

GALDEN(R) LS

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

1.1. Identification of the substance or preparation

Product name : GALDEN(R) LS
Product grade(s) : LS155; LS165; LS200; LS210; LS215; LS215/S; LS217; LS230
Chemical characterization : Perfluorinated polyethers
Structural formula : $\text{CF}_3\text{-O-(C}_3\text{F}_6\text{O)}_n\text{-(CF}_2\text{-O)}_m\text{-CF}_3$
Molecular Weight :
Range of values : 700 - 1,000

1.2. Use of the Substance/Preparation

Recommended use : - Heat transfer medium
- For industrial use only.

1.3. Company/Undertaking Identification

Address : SOLVAY SOLEXIS S.p.A.
VIALE LOMBARDIA, 20
I- 20021 BOLLATE

Telephone : +390238351

Telefax : +390238352614

1.4. Emergency and contact telephone numbers

Emergency telephone : +44(0)208 762 8322 [CareChem 24] (Europe)

Contact telephone number : IT: +39-2-3835-1
(product information):

E-mail address : sds.solexis@solvay.com

2. HAZARDS IDENTIFICATION

Appearance : liquid
Colour : colourless
Odour : odourless

- Substance non classified according to Directive 67/548/EEC.
- Not hazardous in normal conditions of handling and use
- Ecological injuries are not known or expected under normal use.
- Thermal decomposition can lead to release of toxic and corrosive gases.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance name (CAS-No. / EC-No. / Annex-1)	Concentration (W/W)	Classification	R-phrases(s)
1-Propene, 1,1,2,3,3,3-hexafluoro-, oxidized, polymd. (69991-67-9 / Exempt or not available / Exempt or not available)	> 99.9 %		

4. FIRST AID MEASURES

4.1. Inhalation

- Move to fresh air in case of accidental inhalation of fumes from overheating or combustion.
- Oxygen or artificial respiration if needed.

4.2. Eye contact

- Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes.
- If eye irritation persists, consult a specialist.

4.3. Skin contact

- Wash off with soap and water.
- If symptoms persist, call a physician.

4.4. Ingestion

- Drink 1 or 2 glasses of water.
- Do NOT induce vomiting.
- If symptoms persist, call a physician.

5. FIRE-FIGHTING MEASURES

5.1. Suitable extinguishing media

- Water
- powder
- Foam
- Dry chemical
- Carbon dioxide (CO₂)

5.2. Extinguishing media which shall not be used for safety reasons

- None.

5.3. Special exposure hazards in a fire

- The product is not flammable.
- Not explosive
- In case of fire hazardous decomposition products may be produced such as: Gaseous hydrogen fluoride (HF), Fluorophosgene

5.4. Special protective equipment for fire-fighters

- Wear self-contained breathing apparatus and protective suit.
- When intervention in close proximity wear acid resistant over suit.

5.5. Other information

- Evacuate personnel to safe areas.
- Approach from upwind.
- Protect intervention team with a water spray as they approach the fire.
- Keep containers and surroundings cool with water spray.
- Keep product and empty container away from heat and sources of ignition.

6. ACCIDENTAL RELEASE MEASURES

6.1. Personal precautions

- Ensure adequate ventilation.
- Material can create slippery conditions.
- Sweep up to prevent slipping hazard.
- Prevent further leakage or spillage if safe to do so.
- Keep away from open flames, hot surfaces and sources of ignition.
- Refer to protective measures listed in sections 7 and 8.

6.2. Environmental precautions

- Should not be released into the environment.
- Do not flush into surface water or sanitary sewer system.

6.3. Methods for cleaning up

- Soak up with inert absorbent material.
- Suitable material for picking up
 - Earth
 - Sawdust
- Shovel into suitable container for disposal.

7. HANDLING AND STORAGE

7.1. Handling

- No special handling advice required.
- Ensure adequate ventilation.
- Use personal protective equipment.
- Keep away from heat and sources of ignition.
- To avoid thermal decomposition, do not overheat.
- Take measures to prevent the build up of electrostatic charge.
- Clean and dry piping circuits and equipment before any operations.
- Ensure all equipment is electrically grounded before beginning transfer operations.

7.2. Storage

- No special storage conditions required.
- Keep in properly labelled containers.
- Keep away from heat and sources of ignition.
- Keep away from combustible material.
- Keep away from Incompatible products.

