

SAFETY DATA SHEET



TPS™ 44

**1. PRODUCT AND COMPANY IDENTIFICATION**

**Company**

Arkema Inc.  
900 First Avenue  
King of Prussia, Pennsylvania 19406

Thio and Fine Chemicals

**Customer Service Telephone Number:** (800) 628-4453  
(Monday through Friday, 8:00 AM to 5:00 PM EST)

**Emergency Information**

**Transportation:** CHEMTREC: (800) 424-9300  
(24 hrs., 7 days a week)  
**Medical:** Rocky Mountain Poison Center: (866) 767-5089  
(24 hrs., 7 days a week)

**Product Information**

**Product name:** TPS™ 44  
**Synonyms:** Polysulfide  
**Molecular formula:** (t-C<sub>4</sub>H<sub>10</sub>)<sub>2</sub>S<sub>x</sub>  
**Chemical family:** Polysulfide  
**Product use:** Additive for industrial lubricants

**SECTION 2: HAZARDS IDENTIFICATION**

**Emergency Overview**

**Color:** light yellow  
**Physical state:** liquid  
**Odor:** Slightly acrid

**\*Classification of the substance or mixture:**

Flammable liquids, Category 4, H227  
Skin sensitisation, Category 1, H317  
Acute aquatic toxicity, Category 1, H400  
Chronic aquatic toxicity, Category 1, H410

\*For the full text of the H-Statements mentioned in this Section, see Section 16.

**GHS-Labeling**

Hazard pictograms:



Signal word:

**Warning****Hazard statements:**

- H227 : Combustible liquid.
- H317 : May cause an allergic skin reaction.
- H410 : Very toxic to aquatic life with long lasting effects.

**Precautionary statements:****Prevention:**

- P210 : Keep away from heat, sparks, open flame and hot surfaces. No smoking.
- P261 : Avoid breathing mist or vapours.
- P272 : Contaminated work clothing should not be allowed out of the workplace.
- P273 : Avoid release to the environment.
- P280 : Wear protective gloves or eye protection or face protection.

**Response:**

- P302 + P352 : IF ON SKIN: Wash with plenty of soap and water.
- P333 + P313 : If skin irritation or rash occurs: Get medical advice/ attention.
- P363 : Wash contaminated clothing before reuse.
- P370 + P378 : In case of fire: Use dry sand, dry chemical or alcohol-resistant foam for extinction.
- P391 : Collect spillage.

**Storage:**

- P403 + P235 : Store in a well-ventilated place. Keep cool.

**Disposal:**

- P501 : Dispose of contents or container to an approved waste disposal plant.

**SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS**

Chemical Name	CAS-No.	Wt/Wt	GHS Classification**
Polysulfides, di-tert-Bu	68937-96-2	<= 100 %	H227, H317, H400, H410
Oxirane	75-21-8	< 0.1 %	H220, H280, H301, H331, H314, H318, H372, H335, H350, H340, H360

\*\*For the full text of the H-Statements mentioned in this Section, see Section 16.

#### SECTION 4: FIRST AID MEASURES

##### 4.1. Description of necessary first-aid measures:

###### **Inhalation:**

If inhaled, remove victim to fresh air.

###### **Skin:**

In case of contact, immediately flush skin with soap and plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur. Wash clothing before reuse. Thoroughly clean shoes before reuse.

###### **Eyes:**

Immediately flush eye(s) with plenty of water.

###### **Ingestion:**

If swallowed, DO NOT induce vomiting. Get medical attention. Never give anything by mouth to an unconscious person.

##### 4.2. Most important symptoms and effects, both acute and delayed:

For most important symptoms and effects (acute and delayed), see Section 2 (Hazard Statements and Supplemental Information if applicable) and Section 11 (Toxicology Information) of this SDS.

##### 4.3. Indication of any immediate medical attention and special treatment needed:

Unless otherwise noted in Notes to Physician, no specific treatment noted; treat symptomatically.

#### SECTION 5: FIREFIGHTING MEASURES

##### Extinguishing media (suitable):

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Water spray, Carbon dioxide (CO<sub>2</sub>), Foam, Dry chemical

**Extinguishing media (unsuitable):**

Water may be ineffective., Do not use a solid water stream as it may scatter and spread fire.

