

GALDEN® HT HIGH-BOILING

SECTION 1. IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

1.1. Product identifier

- Product name : **GALDEN® HT HIGH-BOILING**
- Product grade(s) : HT200; HT230; HT270
- Chemical characterization : Perfluorinated polyethers

1.2. Relevant identified uses of the substance or mixture and uses advised against

- Identified uses : - Heat transfer medium
- For industrial use only.

1.3. Details of the supplier of the safety data sheet

- Company : SOLVAY SPECIALTY POLYMERS ITALY S.p.A.
- Address : VIALE LOMBARDIA, 20
I- 20021 BOLLATE
- Telephone : +3902290921
- Fax : +390229092614
- E-mail address : sds.solvay@solvay.com

1.4. Emergency telephone number

- Emergency telephone number : **+44(0)1235 239 670 [CareChem 24] (Europe)**

SECTION 2. HAZARDS IDENTIFICATION

2.1. Classification of the substance or mixture

2.1.1. European regulation (EC) 1272/2008, as amended

Not classified as hazardous according to the European regulation (EC) 1272/2008, as amended

2.1.2. European Directive 67/548/EEC or 1999/45/EC, as amended

Not classified as hazardous according to European Directive 67/548/EEC or 1999/45/EC, as amended

2.2. Label elements

No labelling

2.3. Other hazards

- Thermal decomposition can lead to release of toxic and corrosive gases.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

3.1. Substances

3.1.1. Concentration

Substance name:	Concentration
1-Propene, 1,1,2,3,3,3-hexafluoro-, oxidized, polymd.	> 99.9 %
CAS-No.: 69991-67-9 / EC-No.: - / Index-No.: -	

SECTION 4. FIRST AID MEASURES

4.1. Description of first aid measures

4.1.1. If inhaled

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

4.1.2. In case of eye contact

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

4.1.3. In case of skin contact

- Wash off with soap and water.

4.1.4. If swallowed

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

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

4.2.1. Inhalation

- No known effect.

4.2.2. Skin contact

- Redness

4.2.3. Eye contact

- Redness

4.2.4. Ingestion

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

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

SECTION 5. FIREFIGHTING MEASURES

5.1. Extinguishing media

5.1.1. Suitable extinguishing media

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

5.1.2. Unsuitable extinguishing media

- None.

5.2. Special hazards arising from the substance or mixture

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

5.3. Advice for firefighters

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

SECTION 6. ACCIDENTAL RELEASE MEASURES

6.1. Personal precautions, protective equipment and emergency procedures

6.1.1. Advice for non-emergency personnel

- Prevent further leakage or spillage if safe to do so.

6.1.2. Advice for emergency responders

- Ensure adequate ventilation.
- Material can create slippery conditions.
- Sweep up to prevent slipping hazard.
- Keep away from open flames, hot surfaces and sources of ignition.

6.2. Environmental precautions

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

6.3. Methods and materials for containment and cleaning up

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

6.4. Reference to other sections

- Refer to protective measures listed in sections 7 and 8.

SECTION 7. HANDLING AND STORAGE

7.1. Precautions for safe handling

- 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. Conditions for storage, including incompatibilities

7.2.1. Storage

- Keep away from heat and sources of ignition.
- Keep in properly labelled containers.
- Keep away from combustible material.

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

7.2.2. Packaging material

7.2.2.1. Suitable material

- polyethylene containers

7.3. Specific end use(s)

- For further information, please contact: Supplier

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1. Control parameters

8.1.1. Exposure Limit Values

Remarks:

- Threshold limit values of by-products from thermal decomposition

Hydrogen fluoride anhydrous

- UK. EH40 Workplace Exposure Limits (WELs) 12 2011
time weighted average = 1.8 ppm
time weighted average = 1.5 mg/m³
Remarks: as F
- UK. EH40 Workplace Exposure Limits (WELs) 12 2011
Short term exposure limit = 3 ppm
Short term exposure limit = 2.5 mg/m³
Remarks: as F
- US. ACGIH Threshold Limit Values 03 2013
time weighted average = 0.5 ppm
Remarks: as F
- US. ACGIH Threshold Limit Values 03 2013
Ceiling Limit Value = 2 ppm
Remarks: as F
- EU. Indicative Exposure Limit Values in Directives 91/322/EEC, 2000/39/EC, 2006/15/EC, 2009/161/EU 12 2009
time weighted average = 1.8 ppm
time weighted average = 1.5 mg/m³
Remarks: Indicative
- EU. Indicative Exposure Limit Values in Directives 91/322/EEC, 2000/39/EC, 2006/15/EC, 2009/161/EU 12 2009
Short term exposure limit = 3 ppm
Short term exposure limit = 2.5 mg/m³
Remarks: Indicative
- US. ACGIH Threshold Limit Values 03 2013
Remarks: as F, Can be absorbed through skin.

Carbonyl difluoride

- US. ACGIH Threshold Limit Values 03 2013
time weighted average = 2 ppm
- US. ACGIH Threshold Limit Values 03 2013
Short term exposure limit = 5 ppm
- UK. EH40 Workplace Exposure Limits (WELs) 12 2011
time weighted average = 2.5 mg/m³
Remarks: as F
- EU. Indicative Exposure Limit Values in Directives 91/322/EEC, 2000/39/EC, 2006/15/EC, 2009/161/EU 12 2009
time weighted average = 2.5 mg/m³
Remarks: Indicative

8.2. Exposure controls

8.2.1. Appropriate engineering 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.

8.2.2. Individual protection measures

8.2.2.1. *Respiratory protection*

- In case of decomposition (see section 10), use an air breathing apparatus with face mask.
- Use only respiratory protection that conforms to international/ national standards.

8.2.2.2. *Hand protection*

- Wear protective gloves.
- Suitable material: Nitrile rubber, PVC, Neoprene gloves, butyl-rubber
- 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).

8.2.2.3. *Eye protection*

- Tightly fitting safety goggles

8.2.2.4. *Skin and body protection*

- Wear work overall and safety shoes.

8.2.2.5. *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 before breaks and at the end of workday.
- Handle in accordance with good industrial hygiene and safety practice.

8.2.3. Environmental exposure controls

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

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

9.1. Information on basic physical and chemical properties

9.1.1. General Information

- | | |
|---------------------------|------------------------------|
| ■ Appearance | liquid |
| ■ Colour | colourless |
| ■ Odour | odourless |
| ■ Odour Threshold | No data |
| ■ Molecular weight | Range of values: 850 - 1,600 |

9.1.2. Important health safety and environmental information

- | | |
|---------------------------------------|-------------------------------|
| ■ pH | No data |
| ■ pKa | No data |
| ■ Melting point/freezing point | not applicable |
| ■ Boiling point/boiling range | 200 - 270 °C |
| ■ Flash point | The product is not flammable. |
| ■ Evaporation rate | No data |
| ■ Flammability (solid, gas) | No data |
| ■ Flammability | The product is not flammable. |
| ■ Explosive properties | Not explosive |
| ■ Vapour pressure | 0.01 - 0.2 hPa |
| ■ Vapour density | No data |

- | | |
|---|---|
| ▪ Density | 1.79 - 1.85 g/cm ³ |
| ▪ Relative density | No data |
| ▪ Bulk density | No data |
| ▪ Solubility(ies) | insoluble, Water
soluble, fluorinated solvents |
| ▪ Solubility/qualitative | No data |
| ▪ Partition coefficient: n-octanol/water | No data |
| ▪ Auto-ignition temperature | No data |
| ▪ Decomposition temperature | > 290 °C |
| ▪ Viscosity | No data |
| ▪ Oxidizing properties | Non oxidizer |

9.2. Other information

Remarks No data

SECTION 10. STABILITY AND REACTIVITY

10.1. Reactivity

- No dangerous reaction known under conditions of normal use.

