Lenium™ FS

Safety Data Sheet

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations
Issue date: 11/3/2022 Revision date: 11/23/2022 Supersedes: 11/3/2022 Version: 1.1

SECTION 1: Identification

1.1. Identification

Product form : Mixture
Product name : Lenium™ FS
Product code : LENFS

1.2. Recommended use and restrictions on use

Use of the substance/mixture : Cleaning/washing agents and additives
Restrictions on use : Product for industrial use only

1.3. Supplier

Vantage Specialties, Inc.
3938 Porett Drive
Gurnee, IL 60031
USA
T +1 847-244-3410
msds.pm.us@vantagegrp.com

1.4. Emergency telephone number

Emergency number : For Chemical Emergency Call CHEMTREC 24hr/day 7days/week
Within USA and Canada: 1-800-424-9300
Outside USA and Canada: 1-703-527-3887
(collect calls accepted)

SECTION 2: Hazard(s) identification

2.1. Classification of the substance or mixture

GHS US classification

Serious eye damage/eye irritation Category 2A	H319	Causes serious eye irritation
Specific target organ toxicity – Single exposure, Category 3, Narcosis	H336	May cause drowsiness or dizziness

Full text of H statements : see section 16

2.2. GHS Label elements, including precautionary statements

GHS US labeling

Hazard pictograms (GHS US) :

Signal word (GHS US) : Warning
Hazard statements (GHS US) : H319 - Causes serious eye irritation
H336 - May cause drowsiness or dizziness
Precautionary statements (GHS US) : P261 - Avoid breathing dust/fume/gas/mist/vapors/spray.
P264 - Wash hands, forearms and face thoroughly after handling.
P271 - Use only outdoors or in a well-ventilated area.
P280 - Wear protective gloves/protective clothing/eye protection/face protection.
P304+P340 - If inhaled: Remove person to fresh air and keep comfortable for breathing.
P305+P351+P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

2.3. Other hazards which do not result in classification

Other hazards which do not result in classification : vapors are heavier than air and can cause suffocation by reducing oxygen available for breathing.

2.4. Unknown acute toxicity (GHS US)

Not applicable

SECTION 3: Composition/Information on ingredients

3.1. Substances

Not applicable

3.2. Mixtures

Name	Product identifier	%	GHS US classification
1,2-trans-Dichloroethylene	CAS-No.: 156-60-5	30 – 60	Flam. Liq. 2, H225 Acute Tox. 4 (Inhalation), H332 Eye Irrit. 2A, H319 STOT SE 3, H336 Aquatic Chronic 3, H412
1,1,2,2-Tetrafluoroethyl-2,2,2-trifluoroethyl ether	CAS-No.: 406-78-0	30 – 60	Skin Irrit. 2, H315 Eye Irrit. 2, H319 STOT SE 3, H335
Isobutyl Methyl Ketone	CAS-No.: 108-10-1	0 – 1	Flam. Liq. 2, H225 Acute Tox. 4 (Inhalation), H332 Eye Irrit. 2, H319 Carc. 2, H351 STOT SE 3, H335

Full text of hazard classes and H-statements : see section 16

SECTION 4: First-aid measures

4.1. Description of first aid measures

First-aid measures general : Call a poison center/doctor/physician if you feel unwell.
First-aid measures after inhalation : Remove person to fresh air and keep comfortable for breathing.
First-aid measures after skin contact : Wash skin with plenty of water.
First-aid measures after eye contact : Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice/attention.
First-aid measures after ingestion : Call a poison center/doctor/physician if you feel unwell.

4.2. Most important symptoms and effects (acute and delayed)

Symptoms/effects : May cause drowsiness or dizziness.
Symptoms/effects after eye contact : Eye irritation.

4.3. Immediate medical attention and special treatment, if necessary

Treat symptomatically.

SECTION 5: Fire-fighting measures

5.1. Suitable (and unsuitable) extinguishing media

Suitable extinguishing media : Use extinguishing agent suitable for surrounding fire.
Unsuitable extinguishing media : Do not use a solid water stream as it may scatter and spread fire.

5.2. Specific hazards arising from the chemical

Fire hazard : Not flammable.
Explosion hazard : Heating will cause a rise in pressure with a risk of bursting.
Hazardous decomposition products in case of fire : Corrosive vapors. Toxic fumes may be released. Carbon dioxide. Carbon monoxide. Hydrogen fluoride. Hydrogen chloride. Halogenated hydrocarbons.