**Protective equipment:**

Fire fighters and others who may be exposed to products of combustion should wear full fire fighting turn out gear (full Bunker Gear) and self-contained breathing apparatus (pressure demand / NIOSH approved or equivalent).

**Further firefighting advice:**

Cool closed containers exposed to fire with water spray.

Do not permit water to enter containers.

Material may spatter or foam if contacted with water.

A solid stream of water can cause frothing and spattering.

Closed containers of this material may explode when subjected to heat from surrounding fire.

After a fire, wait until the material has cooled to room temperature before initiating clean-up activities.

Do not allow run-off from fire fighting to enter drains or water courses.

Fire fighting equipment should be thoroughly decontaminated after use.

**Fire and explosion hazards:**

When burned, the following hazardous products of combustion can occur:

Carbon oxides

Hydrogen sulphide

Sulphur oxides

Hazardous organic compounds

### 6. ACCIDENTAL RELEASE MEASURES

**Personal precautions, Emergency procedures, Methods and materials for containment/clean-up:**

Prevent further leakage or spillage if you can do so without risk. Evacuate area of all unnecessary personnel.

Ventilate the area. Eliminate all ignition sources. Avoid generation of vapors. Contain and collect spillage with non-combustible absorbent material such as sodium bicarbonate, sodium carbonate, calcium carbonate, clean sand or non-acidic clay and then wet down (dampen) the mixture with water. Sweep or scoop up using non-sparking tools and place into suitable properly labeled containers for prompt disposal. The sweepings should be wetted down further with water. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

Consult a regulatory specialist to determine appropriate state or local reporting requirements, for assistance in waste characterization and/or hazardous waste disposal and other requirements listed in pertinent environmental permits.

**Protective equipment:**

Appropriate personal protective equipment is set forth in Section 8.

**SECTION 7: HANDLING AND STORAGE****Handling****General information on handling:**

Avoid breathing vapor or mist.  
Avoid prolonged or repeated contact with skin.  
Keep away from heat and flames.  
No smoking.  
Keep container closed.  
Use only with adequate ventilation.  
Wash thoroughly after handling.  
Check that all equipment is properly grounded and installed to satisfy electrical classification requirements.  
Follow label warnings even after container is emptied.  
RESIDUAL VAPORS MAY EXPLODE ON IGNITION.  
DO NOT CUT, DRILL, GRIND, OR WELD ON OR NEAR THIS CONTAINER.  
Emptied container retains vapor and product residue.  
Observe all labeled safeguards until container is cleaned, reconditioned or destroyed.

**Storage****General information on storage conditions:**

Keep in a dry, cool place. Keep container closed when not in use. Store in closed containers, in a secure area to prevent container damage and subsequent spillage. Store in well ventilated area away from heat and sources of ignition such as flame, sparks and static electricity. Ensure that all storage and handling equipment is properly grounded and installed to satisfy electrical classification requirements. Static electricity may accumulate when transferring material. All metal and groundable storage containers, including but not limited to drums, cylinders, Returnable Intermodal Bulk Containers (RIBCs) and Class C Flexible Intermodal Bulk Containers (FIBCs) must be bonded and grounded during filling and emptying operations. Observe all federal, state and local regulations and National Fire Protection Association (NFPA) Codes which pertain to the specific local conditions of storage and use, including OSHA 29 CFR 1910.106 and NFPA 30, 70, 77, and 497.

**Storage stability – Remarks:**

Stable under normal conditions.

**Storage incompatibility – General:**

Store separate from:  
Strong oxidizing agents  
Acids  
Hydrogen peroxide  
Hypochlorites  
Nitric acid

**SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION****Airborne Exposure Guidelines:**

**Oxirane (75-21-8)**

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#### US. ACGIH Threshold Limit Values

Time weighted average 1 ppm

#### US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)

Reference:  
Remarks: 29 CFR 1910.1047

#### US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)

Short Term Exposure Limit (STEL): 5 ppm

#### US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)

OSHA Action level: 0.5 ppm

#### US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)

Time weighted average 1 ppm

Only those components with exposure limits are printed in this section. Limits with skin contact designation above have skin contact effect. Air sampling alone is insufficient to accurately quantitate exposure. Measures to prevent significant cutaneous absorption may be required. Limits with a sensitizer designation above mean that exposure to this material may cause allergic reactions.

