

SAFETY DATA SHEET


ACCORDING TO EC-REGULATION 1272/2008 (CLP/GHS).

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

1.1	Product identifier	
	Product Name	Elegas.
	Chemical Name	Sulphur hexafluoride
	Trade name	Sulphur hexafluoride
	Alternative names	Sulphur fluoride, Elegas, Sulphur hexafluoride.
	Formula	SF ₆
	EINECS No.	219-854-2
	REACH registration №	01-2119458769-17-0001
	REACH C&L bulk notification No	02-2119699469-15-0000
	CAS No.	2551-62-4
1.2	Relevant identified uses of the substance or mixture and uses advised against	
	Identified use(s)	As dielectric, process medium or fire extinguishing agent.
	Uses advised against	None assigned.
1.3	Details of the supplier of the Safety Data Sheet	
1.3.1	Manufacturer	«HaloPolymer Kirovo-Chepetsk», LLC per. Pozharny, 2 613040, Kirovo-Chepetsk, Kirov Region, the Russian Federation
	Telephone	+7-83361-9-4281
	Fax	+7-83361-9-3594
	Website	www.halopolymer.com
1.3.2	Only representative of a non-Community manufacturer	URALCHEM Assist GmbH Johannssenstrasse 10 30159, Hannover, Germany
	Telephone	+49-511/45 99 444
	Fax	+49-511/45 99 446
	E-mail	info@uralchem-assist.de
1.4	Emergency telephone number	
	Manufacturer/supplier:	+7-83361-9-4250 [24 hours.]
	Emergency number	
	Europe	112
	Great Britain	+44 (0) 203 394 9870 (24/7)
	The USA	+1-877 271 7077
		Consult the relevant national official advisory body if necessary

2. SECTION 2: HAZARDS IDENTIFICATION

Classification and labeling have been performed according to Regulation (EC) No. 1272/2008 (CLP/GHP)

2.1	Classification of the substance or mixture	
2.1.1	Regulation (EC) No. 1272/2008	Not classified as dangerous for supply/use.
2.2	Label elements	
	Labeling according to Regulation (EC)	
	No 1272/2008 [CLP/GHS]	
	Hazard Pictogram	
	Signal word(s)	Warning
	Hazard statement(s)	H280: Contains gas under pressure; may explode if heated.
	Precautionary statement(s)	P410 + P403: Protect from sunlight. Store in a well-ventilated place.
2.3	Other hazards	Contains gas under pressure; may explode if heated.

Frostbite (cold burn). Asphyxiation. The product may decompose if heated to temperatures above (°C): 500. Thermal decomposition will evolve toxic and corrosive vapours..

See Also Section: 15.1.1.

2.4 Additional Information
3. SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS
3.1 Substances

EC Classification No. 1272/2008

Product identifier type in accordance with Article 18(2) of Regulation (EC) No 1272/2008	Identifier number	Identification name	Weight % content (or range)	EC Number
CAS number	2551-62-4	Sulphur hexafluoride	> 99.9	219-854-2

3.2 Mixtures

Not applicable.

3.3 Additional Information

None.

4. SECTION 4: FIRST AID MEASURES

4.1 Description of first aid measures

Inhalation

Skin Contact

Eye Contact

Ingestion

4.2 Most important symptoms and effects, both acute and delayed
4.3 Indication of immediate medical attention and special treatment needed

Remove to fresh air and keep at rest in a position comfortable for breathing. If breathing is laboured, oxygen should be administered by qualified personnel.

Allow to evaporate. Frostbite.: Thaw frosted parts with lukewarm water. Do no rub affected area. If symptoms persist, obtain medical attention. Hold eyelids apart and flush eyes with plenty of water for at least 15 minutes. If symptoms persist, obtain medical attention. Unlikely route of exposure.

Asphyxiation.: Feeling of suffocation.

Frostbite.: Redness. Pain.

No special requirements.