5.3. Special protective equipment and precautions for fire-fighters

Protection during firefighting : Under fire conditions closed containers may rupture or explode. Do not attempt to take action without suitable protective equipment. Self-contained breathing apparatus. Complete protective clothing.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

6.1.1. For non-emergency personnel

Emergency procedures : Ventilate spillage area. Avoid breathing dust/fume/gas/mist/vapors/spray. Avoid contact with skin and eyes.

6.1.2. For emergency responders

Protective equipment : Do not attempt to take action without suitable protective equipment. For further information refer to section 8: "Exposure controls/personal protection".

6.2. Environmental precautions

Avoid release to the environment.

6.3. Methods and material for containment and cleaning up

Methods for cleaning up : Take up liquid spill into absorbent material.
Other information : Dispose of materials or solid residues at an authorized site.

6.4. Reference to other sections

For further information refer to section 13.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Precautions for safe handling : Use only outdoors or in a well-ventilated area. Avoid breathing dust/fume/gas/mist/vapors/spray. Avoid contact with skin and eyes. Wear personal protective equipment.
Hygiene measures : Do not eat, drink or smoke when using this product. Always wash hands after handling the product.

7.2. Conditions for safe storage, including any incompatibilities

Storage conditions : Store locked up. Store in a well-ventilated place. Keep container tightly closed. Keep cool.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Lenium™ FS
No additional information available

1,2-trans-Dichloroethylene (156-60-5)	
USA - ACGIH - Occupational Exposure Limits	
Local name	1,2-Dichloroethylene, trans-isomer
ACGIH OEL TWA [ppm]	200 ppm
Remark (ACGIH)	TLV® Basis: CNS impair; eye irr
Regulatory reference	ACGIH 2022

1,1,2,2-Tetrafluoroethyl-2,2,2-trifluoroethyl ether (406-78-0)
No additional information available

Isobutyl Methyl Ketone (108-10-1)	
USA - ACGIH - Occupational Exposure Limits	
Local name	Methyl isobutyl ketone
ACGIH OEL TWA [ppm]	20 ppm
ACGIH OEL STEL [ppm]	75 ppm
Remark (ACGIH)	TLV® Basis: URT irr; dizziness; headache. Notations: A3 (Confirmed Animal Carcinogen with Unknown Relevance to Humans); BEI
ACGIH chemical category	Confirmed Animal Carcinogen with Unknown Relevance to Humans
Regulatory reference	ACGIH 2022
USA - ACGIH - Biological Exposure Indices	
BEI	1 mg/l Parameter: MIBK - Medium: urine - Sampling time: end of shift
USA - OSHA - Occupational Exposure Limits	
Local name	Hexone (Methyl isobutyl ketone)
OSHA PEL TWA [1]	410 mg/m³
OSHA PEL TWA [2]	100 ppm
Regulatory reference (US-OSHA)	OSHA Annotated Table Z-1
USA - IDLH - Occupational Exposure Limits	
IDLH [ppm]	500 ppm
USA - NIOSH - Occupational Exposure Limits	
NIOSH REL TWA	205 mg/m³
NIOSH REL TWA [ppm]	50 ppm
NIOSH REL STEL	300 mg/m³
NIOSH REL STEL [ppm]	75 ppm

8.2. Appropriate engineering controls

Appropriate engineering controls : Ensure good ventilation of the work station.

Environmental exposure controls : Avoid release to the environment.

8.3. Individual protection measures/Personal protective equipment

Hand protection:
Protective gloves

Eye protection:
Safety glasses

Skin and body protection:
Wear suitable protective clothing

Respiratory protection:
In case of insufficient ventilation, wear suitable respiratory equipment

Personal protective equipment symbol(s):

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state	:	Liquid
Color	:	clear
Odor	:	ether-like
Odor threshold	:	No data available
pH	:	No data available
Melting point	:	Not applicable
Freezing point	:	No data available
Boiling point	:	42 °C
Flash point	:	does not flash
Relative evaporation rate (butyl acetate=1)	:	No data available
Relative evaporation rate (ether=1)	:	1.27
Flammability	:	Not applicable.
Vapor pressure	:	No data available
Relative vapor density at 20°C	:	No data available
Relative density	:	1.35 @ 25°C
Solubility	:	Immiscible.
Partition coefficient n-octanol/water (Log Pow)	:	No data available
Auto-ignition temperature	:	No data available
Decomposition temperature	:	No data available
Viscosity, kinematic	:	0.34 mm²/s @ 25°C
Viscosity, dynamic	:	No data available
Explosion limits	:	No data available
Explosive properties	:	Intense heat may cause container to burst.
Oxidizing properties	:	None reported.

9.2. Other information

No additional information available

SECTION 10: Stability and reactivity

10.1. Reactivity

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

10.2. Chemical stability

Stable under normal conditions.

