practice.

9. Physical and chemical properties

Appearance

Odorless, white powder.

Physical state

Solid.

Form

Powder White.

Color

Odor

Odorless.

Odor threshold

Not available.

Not available.

Melting point/freezing point

312.8 °F (156 °C)

Initial boiling point and

Not available.

boiling range

> 203.0 °F (> 95.0 °C) Closed Cup

Flash point **Evaporation rate**

<Ether

Flammability (solid, gas)

Not available.

Upper/lower flammability or explosive limits Flammability limit - lower

Not available.

(%)

Flammability limit -

Not available.

upper (%)

Explosive limit - lower

Not available.

(%)

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Explosive limit - upper

(%)

Not available.

Vapor pressure

N/A

Vapor density

>Air

Relative density

1.06 g/cm3

Solubility(ies)

Solubility (water)

Not available.

Partition coefficient (n-octanol/water)

8.99

Auto-ignition temperature

Not available.

Decomposition temperature

482 °F (250 °C)

Viscosity

Not available.

Other information

Flash point class

Combustible IIIB

Molecular formula

C29H44O2

10. Stability and reactivity

Reactivity

The product is stable and non-reactive under normal conditions of use, storage and transport.

Chemical stability

Stable under normal conditions [e.g., 70°F (21°C) & 14.7 psig (760 mmHg)]. Material is stable under normal conditions.

Possibility of hazardous

reactions

Will not occur under normal conditions [e.g., 70°F (21°C) & 14.7 psig (760 mmHg)].

Conditions to avoid

Heat, flames and sparks. Avoid dust close to ignition sources.

Incompatible materials

Incompatible with strong acids and bases.

Hazardous decomposition

products

Upon decomposition, this product emits carbon monoxide, carbon dioxide and/or low molecular

weight hydrocarbons.

11. Toxicological information

Information on likely routes of exposure

Inhalation

May cause irritation to the respiratory system.

Skin contact

May cause skin irritation.

Eye contact **Ingestion**

Dust or powder may irritate eye tissue.

Symptoms related to the

Ingestion of this product may cause nausea, vomiting and diarrhea. Product dust may be irritating to eyes, skin and respiratory system.

physical, chemical and toxicological

characteristics

Information on toxicological effects

Acute toxicity

May cause eye/skin irritation. May cause irritation of respiratory tract. Ingestion may cause

gastrointestinal irritation, nausea, vomiting and diarrhea.

Product

Species

Test Results

2,2',6,6'-TETRA-TERT-BUTYL-4,4'-METHYLENEDIPHENOL (CAS 118-82-1)

Acute

Dermal

LD50

Rat

> 2000 mg/kg

Oral

LD50

Rat

> 2000 mg/kg

Skin corrosion/irritation

May be irritating to the skin.

Dust or powder may irritate eve tissue.

Serious eye damage/eye irritation

Respiratory or skin sensitization

Respiratory sensitization

Not classified.

Skin sensitization

May cause sensitization by skin contact.

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Germ cell mutagenicity

Not classified.

Carcinogenicity

Not classified.

IARC Monographs. Overall Evaluation of Carcinogenicity

Not listed.

OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)

Not regulated.

US. National Toxicology Program (NTP) Report on Carcinogens

Not listed.

Reproductive toxicity

Not classified.

Specific target organ

Not classified.

toxicity - single exposure

Specific target organ

Not classified.

toxicity - repeated

exposure

Aspiration hazard

Not applicable.

Chronic effects

Prolonged exposure may cause chronic effects.

Further information

The toxicological properties of this product have not been thoroughly investigated. Use appropriate

820 mg/l, 96 hours

precautions.

12. Ecological information

Ecotoxicity

Not expected to be harmful to aquatic organisms.

Product Species Test Results 2,2',6,6'-TETRA-TERT-BUTYL-4,4'-METHYLENEDIPHENOL (CAS 118-82-1) **Aquatic** Acute > 0.1 mg/l, 48 hours Crustacea **EC50** Daphnia

Rainbow trout, donaldson trout

(Oncorhynchus mykiss)

Persistence and degradability

Not inherently biodegradable.

Bioaccumulative potential

No data is available on the product itself.

Mobility in soil

Not considered mobile.