7.3. Specific use(s)

- Product degradation was not observed in VPS application.
- For further information, please contact: Supplier

7.4. Packaging material

- glass
- Plastic material

7.5. Other information

- Provide tight electrical equipment well protected against corrosion.
- Refer to protective measures listed in sections 7 and 8.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1. Exposure Limit Values

Remarks:

- Threshold limit values of by-products from thermal decomposition

Hydrogen fluoride anhydrous

- UK. EH40 Workplace Exposure Limits (WELs) 2005
time weighted average = 1.8 ppm
time weighted average = 1.5 mg/m³
Remarks: as F
- UK. EH40 Workplace Exposure Limits (WELs) 2005
Short term exposure limit = 3 ppm
Short term exposure limit = 2.5 mg/m³
Remarks: as F
- US. ACGIH Threshold Limit Values 2007
time weighted average = 0.5 ppm
Remarks: as F
- US. ACGIH Threshold Limit Values 2007
Ceiling Limit Value = 2 ppm
Remarks: as F
- EU. Indicative Exposure and Directives relating to the protection of risks related to work exposure to chemical, physical, and biological agents. 02 2006
time weighted average = 1.8 ppm
time weighted average = 1.5 mg/m³
- EU. Indicative Exposure and Directives relating to the protection of risks related to work exposure to chemical, physical, and biological agents. 02 2006
Short term exposure limit = 3 ppm
Short term exposure limit = 2.5 mg/m³
- US. ACGIH Threshold Limit Values 2008
Remarks: as F, Can be absorbed through skin.

Carbonyl difluoride

- US. ACGIH Threshold Limit Values 01 2006
time weighted average = 2 ppm
- US. ACGIH Threshold Limit Values 01 2006
Short term exposure limit = 5 ppm
- UK. EH40 Workplace Exposure Limits (WELs) 2005
time weighted average = 2.5 mg/m³
Remarks: as F
- EU. Indicative Exposure and Directives relating to the protection of risks related to work exposure to chemical, physical, and biological agents. 02 2006
time weighted average = 2.5 mg/m³

8.2. Exposure controls

- Provide local ventilation appropriate to the product decomposition risk (see section 10).
- Refer to protective measures listed in sections 7 and 8.
- Apply technical measures to comply with the occupational exposure limits.

8.2.1. Occupational exposure controls

8.2.1.1. Respiratory protection

- No personal respiratory protective equipment normally required.
- Wear self-contained breathing apparatus in confined spaces, in cases where the oxygen level is depleted, or in case of significant emissions.
- Use only respiratory protection that conforms to international/ national standards.

8.2.1.2. Hand protection

- Rubber or plastic gloves
- Latex gloves
- Take note of the information given by the producer concerning permeability and break through times, and of special workplace conditions (mechanical strain, duration of contact).

8.2.1.3. Eye protection

- Tightly fitting safety goggles

8.2.1.4. Skin and body protection

- Rubber apron
- long sleeved clothing

8.2.1.5. Hygiene measures

- Ensure that eyewash stations and safety showers are close to the workstation location.
- When using do not eat, drink or smoke.
- Wash hands and face before breaks and immediately after handling the product.
- Handle in accordance with good industrial hygiene and safety practice for diagnostics.

8.2.2. Environmental exposure controls

- Dispose of rinse water in accordance with local and national regulations.

9. PHYSICAL AND CHEMICAL PROPERTIES

9.1. General Information (appearance, odour)

Appearance	: liquid
Colour	: colourless
Odour	: odourless

9.2. Important health safety and environmental information

Boiling point/boiling range	: 150 - 230 °C
Flash point	: <i>Remarks:</i> The product is not flammable.
Flammability	: <i>Remarks:</i> The product is not flammable.
Explosive properties	: <u><i>Explosion danger:</i></u> <i>Remarks:</i> Not explosive
Oxidizing properties	: <i>Remarks:</i> Non oxidizer
Vapour pressure	: 0.001 - 1.3 hPa <i>Temperature:</i> 20 °C
Relative density / Density	: 1.78 - 1.83 g/cm ³ <i>Temperature:</i> 20 °C
Solubility	: Water <i>Remarks:</i> insoluble : fluorinated solvents <i>Remarks:</i> soluble

9.3. Other data

Melting point/range	: <i>Remarks:</i> not applicable
Decomposition temperature	: > 290 °C

10. STABILITY AND REACTIVITY

10.1. Stability

- Stable under recommended storage conditions.
- metals promote and lower decomposition temperature
- In presence of titanium and its alloys the decomposition temperature decreases to 260°C.



10.2. Conditions to avoid

- To avoid thermal decomposition, do not overheat.
- Keep away from flames and sparks.

