

1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND OF THE COMPANY/UNDERTAKING

Product identifier

Product Name LENIUM® ES

Other means of identification

Product Code LENES

Recommended use of the chemical and restrictions on use

Recommended Use For use in engineered vapor degreasing systems.

Uses advised against FOR INDUSTRIAL USE ONLY

Details of the supplier of the safety data sheet

Supplier Vantage Specialties, Inc.

Address 3938 Porett Drive
Gurnee, IL 60031 USA
847-244-3410

Emergency Telephone Number

Company Phone Number 847-244-3410

Emergency Telephone Number CHEMTREC International +1-703-527-3887
CHEMTREC USA: 1-800-424-9300

2. HAZARDS IDENTIFICATION

Classification

Skin corrosion/irritation	Category 2
Serious eye damage/eye irritation	Category 2
Carcinogenicity	Category 1B
Reproductive Toxicity	Category 1B
Specific target organ toxicity (single exposure)	Category 3
Specific target organ toxicity (repeated exposure)	Category 2

Label Elements

EMERGENCY OVERVIEW

Hazard statements

Causes eye irritation

Causes skin irritation

May cause respiratory irritation

May cause drowsiness or dizziness

May cause cancer

May damage fertility or the unborn child

May cause damage to lungs, liver, kidney, and peripheral nervous system (PNS) through prolonged or repeated exposure if inhaled



Color Colorless

Physical State Liquid

Odor Characteristic

Precautionary Statements - Prevention

Obtain special instructions before use
 Do not handle until all safety precautions have been read and understood
 Avoid breathing vapors or mists
 Wear eye/face protection
 Wear protective gloves
 In case of inadequate ventilation wear respiratory protection

Precautionary Statements - Response

Get medical advice/attention if you feel unwell
 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
 IF INHALED: Remove to fresh air and keep at rest in a position comfortable for breathing. Consult a physician if breathing is difficult or other respiratory symptoms develop.
 IF ON SKIN: Rinse exposed skin with plenty of water. If skin irritation occurs: get medical advice/attention.
 IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician

Precautionary Statements - Storage

Store in a well-ventilated place
 Keep container tightly closed
 Store locked up

Precautionary Statements - Disposal

Dispose of contents/container in accordance with applicable regulations.

Hazards not otherwise classified (HNOC)

Vapors may become flammable if not controlled.
 Vapors may displace oxygen and cause rapid suffocation.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical nature Azeotropic mixture of solvents.

Chemical Name	CAS-No.	Weight %
1-Bromopropane	106-94-5	75 - 90
2-Propanol	67-63-0	5 - 10
Dimethoxymethane	109-87-5	1 - 2
2-Methyl-2-propanol	75-65-0	1 - 2
1,2-Epoxybutane	106-88-7	0.1 - 1

4. FIRST AID MEASURES**FIRST AID MEASURES**

Eye contact IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists, consult a specialist.

Skin contact IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower. If skin irritation persists, call a physician.

Inhalation IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. If exposed or concerned: get medical attention.

Ingestion IF SWALLOWED: Rinse mouth. Do NOT induce vomiting. Seek immediate medical attention.

Most important symptoms and effects, both acute and delayed

Symptoms Headache/dizziness. Irritation or pain in contact with skin or eyes.

Indication of any immediate medical attention and special treatment needed

Notes to Physician Treat symptomatically.