Mobility in general

Fish

The product is insoluble in water.

Other adverse effects

Not available.

LC50

13. Disposal considerations

Disposal instructions

Collect and reclaim or dispose in sealed containers at licensed waste disposal site. This product, in its present state, when discarded or disposed of, is not a hazardous waste according to Federal regulations (40 CFR 261.4 (b)(4)). Under RCRA, it is the responsibility of the user of the product to determine, at the time of disposal, whether the product meets RCRA criteria for hazardous waste. Do not allow this material to drain into sewers/water supplies. Dispose in accordance with all applicable regulations.

Local disposal regulations

Dispose in accordance with all applicable regulations. Do not allow this material to drain into sewers/water supplies.

Hazardous waste code

Not regulated.

Waste from residues /

unused products

Dispose of in accordance with local regulations.

Contaminated packaging

Empty containers should be taken to an approved waste handling site for recycling or disposal. Since emptied containers may retain product residue, follow label warnings even after container is emptied. Do not re-use empty containers.

14. Transport information

General information

This product is not regulated as a hazardous material by the United States (DOT) or Canadiar (TDG) transportation regulations. Not dangerous goods in the meaning of ADR/RID, ADNR, IMDG-Code, ICAO/IATA-DGR

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ROAD/RAIL (US DOT)

Packaging Type:

Proper Shipping Name:

ERG Number:

BULK-- TANK TRUCK/TANK CAR

CHEMICALS, N.O.I. - NOT REGULATED FOR TRANSPORT

171

Packaging Type:

Proper Shipping Name:

ERG Number:

DRUM(s)/BAG(s)

CHEMICALS, N.O.I. - NOT REGULATED FOR TRANSPORT

171

Packaging Type:

Proper Shipping Name:

ERG Number:

INTERMEDIATE BULK CONTAINER

CHEMICALS, N.O.I. - NOT REGULATED FOR TRANSPORT

171

Packaging Type:

Proper Shipping Name:

ERG Number:

PAIL(s)/CAN(s)

CHEMICALS, N.O.I. - NOT REGULATED FOR TRANSPORT

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AIR (ICAO/IATA)

Packaging Type:

Proper Shipping Name:

DRUM(s)/BAG(s)

CHEMICALS, N.O.I. - NOT REGULATED FOR TRANSPORT

Packaging Type:

Proper Shipping Name:

PAIL(s)/CAN(s)

CHEMICALS, N.O.I. - NOT REGULATED FOR TRANSPORT

VESSEL (IMDG)

Packaging Type:

Proper Shipping Name:

BULK-- TANK TRUCK/TANK CAR

CHEMICALS, N.O.I. - NOT REGULATED FOR TRANSPORT

Packaging Type:

Proper Shipping Name:

DRUM(s)/BAG(s)

CHEMICALS, N.O.I. - NOT REGULATED FOR TRANSPORT

Packaging Type:

Proper Shipping Name:

INTERMEDIATE BULK CONTAINER

CHEMICALS, N.O.I. - NOT REGULATED FOR TRANSPORT

Packaging Type:

PAIL(s)/CAN(s)

Proper Shipping Name:

CHEMICALS, N.O.I. - NOT REGULATED FOR TRANSPORT

15. Regulatory information

US federal regulations

This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard,

29 CFR 1910.1200.

The user of this material has the responsibility to provide a safe work place and, as necessary via job-task analysis: develop appropriate work practices, assign personal protective equipment, and provide instructional programs.

TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)

2,2',6,6'-TETRA-TERT-BUTYL-4,4'-METHYLENEDIPHENOL 1.0 % One-Time Export Notification only. (CAS 118-82-1)

CERCLA Hazardous Substance List (40 CFR 302.4)

Not listed.

SARA 304 Emergency release notification

Not regulated.

OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)

Not regulated.

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Superfund Amendments and Reauthorization Act of 1986 (SARA)

Hazard categories

Immediate Hazard - No Delayed Hazard - No Fire Hazard - Yes Pressure Hazard - No Reactivity Hazard - No

SARA 302 Extremely hazardous substance

Not listed.

SARA 311/312

Yes

Hazardous chemical

Other federal regulations

Clean Air Act (CAA) Section 112 Hazardous Air Pollutants (HAPs) List

Not regulated.

Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130)

Not regulated.

Safe Drinking Water Act

Not regulated.

(SDWA)

US state regulations

US. California Controlled Substances. CA Department of Justice (California Health and Safety Code Section 11100)

Not listed.

US. New Jersey Worker and Community Right-to-Know Act

Not listed.

US. California Proposition 65

California Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65): This material is not known to contain any chemicals currently listed as carcinogens or reproductive toxins.

16. Other information, including date of preparation or last revision

Issue date

08-10-2015

Revision date

05-14-2017

Version #

13

Further information

HMIS® is a registered trade and service mark of the ACA.

HMIS® ratings

Health: 1 Flammability: 2

Physical hazard: 0

NFPA ratings

Health: 1 Flammability: 2

Instability: 0

Material name: ETHANOX® 4702

List of abbreviations

ACGIH: American Conference of Governmental Industrial Hygienists.

ADR: European agreement concerning the international carriage of dangerous goods by road

(Accord européen relatif transport des merchandises dangereuses par route).

ANSI: American National Standards Institute.

Maximum permissible concentration of biological working substances (BAT: Biologische

Arbeitsstofftoleranzwerte).

BOD5: Biochemical oxygen demand within 5 days.

CAS: Chemical Abstract Service.

CEN: European Committee for Standardization (Comité Européen de Normalisation).

CLP: Classification, Labeling and Packaging REGULATION (EC) No 1272/2008 on classification,

labeling and packaging of substances and mixtures.

DNEL: Derived No Effect Level. EC: European Community.

EC50: Effective Concentration 50%. ECHA: European Chemical Agency.

ICAO: International Civil Aviation Organization.

IMDG Code: International Maritime Dangerous Goods Code.

LC: Lethal Concentration.

LC50: Lethal Concentration 50%.

LD50: Lethal Dose 50%.

MAK: Threshold limit values Germany (Maximale Arbeitsplatzkonzentration - DFG).

N/A: Not available. NY: New York State.

OSHA: Occupational Safety & Health Administration.

PBT: Persistent, bioaccumulative, toxic.

PEL: Permissible Exposure Limit.

PNEC: Predicted No Effect Concentration.
PPE: Personal Protective Equipment.
RCRA: Resource Conservation Recovery Act.
SCBA: Self-contained breathing apparatus.

STEL: Short-term Exposure Limit.
TDG: Transport of Dangerous Goods.
TSCA: Toxic Substance Control Act.
TWA: Time Weighted Average.
USA: United States of America.

vPvB: very Persistent, very Bioaccumulative.

References ACGIH: American Conference of Governmental Industrial Hygienists.

ECHA: European Chemical Agency. ERG: Emergency Response Guide

GHS: Globally Harmonized System of Classification and Labelling of Chemicals

HSDB® - Hazardous Substances Data Bank

IARC: International Agency for Research on Cancer - Monographs NTP: National Toxicology Program - Report on Carcinogens OSHA: Occupational Safety and Health Administration.

SI Group®: Test results

[Vendor]

Disclaimer

The health and safety information is that available to SI Group as of the date published and S. Group makes no representation of the information's completeness or accuracy. Any data provided is based on either: reference sources, testing performed on a representative sample(s), or professional judgement. The physical data should not be construed as either representing specifications or a guaranteed analysis. This material has been classified in accordance with the hazard criteria of the Controlled Products Regulation and the SDS contains information required by Controlled Products Regulation. SI Group provides its SDS in several languages using English as the primary language. While SI Group uses reasonable efforts to provide accurate translations, SI Group assumes no liability, or responsibility, for errors, omissions or ambiguities in any translations. SI Group expects those persons who receive this SDS to exercise their independent professional judgement, or consult with a competent health/safety professional, to determine how to utilize this material safely. This includes, but is not exclusive to, the material's appropriateness for a specific use, the type of personal protection equipment necessary, and the use of engineering controls. In no event is SI Group liable for any damages whatsoever arising out of your use of this material based upon information obtained from this SDS including: direct, indirect, incidental, consequential or punitive claims or damages.

Revision information

This document has undergone significant changes and should be reviewed in its entirety.

Material name: ETHANOX® 4702