5. SECTION 5: FIRE-FIGHTING MEASURES
5.1 Extinguishing Media

Suitable Extinguishing Media

Unsuitable Extinguishing Media

Extinguish with carbon dioxide, dry chemical, foam or waterspray. None.

5.2 Special hazards arising from the substance or mixture
5.3 Advice for fire-fighters
5.4 Additional Information

May decompose in a fire giving off toxic fumes. Hazardous Decomposition Product(s): Sulphur oxides, fluorine compound, SF_x.

Evacuate the area. Fire fighters should wear complete protective clothing including self-contained breathing apparatus. Chemical protection suit.

Keep containers cool by spraying with water if exposed to fire.

6. SECTION 6: ACCIDENTAL RELEASE MEASURES
6.1 Personal precautions, protective equipment and emergency procedures
6.2 Environmental precautions
6.3 Methods and material for containment and cleaning up

Evacuate area. Ensure adequate ventilation. Shut off leaks if without risk. Ensure full personal protection (including respiratory protection) during removal of spillages.

Vapor is heavier than air; beware of pits and confined spaces. Avoid release to the environment.

Allow small spillages to evaporate provided there is adequate ventilation.

- 6.4 Reference to other sections See Also Section: 8 and 13.
 6.5 Additional Information None.

7. SECTION 7: HANDLING AND STORAGE

- 7.1 **Precautions for safe handling** Provide adequate ventilation. Keep away from heat and direct sunlight. Do not eat, drink or smoke when using this product. Avoid inhalation of high concentrations of vapours. Wear appropriate personal protective equipment, avoid direct contact. See Also Section: 8.
- 7.2 **Conditions for safe storage, including any incompatibilities**
- Storage Temperature Keep container tightly closed and at a temperature not exceeding (°C): 50.
- Storage Life Stable under normal conditions.
- Incompatible materials Disilane, sulphur vapours, hydrogen, carbon, carbon bisulfide, certain metals and Strong oxidising agents.
- 7.3 **Specific end use(s)** As dielectric, process medium or fire extinguishing agent.

8. SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

- 8.1 **Control parameters**
 8.1.1 **Occupational Exposure Limits**

Substance	Sulphur hexafluoride			
CAS No.	2551-62-4			
	Limit value - Eight hours		Limit value - Short term	
	ppm	mg/m ³	ppm	mg/m ³
Austria	1000	6000	2000	12000
Belgium	1000	6057		
Canada - Québec	1000	5970		
Denmark	1000	6000	2000	12000
France	1000	6000		
Germany (AGS)	1000	6100	8000 (1)	48800 (1)
Germany (DFG)	1000	6100	8000	48800
Poland		6000		
Spain	1000	6075		
Sweden	1000	6000		
Switzerland	1000	6000		
USA - NIOSH	1000	6000		
USA - OSHA	1000	6000		
United Kingdom	1000	6070	1250	7590
	Remarks			
Germany (AGS)	(1) 15 minutes average value			
Germany (DFG)	STV 15 minutes average value			

- 8.1.2 **Biological limit value** No information available.
- 8.1.3 **PNECs and DNELs** The DNEL of 77900 mg/m³ corresponds to the concentration of 12725 ppm. This value is more than a factor 10 higher than the TLV for inert gases (1000 ppm) established by the ACGIH, indicating that the substance presents an extremely low toxicological concern.
- 8.2 **Exposure controls**
- 8.2.1 **Appropriate engineering controls** Provide adequate ventilation, including appropriate local extraction.

8.2.2 Personal protection equipment

Eye/face protection



Eye protection with side protection (EN 166).

Skin protection


 Hand protection: Wear impervious gloves (EN374).
 Body protection: Wear chemical resistant apron.

Respiratory protection



Where engineering controls are not fitted or inadequate wear suitable respiratory protective equipment. A suitable mask with filter type A (EN141 or EN405) may be appropriate.

Thermal hazards

No information available.