10.3. Materials to avoid

- Combustible material, Flammable materials
- non-aqueous alkalis
- Aluminum and magnesium in powder form above 200°C
- Lewis acids (Friedel-Crafts) above 100°C

10.4. Hazardous decomposition products

- Gaseous hydrogen fluoride (HF), Fluorophosgene

11. TOXICOLOGICAL INFORMATION

11.1 Toxicological data

Acute oral toxicity

- LD50, rat, > 15,000 mg/kg

Acute inhalation toxicity

- LC50, 4 h, rat, > 66.6 mg/l

Acute dermal toxicity

- LD50, rat, > 5,000 mg/kg

Skin irritation

- rabbit, No skin irritation
- rabbit, No skin irritation, Remarks: 14 days

Eye irritation

- rabbit, No eye irritation

Sensitisation

- guinea pig, Did not cause sensitization on laboratory animals.

Genetic toxicity in vitro

- Not mutagenic in Ames Test.
- negative , Remarks: Chromosome aberration test in vitro

Possible hazards (summary)

- Description of possible hazardous to health effects is based on experience and/or toxicological characteristics of several components.

11.2. Health effects

Main effects

- Thermal decomposition can lead to release of toxic and corrosive gases.
- Exposure to decomposition products
- Causes severe irritation of eyes, skin and mucous membranes.

Inhalation

- No known effect.

Eye contact

- Contact with eyes may cause irritation.
- Redness

Skin contact

- Symptoms: Redness.

Ingestion

- Ingestion may provoke the following symptoms:
- Symptoms: Nausea, Vomiting, Diarrhoea.

12. ECOLOGICAL INFORMATION

12.1. Ecotoxicity effects

Acute toxicity

- Fishes, *Oncorhynchus mykiss*, 96 h, > 360 mg/l
Remarks: saturated aqueous solution
- Crustaceans, *Daphnia magna*, 48 h, > 360 mg/l
Remarks: saturated aqueous solution

12.2. Mobility

- Remarks: no data available

12.3. Persistence and degradability

Abiotic degradation

- Result: no data available

Biodegradation

- Remarks: no data available

12.4. Bioaccumulative potential

- Result: no data available

12.5. Other adverse effects

- no data available

12.6. Possible hazards (summary)

- Ecological injuries are not known or expected under normal use.

13. DISPOSAL CONSIDERATIONS

13.1. Waste from residues / unused products

- Can be incinerated, when in compliance with local regulations.
- The incinerator must be equipped with a system for the neutralisation or recovery of HF.
- In accordance with local and national regulations.

13.2. Packaging treatment

- Empty containers can be landfilled, when in accordance with the local regulations.

14. TRANSPORT INFORMATION

- Sea (IMO/IMDG)
not regulated
- Air (ICAO/IATA)
not regulated
- European Road/Rail (ADR/RID)
not regulated

15. REGULATORY INFORMATION

15.1. EC Label

- Substance non classified according to Directive 67/548/EEC.

15.2. Inventory Information

Toxic Substance Control Act list (TSCA) : - In compliance with inventory.

Australian Inventory of Chemical Substances (AICS)	: -	In compliance with inventory.
Canadian Domestic Substances List (DSL)	: -	In compliance with inventory.
Inventory of Existing Chemical Substances (China) (IECS)	: -	In compliance with inventory.
Korea Existing Chemicals Inv. (KECI) (KECI (KR))	: -	In compliance with inventory.
Japanese Existing and New Chemical Substances (MITI List) (ENCS)	: -	In compliance with inventory.
New Zealand Inventory (in preparation) (NZ)	: -	In compliance with inventory.
Philippine Inventory of Chemicals and Chemical Substances (PICCS)	: -	In compliance with inventory.
EU list of existing chemical substances (EINECS)	: -	not applicable, Product falls under the EU-polymer definition..

15.3. Other regulations

- European Waste Catalogue, Hazardous waste, Waste codes should be assigned by the user based on the application for which the product was used.

16. OTHER INFORMATION

16.1. Administrative information

- Update
- Distribute new edition to clients

This SDS is only intended for the indicated country to which it is applicable. The European SDS format compliant with the applicable European legislation is not intended for use nor distribution in countries outside the European Union with the exception of Norway and Switzerland. Safety datasheets applicable in other countries/regions are available upon request.

The information given corresponds to the current state of our knowledge and experience of the product, and is not exhaustive. This applies to product which conforms to the specification, unless otherwise stated. In this case of combinations and mixtures one must make sure that no new dangers can arise. In any case, the user is not exempt from observing all legal, administrative and regulatory procedures relating to the product, personal hygiene, and protection of human welfare and the environment.