10.3. Possibility of hazardous reactions

No dangerous reactions known under normal conditions of use.

10.4. Conditions to avoid

None under recommended storage and handling conditions (see section 7).

10.5. Incompatible materials

Oxidizing agent. alkalis. Alkaline earth metals.

10.6. Hazardous decomposition products

Carbon dioxide. Carbon monoxide. Hydrogen chloride. Hydrogen fluoride.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute toxicity (oral) : Not classified
Acute toxicity (dermal) : Not classified
Acute toxicity (inhalation) : Not classified

1,2-trans-Dichloroethylene (156-60-5)	
LD50 oral rat	1235 mg/kg
LD50 dermal rabbit	> 5000 mg/kg
LC50 Inhalation - Rat	96.943 mg/l (OECD 403: Acute Inhalation Toxicity, 4 h, Rat, Male / female, Experimental value, Inhalation (vapours), 14 day(s))
LC50 Inhalation - Rat [ppm]	24100 ppm/4h

Isobutyl Methyl Ketone (108-10-1)	
LD50 oral rat	2080 mg/kg
LD50 dermal rat	≥ 2000 mg/kg body weight (OECD 402: Acute Dermal Toxicity, 24 h, Rat, Male / female, Experimental value, Dermal, 14 day(s))
LD50 dermal rabbit	3000 mg/kg
LC50 Inhalation - Rat	11.6 mg/l (Equivalent or similar to OECD 403, 4 h, Rat, Male, Experimental value, Inhalation (vapours))
LC50 Inhalation - Rat [ppm]	2000 – 4000 ppm/4h

Skin corrosion/irritation : Not classified
Serious eye damage/irritation : Causes serious eye irritation.
Respiratory or skin sensitization : Not classified
Germ cell mutagenicity : Not classified
Carcinogenicity : Not classified

Isobutyl Methyl Ketone (108-10-1)	
IARC group	2B - Possibly carcinogenic to humans
National Toxicity Program (NTP) Status	Evidence of Carcinogenicity
In OSHA Hazard Communication Carcinogen list	Yes

Reproductive toxicity : Not classified
STOT-single exposure : May cause drowsiness or dizziness.

1,2-trans-Dichloroethylene (156-60-5)	
STOT-single exposure	May cause drowsiness or dizziness.

1,1,2,2-Tetrafluoroethyl-2,2,2-trifluoroethyl ether (406-78-0)	
STOT-single exposure	May cause respiratory irritation.

Isobutyl Methyl Ketone (108-10-1)	
STOT-single exposure	May cause respiratory irritation.

STOT-repeated exposure : Not classified

Isobutyl Methyl Ketone (108-10-1)	
LOAEL (oral,rat,90 days)	1000 mg/kg body weight Animal: rat, Guideline: OECD Guideline 408 (Repeated Dose 90-Day Oral Toxicity Study in Rodents)
NOAEL (oral,rat,90 days)	250 mg/kg body weight Animal: rat, Guideline: OECD Guideline 408 (Repeated Dose 90-Day Oral Toxicity Study in Rodents)
NOAEC (inhalation,rat,vapor,90 days)	4106 mg/l air Animal: rat, Guideline: OECD Guideline 413 (Subchronic Inhalation Toxicity: 90-Day Study)

Aspiration hazard : Not classified
Viscosity, kinematic : 0.34 mm²/s @ 25°C
Symptoms/effects : May cause drowsiness or dizziness.
Symptoms/effects after eye contact : Eye irritation.

SECTION 12: Ecological information

12.1. Toxicity

1,2-trans-Dichloroethylene (156-60-5)	
LC50 - Fish [1]	135 mg/l (Exposure time: 96 h - Species: Lepomis macrochirus [static])
EC50 - Crustacea [1]	220 mg/l Source: ECHA

Isobutyl Methyl Ketone (108-10-1)	
LC50 - Fish [1]	496 – 514 mg/l (Exposure time: 96 h - Species: Pimephales promelas [flow-through])
EC50 - Crustacea [1]	170 mg/l (Exposure time: 48 h - Species: Daphnia magna)
NOEC chronic fish	57 mg/l
NOEC chronic crustacea	7.8 mg/l

12.2. Persistence and degradability

1,2-trans-Dichloroethylene (156-60-5)	
Persistence and degradability	Readily biodegradable in water.

Isobutyl Methyl Ketone (108-10-1)	
Persistence and degradability	Biodegradable in the soil. Biodegradable in the soil under anaerobic conditions. Readily biodegradable in water.
Biochemical oxygen demand (BOD)	2.06 g O_2/g substance
Chemical oxygen demand (COD)	2.16 g O_2/g substance
ThOD	2.72 g O_2/g substance

12.3. Bioaccumulative potential

1,2-trans-Dichloroethylene (156-60-5)	
Partition coefficient n-octanol/water (Log Pow)	1.48
Bioaccumulative potential	Low potential for bioaccumulation (Log Kow < 4).