#### Engineering controls:

Investigate engineering techniques to reduce exposures below airborne exposure limits or to otherwise reduce exposures. Provide ventilation if necessary to minimize exposures or to control exposure levels to below airborne exposure limits for: hydrogen sulfide, ethylene oxide. If practical, use local mechanical exhaust ventilation at sources of air contamination such as open process equipment.

Consult ACGIH ventilation manual or NFPA Standard 91 for design of exhaust systems.

#### Respiratory protection:

Avoid breathing vapor or mist. Where airborne exposure is likely or airborne exposure limits are exceeded (if applicable, see above), use NIOSH approved respiratory protection equipment appropriate to the material and/or its components. Full facepiece equipment is recommended and, if used, replaces need for face shield and/or chemical goggles. Consult OSHA Standard (29 CFR § 1910.1047 - Ethylene Oxide) to determine required type equipment for given application. Observe respirator use limitations specified by NIOSH or the manufacturer. For emergency and other conditions where there may be a potential for significant exposure or where exposure limit may be significantly exceeded, use an approved full face positive-pressure, self-contained breathing apparatus or positive-pressure airline with auxiliary self-contained air supply. Respiratory protection programs must comply with 29 CFR § 1910.134.

#### Skin protection:

Glove materials: Nitrile rubber

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Wear appropriate chemical resistant protective clothing and chemical resistant gloves to prevent skin contact. Consult glove manufacturer to determine appropriate type glove material for given application. Wear chemical goggles, a face shield, and chemical resistant clothing such as a rubber apron when splashing may occur. Rinse immediately if skin is contaminated. Remove contaminated clothing immediately and wash before reuse. Clean protective equipment before reuse. Provide a safety shower at any location where skin contact can occur. Wash thoroughly after handling.

#### Eye protection:

Where eye contact may be likely, wear chemical goggles and have eye flushing equipment available.

### SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

<b>Color:</b>	light yellow
<b>Physical state:</b>	liquid
<b>Odor:</b>	Slightly acrid
<b>Odor threshold:</b>	No data available
<b>Flash point</b>	192 °F (89 °C) (closed cup)
<b>Auto-ignition temperature:</b>	437 °F (225 °C)
<b>Lower flammable limit (LFL):</b>	No data available
<b>Upper flammable limit (UFL):</b>	No data available
<b>pH:</b>	No data available
<b>Density:</b>	999.5 kg/m <sup>3</sup> (68 °F (20 °C)) (Method: OECD Test Guideline 109)
<b>Specific Gravity (Relative density):</b>	0.9995 (68 °F (20 °C))(Method:OECD Test Guideline 109) Water=1 (liquid)
<b>Vapor pressure:</b>	0.117 mmHg (68 °F (20 °C))(Method: OECD Test Guideline 104)
<b>Boiling point/boiling range:</b>	367 °F (186 °C) (Method: OECD Test Guideline 103)
<b>Melting point/range:</b>	12 °F (-11 °C)(Method: OECD Test Guideline 102)
<b>Freezing point:</b>	No data available.
<b>Evaporation rate:</b>	No data available
<b>Solubility in water:</b>	7 mg/l 68 °F (20 °C) (Method: OECD Test Guideline 105)

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<b>Solubility in other solvents: [qualitative and quantitative]</b>	Soluble in hydrocarbons
<b>Viscosity, dynamic:</b>	4.37 mPa.s 68 °F (20 °C)
<b>Oil/water partition coefficient:</b>	No data available.
<b>Thermal decomposition:</b>	> 212 °F (> 100 °C)
<b>Flammability:</b>	See GHS Classification in Section 2 if applicable

**SECTION 10: STABILITY AND REACTIVITY****Stability:**

This material is chemically stable under normal and anticipated storage, handling and processing conditions.

**Hazardous reactions:**

None known.

**Materials to avoid:**

Strong oxidizing agents  
Hydrogen peroxide  
Nitric acid  
Hypochlorites  
Acids

**Conditions / hazards to avoid:**

To avoid thermal decomposition, do not overheat. Keep away from heat and sources of ignition.