5. FIRE-FIGHTING MEASURES

<u>Suitable extinguishing media</u>	Class ABC/BC fire extinguisher. Dry chemical. Carbon dioxide. Water spray. Alcohol-resistant foam.
Small Fires	Containers near a fire should be removed or cooled with water spray.
Large Fires	Cool closed containers with water spray. Closed containers will build pressure if exposed to flame or intense heat. This may lead to violent bursting of containers.
Unsuitable extinguishing media	None identified.
<u>Specific hazards arising from the chemical</u>	Vapors may become flammable if not controlled. Vapors are heavier than air and can cause suffocation by reducing oxygen available for breathing. Vapors may accumulate in confined areas (basement, tanks, hopper/tank cars, etc.).
Hazardous combustion products	May release hydrogen bromide, carbon monoxide, and carbon dioxide if exposed to flames or intense heat. Decomposition begins at approximately 200°C (400°F).
<u>Explosion Data</u>	
<u>Sensitivity to Mechanical Impact</u>	No.
<u>Sensitivity to Static Discharge</u>	No.
<u>Protective equipment and precautions for firefighters</u>	As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

Personal Precautions	Use personal protective equipment. Ensure adequate ventilation. Avoid contact with skin, eyes, and clothing.
For emergency responders	Use personal protective equipment as required. Remove all sources of ignition. Vapors from this product are heavier than air and may displace oxygen in confined spaces or low areas.

Environmental precautions

Environmental precautions	Prevent release to surface water.
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Methods and material for containment and cleaning up

Methods for Containment	Dike to collect large liquid spills.
Methods for Cleaning Up	Absorb with inert material and transfer to containers for disposal.

7. HANDLING AND STORAGE

Precautions for safe handling

Handling	Wear personal protective equipment. Avoid contact with skin, eyes, and clothing. Ensure adequate ventilation.
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Conditions for safe storage, including any incompatibilities

Storage Keep containers tightly closed in a cool, well-ventilated place. Keep away from heat and sources of ignition.

Incompatible materials Bases. Strong oxidizing agents.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Control parameters

Exposure Guidelines

Chemical Name	ACGIH TLV	OSHA PEL	NIOSH IDLH
1-Bromopropane 106-94-5	TWA: 0.1 ppm	not established	-
2-Propanol 67-63-0	STEL: 400 ppm TWA: 200 ppm	400 ppm	2,000 ppm
Dimethoxymethane 109-87-5	TWA: 1000 ppm	100 ppm	-
2-Methyl-2-propanol 75-65-0	TWA: 100 ppm	100 ppm	-

Appropriate engineering controls

Engineering Measures Provide general or local ventilation in work area to maintain vapor concentration below exposure limits.

Individual protection measures, such as personal protective equipment

- Eye/face Protection** Safety glasses with side-shields. Face-shield.
- Skin and Body Protection** Protective gloves. Long sleeved clothing.
- Respiratory Protection** Use NIOSH/MSHA approved respirator if ventilation is not sufficient to control vapors.

Hygiene Measures Do not eat, drink or smoke when using this product. Handle in accordance with good industrial hygiene and safety practice.

9. PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties

Physical State	Liquid	Odor	Characteristic
Appearance	Clear		
Color	Colorless		
Property	Values	Remarks • Method	
pH		Not Applicable	
Melting point/freezing point		Not determined	
Boiling point/boiling range	64 - 66 °C / 148 - 151 °F		
Flash Point	None to boiling	Pensky-Martens closed cup ASTM D 93	
Evaporation Rate	0.96	(TCA = 1)	
Flammability (solid, gas)		Forms flammable mixtures with air in a limited concentration range.	
Flammability Limits in Air			
Upper flammability limits	8%		
Lower Flammability Limit	4%		
Vapor pressure	110.8	mm Hg	
Vapor Density	4.3	data for 1-Bromopropane	
Specific Gravity	1.25	@ 25°C	
Water Solubility	Partially soluble		
Solubility in other solvents		Not determined	
Partition coefficient	2.10	Data for 1-bromopropane	
Autoignition Temperature		Not determined	
Decomposition temperature	200°C		

Kinematic viscosity	0.49 cps @ 25°C	
Dynamic viscosity		Not determined
Explosive Properties	None	
Oxidizing Properties	None	

Other Information

VOC Content 100%

10. STABILITY AND REACTIVITY

Reactivity Not reactive
Remarks

Chemical stability Stable under recommended storage conditions.