10.2. Chemical 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.

10.3. Possibility of hazardous reactions

- No dangerous reaction known under conditions of normal use.

10.4. Conditions to avoid

- Avoid to use in presence of high voltage electric arc and in absence of oxygen.
- Keep away from flames.
- To avoid thermal decomposition, do not overheat.

10.5. Incompatible materials

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

10.6. Hazardous decomposition products

- Gaseous hydrogen fluoride (HF), Fluorophosgene

SECTION 11. TOXICOLOGICAL INFORMATION

11.1. Acute toxicity

11.1.1. Acute oral toxicity

- LD₅₀, rat, > 15,000 mg/kg

11.1.2. Acute inhalation toxicity

- LC₅₀, 4 h, rat, > 66.6 mg/l

11.1.3. Acute dermal toxicity

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

11.2. Skin corrosion/irritation

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

11.3. Serious eye damage/eye irritation

- rabbit, No eye irritation

11.4. Respiratory or skin sensitisation

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

11.5. Germ cell mutagenicity

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

11.6. Carcinogenicity

- no data available

11.7. Reproductive toxicity

- no data available

11.8. Specific target organ toxicity - single exposure

- Remarks: no data available

11.9. Specific target organ toxicity - repeated exposure

- Remarks: no data available

11.10. Aspiration hazard

- no data available

11.11. Other information

- Description of possible hazardous to health effects is based on experience and/or toxicological characteristics of several components.
- The product is biologically inert.
- Thermal decomposition can lead to release of toxic and corrosive gases.
- Exposure to decomposition products
- Causes severe irritation of eyes, skin and mucous membranes.

SECTION 12. ECOLOGICAL INFORMATION

12.1. Toxicity

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

12.2. Persistence and degradability

12.2.1. Abiotic degradation

- Result: no data available

12.2.2. Biodegradation

- no data available

12.3. Bioaccumulative potential

- Result: no data available

12.4. Mobility in soil

- no data available

12.5. Results of PBT and vPvB assessment

- no data available

12.6. Other adverse effects

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

SECTION 13. DISPOSAL CONSIDERATIONS

13.1. Waste treatment methods

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

13.2. Contaminated packaging

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

SECTION 14. TRANSPORT INFORMATION

International transport regulations

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

SECTION 15. REGULATORY INFORMATION

15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture

- Regulation (EC) No 1272/2008 of the European Parliament and of the Council of 16 December 2008 on classification, labelling and packaging of substances and mixtures, as amended
- Regulation (EC) No 1907/2006 of the European Parliament and of the Council of 18 December 2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH), as amended
- European Waste Catalogue
- Waste codes should be assigned by the user based on the application for which the product was used.

15.1.1. Notification status

Inventory Information	Status
USA. Toxic Substances Control Act (TSCA)	- Listed on inventory
Australia. Inventory of Chemical Substances (AICS)	- Listed on inventory
Canada. Domestic Substances List (DSL)	- Listed on inventory
Korea. Existing Chemicals Inventory (KECI (KR))	- Listed on inventory
China. Inventory of Existing Chemical Substances (IECSC)	- Listed on inventory
Japan. Industrial Safety & Health Law Inventory (ISHL (JP))	- Listed on inventory
Japan. Inventory of Existing & New Chemical Substances (ENCS)	- Listed on inventory
Philippine. Inventory of Chemicals and Chemical Substances (PICCS)	- Listed on inventory
New Zealand. Inventory of Chemicals (NZIOC)	- Listed on inventory
Taiwan. National Existing Chemical Substance Inventory (NECSI)	- Listed on inventory
EU. European Registration, Evaluation, Authorisation and Restriction of Chemical (REACH)	- If product is purchased from Solvay in Europe it is in compliance with REACH, if not please contact the supplier.

15.2. Chemical Safety Assessment

- A Chemical Safety Assessment is not required for this substance.

SECTION 16. OTHER INFORMATION

16.1. Other information

- New (SDS)
- 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.

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