**Hazardous decomposition products:**

Thermal decomposition giving flammable and toxic products  
Hydrogen sulphide  
Sulphur oxides  
Carbon oxides  
Hazardous organic compounds

**SECTION 11: TOXICOLOGICAL INFORMATION**

Data on this material and/or its components are summarized below.

**Data for Polysulfides, di-tert-Bu (68937-96-2)****Acute toxicity****Oral:**

No deaths occurred. (rat) LD0 > 2,000 mg/kg.



**Dermal:**

No deaths occurred. (rat) LD0 > 2,000 mg/kg.

**Skin Irritation:**

Causes mild skin irritation. (rabbit) (4 h)

**Eye Irritation:**

Causes mild eye irritation. (rabbit)

**Skin Sensitization:**

May cause an allergic skin reaction. Guinea pig maximization test. Skin allergy was observed.

**Repeated dose toxicity**

Repeated exposure oral administration to rat / signs: Haematological problems, Effect reversible within a few days

**Genotoxicity****Assessment in Vitro:**

No genetic changes were observed in laboratory tests using: bacteria, human cells

Genetic changes were observed in a laboratory test using: animal cells

**Genotoxicity****Assessment in Vivo:**

No genetic changes were observed in laboratory tests using: mice

**Reproductive effects**

Reproductive/Developmental Effects Screening Assay. Oral (rat) / No toxicity to reproduction. / (levels produced toxic effects in the mothers and offspring)

**SECTION 12: ECOLOGICAL INFORMATION****Chemical Fate and Pathway**

Data on this material and/or its components are summarized below.

**Data for Polysulfides, di-tert-Bu (68937-96-2)****Biodegradation:**

Not readily biodegradable. (28 d) biodegradation 13 %

**Bioaccumulation:**

14 d BCF = 188 (Lepomis macrochirus (Bluegill sunfish))

**Octanol Water Partition Coefficient:**

log Pow: = 5.6, at 68 °F (20 °C) pH = 7

**Ecotoxicology**

Data on this material and/or its components are summarized below.

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### Data for Polysulfides, di-tert-Bu (68937-96-2)

**Aquatic toxicity data:**

No effect up to the limit of solubility. Danio rerio (zebra fish) 96 h LC50 > 0.088 mg/l

**Aquatic invertebrates:**

Very toxic. Daphnia magna (Water flea) 48 h EC50 = 0.24 mg/l

**Algae:**

Very toxic. Raphidocelis subcapitata (freshwater green alga) 72 h EC50 = 0.838 mg/l

**Microorganisms:**

Respiration inhibition / Activated sludge 28 d NOEC = 45.1 mg/l

**Chronic toxicity to aquatic plants:**

Very toxic. Raphidocelis subcapitata 72 h NOEC = 0.04 mg/l

### SECTION 13: DISPOSAL CONSIDERATIONS

**Waste disposal:**

Disposal via incineration is recommended. Dispose of in accordance with federal, state and local regulations. Consult a regulatory specialist to determine appropriate state or local reporting requirements, for assistance in waste characterization and/or hazardous waste disposal and other requirements listed in pertinent environmental permits. Note: Chemical additions to, processing of, or otherwise altering this material may make this waste management information incomplete, inaccurate, or otherwise inappropriate. Furthermore, state and local waste disposal requirements may be more restrictive or otherwise different from federal laws and regulations.

Take appropriate measures to prevent release to the environment.

### SECTION 14: TRANSPORT INFORMATION

**US Department of Transportation (DOT)**

**UN Number** : 3082  
**Proper shipping name** : Environmentally hazardous substance, liquid, n.o.s.  
**Technical name** : (Ditertbutylpolysulfide)  
**Class** : 9  
**Packaging group** : III  
**Marine pollutant** : yes

**Special Shipping Information:** Bulk Shipments: NA1993, Combustible liquid, n.o.s.(di-tert-butyl polysulfide), PGIII, Marine Pollutant.