Possibility of Hazardous Reactions

Hazardous Reactions None under normal processing.
Hazardous Polymerization Hazardous polymerization does not occur.

Conditions to Avoid Excessive heat, flames, and sparks.

Incompatible materials Bases. Strong oxidizing agents.

Hazardous Decomposition Products

May form hydrogen bromide.

11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure**Product Information**

Inhalation Harmful by inhalation.
Eye contact Avoid contact with eyes.
Skin contact Avoid contact with skin.
Ingestion May cause additional affects as listed under "Inhalation".

Component Information

Chemical Name	Oral LD50	Dermal LD50	Inhalation LC50
1-Bromopropane 106-94-5	= 3600 mg/kg (Rat)	-	= 253 g/m ³ (Rat) 30 min
2-Propanol 67-63-0	> 5000 mg/kg (Rat)	= 4059 mg/kg (Rabbit)	= 72600 mg/m ³ (Rat) 4 h
Dimethoxymethane 109-87-5	= 6653 mg/kg (Rat)	-	-
2-Methyl-2-propanol 75-65-0	= 2200 mg/kg (Rat)	> 2 g/kg (Rabbit)	> 10000 ppm (Rat) 4 h
1,2-Epoxybutane 106-88-7	= 500 mg/kg (Rat)	= 1757 mg/kg (Rabbit)	= 6300 mg/m ³ (Rat) 4 h

Information on toxicological effects

Symptoms Inhalation of vapors may cause dizziness, headache, drowsiness, and irritation of respiratory tract.

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Skin corrosion/irritation Irritating to skin.
Serious eye damage/eye irritation Irritating to eyes.
Sensitization No known hazard.

Chemical Name	ACGIH	IARC	NTP	OSHA
1-Bromopropane 106-94-5			(RAHC) Reasonably anticipated to be a human carcinogen	
1,2-Epoxybutane 106-88-7		Group 2B		X

Reproductive Toxicity	1-Bromopropane is suspected of causing reproductive and developmental damage.
STOT - single exposure	Inhalation of vapors may affect the central nervous system and cause respiratory irritation.
STOT - repeated exposure	Long term exposure to 1-bromopropane via inhalation may cause damage to the liver and nervous system. May cause disorder and damage to the Peripheral Nervous System (PNS).
Aspiration hazard	No known hazard.
Numerical measures of toxicity-Product Information	Not determined

12. ECOLOGICAL INFORMATION

Ecotoxicity

Harmful to aquatic life

Chemical Name	Toxicity to Algae	Toxicity to Fish	Microtox	Daphnia Magna (Water Flea)
1-Bromopropane 106-94-5		LC50= 67.3 mg/L Pimephales promelas 96 h		
2-Propanol 67-63-0	EC50 > 1000 mg/L 96 h EC50 > 1000 mg/L 72 h	LC50> 1400000 µg/L Lepomis macrochirus 96 h LC50= 11130 mg/L Pimephales promelas 96 h LC50= 9640 mg/L Pimephales promelas 96 h	EC50 = 35390 mg/L 5 min	EC50 = 13299 mg/L 48 h
Dimethoxymethane 109-87-5		LC50 6260 - 7800 mg/L Pimephales promelas 96 h		
2-Methyl-2-propanol 75-65-0	EC50 > 1000 mg/L 72 h	LC50 6130 - 6700 mg/L Pimephales promelas 96 h	EC50 > 10000 mg/L 17 h	EC50 = 933 mg/L 48 h
1,2-Epoxybutane 106-88-7	EC50 > 500 mg/L 72 h	LC50 100 - 220 mg/L Leuciscus idus 96 h	EC50 = 4840 mg/L 17 h	EC50 = 69.8 mg/L 48 h

Persistence and degradability

Not readily biodegradable.