Isobutyl Methyl Ketone (108-10-1)	
Partition coefficient n-octanol/water (Log Pow)	1.9 (at pH 6.7)
Bioaccumulative potential	Low potential for bioaccumulation (Log Kow < 4).

12.4. Mobility in soil

1,2-trans-Dichloroethylene (156-60-5)	
Surface tension	25 mN/m (20 °C)
Ecology - soil	No (test)data on mobility of the substance available.

Isobutyl Methyl Ketone (108-10-1)	
Surface tension	No data available in the literature
Organic Carbon Normalized Adsorption Coefficient (Log Koc)	2.008 (log Koc, Weight of evidence, Calculated value)
Ecology - soil	Low potential for adsorption in soil.

12.5. Other adverse effects

No additional information available

SECTION 13: Disposal considerations

13.1. Disposal methods

Waste treatment methods : Dispose of contents/container in accordance with licensed collector's sorting instructions.

SECTION 14: Transport information

In accordance with DOT / TDG / IMDG / IATA

DOT	TDG	IMDG	IATA
14.1. UN number			
Not regulated for transport			
14.2. Proper Shipping Name			
Not applicable	Not applicable	Not applicable	Not applicable

DOT	TDG	IMDG	IATA
Transport document description			
Not applicable	Not applicable	Not applicable	Not applicable
14.3. Transport hazard class(es)			
Not applicable	Not applicable	Not applicable	Not applicable
14.4. Packing group			
Not applicable	Not applicable	Not applicable	Not applicable
14.5. Environmental hazards			
Not applicable	Not applicable	Not applicable	Not applicable
No supplementary information available			

14.6. Special precautions for user

DOT
No data available

TDG
No data available

IMDG
No data available

IATA
No data available

14.7. Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

Not applicable

SECTION 15: Regulatory information

15.1. US Federal regulations

All components of this product are present and listed as Active on the United States Environmental Protection Agency Toxic Substances Control Act (TSCA) inventory		
Contains chemical(s) subject to TSCA 12b export notification if product is shipped outside the U.S		
1,1,2,2-Tetrafluoroethyl-2,2,2-trifluoroethyl ether	CAS-No. 406-78-0	30 – 60%

Chemical(s) subject to the reporting requirements of Section 313 or Title III of the Superfund Amendments and Reauthorization Act (SARA) of 1986 and 40 CFR Part 372.		
Isobutyl Methyl Ketone	CAS-No. 108-10-1	0 – 1%

1,2-trans-Dichloroethylene (156-60-5)	
CERCLA RQ	1000 lb listed under 1,2-Dichloroethylene

Isobutyl Methyl Ketone (108-10-1)
Listed on EPA Hazardous Air Pollutant (HAPS)

Isobutyl Methyl Ketone (108-10-1)	
CERCLA RQ	5000 lb

15.2. International regulations

Isobutyl Methyl Ketone (108-10-1)
Listed on IARC (International Agency for Research on Cancer)

15.3. US State regulations

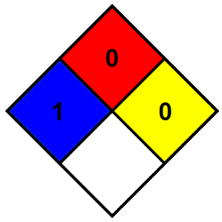
WARNING: This product can expose you to Methyl isobutyl ketone, which is known to the State of California to cause cancer and birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov.

SECTION 16: Other information

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations
Revision date : 11/23/2022

Full text of H-phrases	
H225	Highly flammable liquid and vapor
H315	Causes skin irritation
H319	Causes serious eye irritation
H332	Harmful if inhaled
H335	May cause respiratory irritation
H336	May cause drowsiness or dizziness
H351	Suspected of causing cancer
H412	Harmful to aquatic life with long lasting effects

NFPA health hazard : 1 - Materials that, under emergency conditions, can cause significant irritation.
NFPA fire hazard : 0 - Materials that will not burn under typical fire conditions, including intrinsically noncombustible materials such as concrete, stone, and sand.
NFPA reactivity : 0 - Material that in themselves are normally stable, even under fire conditions.



Hazard Rating
Health : 1 Slight Hazard - Irritation or minor reversible injury possible
Flammability : 0 Minimal Hazard - Materials that will not burn
Physical : 0 Minimal Hazard - Materials that are normally stable, even under fire conditions, and will NOT react with water, polymerize, decompose, condense, or self-react. Non-Explosives.
Personal protection : B - Safety glasses, Gloves

Vantage - Safety Data Sheet (SDS), USA