**International Maritime Dangerous Goods Code (IMDG)**

**UN Number** : 3082  
**Proper shipping name** : ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.  
**Technical name** : (DITERTBUTYLPOLYSULFIDE)  
**Class** : 9

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**Packaging group** : III  
**Marine pollutant** : yes  
**Flash point** : 192 °F (89 °C) closed cup

**SECTION 15: REGULATORY INFORMATION**

**Chemical Inventory Status**

US. Toxic Substances Control Act	TSCA	The components of this product are all on the Active TSCA Inventory.
Canadian Domestic Substances List (DSL)	DSL	All components of this product are on the Canadian DSL
China. Inventory of Existing Chemical Substances in China (IECSC)	IECSC (CN)	All components of this product are listed or exempted
Japan. ENCS - Existing and New Chemical Substances Inventory	ENCS (JP)	All components of this product are listed or exempted
Korea. Korean Existing Chemicals Inventory (KECI)	KECI (KR)	All components of this product are listed or exempted
Philippines Inventory of Chemicals and Chemical Substances (PICCS)	PICCS (PH)	All components of this product are listed or exempted
Australian Inventory of Industrial Chemicals	AU AIICL	All components of this product are listed or exempted
Taiwan Chemical Substance Inventory (TCSI)	TCSI	All components of this product are listed or exempted

**United States – Federal Regulations**

**SARA Title III – Section 302 Extremely Hazardous Chemicals:**

<u>Chemical name</u>	<u>CAS-No.</u>	<u>SARA Reportable Quantities</u>	<u>SARA Threshold Planning Quantity</u>
Oxirane	75-21-8	10 lbs	1000 lbs

**SARA Title III - Section 311/312 Hazard Categories:**

Acute Health Hazard, Fire Hazard

**SARA Title III – Section 313 Toxic Chemicals:**

This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

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**Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) - Reportable Quantity (RQ):**

<u>Chemical name</u>	<u>CAS-No.</u>	<u>Reportable quantity</u>
Oxirane	75-21-8	10 lbs

**United States – State Regulations**

**California Prop. 65**

WARNING! This product contains a chemical known to the State of California to cause cancer.

<u>Chemical name</u>	<u>CAS-No.</u>
Oxirane	75-21-8

**California Prop. 65**

WARNING: This product contains a chemical known to the State of California to cause birth defects or other reproductive harm.

<u>Chemical name</u>	<u>CAS-No.</u>
Oxirane	75-21-8

**SECTION 16: OTHER INFORMATION**

**Full text of H-Statements referred to under sections 2 and 3.**

- H220 Extremely flammable gas.
- H227 Combustible liquid.
- H280 Contains gas under pressure; may explode if heated.
- H301 Toxic if swallowed.
- H314 Causes severe skin burns and eye damage.
- H317 May cause an allergic skin reaction.
- H318 Causes serious eye damage.
- H331 Toxic if inhaled.
- H335 May cause respiratory irritation.
- H340 May cause genetic defects.
- H350 May cause cancer.
- H360 May damage fertility or the unborn child.
- H372 Causes damage to organs through prolonged or repeated exposure.
- H400 Very toxic to aquatic life.
- H410 Very toxic to aquatic life with long lasting effects.

Miscellaneous:

Other information: Refer to National Fire Protection Association (NFPA) Codes 30, 70, 77, and 497 and OSHA 29 CFR 1910.106, for safe handling.

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Latest Revision(s):

Reference number:	200005573
Date of Revision:	12/05/2022
Date Printed:	12/05/2022

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The Company adheres to a strict policy that applies to the use of any of its products in medical device applications. This policy can be found at <https://www.arkema.com/global/en/social-responsibility/innovation-and-sustainable-solutions/responsible-product-management/medical-device-policy/> which is incorporated herein by reference and made a part hereof. Except as expressly authorized, the Company (i) has designated specific medical grade compositions for products used in medical device applications and Company products not so designated are not authorized for use in medical device applications and (ii) strictly prohibits the use of any of its products in medical device applications that are implanted in the body or in contact with bodily fluids or tissues for greater than 30 days. The Company does not design, manufacture and/or directly sell any medical devices. The Company does not co-design, or offer assistance to any purchaser of its products, in their design, manufacture and/or sale of products for medical devices. It is the sole responsibility of the manufacturer of medical devices to determine the suitability of all raw material, products and components, including any medical grade products, in order to ensure that the medical device is safe for end-use and complies with all applicable legal and regulatory requirements and to conduct all necessary tests and inspections.

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