Bioaccumulation/Accumulation

1-bromopropane BCF < 2000

Chemical Name	Partition coefficient
2-Propanol 67-63-0	= 0.05
2-Methyl-2-propanol 75-65-0	= 0.35
1,2-Epoxybutane 106-88-7	= 0.416

13. DISPOSAL CONSIDERATIONS

Waste treatment methods

Waste Disposal Method	It must undergo special treatment, e.g. at suitable disposal site, to comply with local regulations.
Contaminated Packaging	Dispose of in accordance with applicable regulations.

Chemical Name	California Hazardous Waste Status
2-Propanol 67-63-0	Toxic, Ignitable

14. TRANSPORT INFORMATION

DOT	Not regulated
TDG	Not regulated
MEX	Not regulated
ICAO	Not regulated
IATA	Not regulated
IMDG / IMO	Not regulated
RID	Not regulated
ADR	Not regulated
ADN	Not regulated

15. REGULATORY INFORMATION

International Inventories

TSCA	Complies
DSL	Complies
EINECS	Complies
ENCS	Not determined
IECSC	Complies
KECL	Complies
PICCS	Not determined
AICS	Not determined

Legend

TSCA - United States Toxic Substances Control Act Section 8(b) Inventory

DSL/NDSL - Canadian Domestic Substances List/Non-Domestic Substances List

EINECS/ELINCS - European Inventory of Existing Commercial Chemical Substances/EU List of Notified Chemical Substances

ENCS - Japan Existing and New Chemical Substances

IECSC - China Inventory of Existing Chemical Substances

KECL - Korean Existing and Evaluated Chemical Substances

PICCS - Philippines Inventory of Chemicals and Chemical Substances

AICS - Australian Inventory of Chemical Substances

U.S. Federal Regulations

SARA 313

Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product contains a chemical or chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372: 1,2-epoxybutane, 2-methyl-2-propanol.

Chemical Name	CAS-No.	Weight %	SARA 313 - Threshold Values %
2-Propanol - 67-63-0	67-63-0	5 - 10	1.0
2-Methyl-2-propanol - 75-65-0	75-65-0	1 - 2	1.0
1,2-Epoxybutane - 106-88-7	106-88-7	0.1 - 1	0.1

SARA 311/312 Hazard Categories

Acute health hazard	Yes
Chronic Health Hazard	Yes
Fire hazard	No
Sudden release of pressure hazard	No

Reactive Hazard No

Clean Water Act

This product does not contain any substances regulated as pollutants pursuant to the Clean Water Act (40 CFR 122.21 and 40 CFR 122.42)

Chemical Name	CWA - Reportable Quantities	CWA - Toxic Pollutants	CWA - Priority Pollutants	CWA - Hazardous Substances
2-Propanol 67-63-0				x

CERCLA

This material, as supplied, contains one or more substances regulated as a hazardous substance under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302)

Chemical Name	Hazardous Substances RQs	Extremely Hazardous Substances RQs	RQ
1,2-Epoxybutane 106-88-7	100 lb		100 lbs.

U.S. State Regulations

Chemical Name	California Prop. 65
1-Bromopropane - 106-94-5	Developmental Female Reproductive Male Reproductive

U.S. State Right-to-Know Regulations

Chemical Name	New Jersey	Massachusetts	Pennsylvania
1-Bromopropane 106-94-5	X	X	X
2-Propanol 67-63-0	X	X	X
Dimethoxymethane 109-87-5	X	X	X
2-Methyl-2-propanol 75-65-0	X	X	X
1,2-Epoxybutane 106-88-7	X	X	X

16. OTHER INFORMATION

NFPA Health Hazard 2 Flammability 1 Instability 0 Physical and Chemical Hazards n/a
HMIS Health Hazard 2* Flammability 1 Physical hazards 0 Personal Precautions n/a

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 Reason for Revision Update to supplier identity/logo

Disclaimer

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

End of MSDS

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