8.2.3 Environmental Exposure Controls

Avoid release to the environment.

9. SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES
9.1 Information on basic physical and chemical properties

Appearance

Liquefied pressure gas.

Colour

Colourless.

Odour

Odourless.

Odour Threshold (ppm)

Not established.

pH (Value)

Not applicable.

Melting Point (°C) / Freezing Point (°C)

-50.8 °C (-59.5 °F) @ 2260 hPa.

Boiling point/boiling range

-63.9 °C (-83 °F) @ 1013 hPa.

Flash Point (°C)

Not applicable.

Evaporation rate

Not applicable.

Flammability (solid, gas)

Non-flammable.

Explosive limit ranges.

Not applicable.

Vapour Pressure (mm Hg)

16050 mm Hg @ 20°C.

Vapour Density (Air=1)

Not applicable.

Density (g/ml) @ 25°C

Gas.: 6.09 g/ml.

Solubility (Water) @ 20°C

Liquefied gas: 1.34 g/ml.

Solubility (Other)

51.1 mg/l @ 1013 hPa

Partition Coefficient (n-Octanol/water)

Ethanol, Ether, Potassium hydrate.

Auto Ignition Temperature (°C)

1.68.

Decomposition Temperature (°C)

Not applicable.

Viscosity (mPa.s) @ 25°C

>500 °C.

Explosive properties

Gas: 0.0156 mPa.s @ 101325 kPa.

Oxidising properties

Liquid: 0.277 mPa.s @ 101325 kPa.

9.2
Other information

Not explosive.

Not oxidising.

No information available.

10. SECTION 10: STABILITY AND REACTIVITY
10.1 Reactivity

Stable under normal conditions. Decomposes at temperatures above (°C): 500.

10.2 Chemical stability

Stable under normal conditions.

10.3 Possibility of hazardous reactions

Reacts violently with - Disilane: Risk of explosion.

Can react with - sulphur vapours or hydrogen at 400°C; carbon and carbon bisulfide at 500°C and 40 atm; magnesium, calcium, tungsten, glass and sodium carbonate.

10.4 Conditions to avoid

Heat.

10.5 Incompatible materials

Disilane, sulphur vapors, hydrogen, carbon, carbon bisulfide, certain metals and Strong oxidising agents.

10.6 Hazardous Decomposition Product(s)

 Thermal decomposition will evolve toxic and corrosive vapours.
 Sulphur oxides, fluorine compound, SF_x.

11. SECTION 11: TOXICOLOGICAL INFORMATION

This material is unlikely to present a significant health hazard under normal conditions of handling and use

11.1	Information on toxicological effects	
11.1.1	Substances	
	Acute toxicity	
	Ingestion	Unlikely route of exposure
	Inhalation	NOEL (rat) (16–24hour(s).) >80% v/v (SF ₆ /O ₂). Asphyxiation. In high concentrations the gas induces unconsciousness.
	Skin Contact	Sulphur hexafluoride: Low acute toxicity. Frostbite (cold burn): Redness. Pain.
	Eye Contact	Sulphur hexafluoride: Low acute toxicity. Frostbite (cold burn): Redness. Pain.
	Skin corrosion/irritation	Not classified. No evidence of irritant effects from normal handling and use.
	Serious eye damage/irritation	Sulphur hexafluoride: Not classified. Frostbite.: Redness. Pain.
	Respiratory or skin sensitization	Not classified.
	Mutagenicity	No evidence of genotoxicity.
	Carcinogenicity	There is no evidence that this product poses a carcinogenic risk under normal conditions of handling and use.
	Reproductive toxicity	Not classified.
	STOT - single exposure	Frostbite.: Skin. Eyes.
	STOT - repeated exposure	None anticipated.
	Aspiration hazard	Not classified.
11.1.2	Mixtures	Not applicable.
11.2	Other information	None.

12. SECTION 12: ECOLOGICAL INFORMATION

12.1	Toxicity	The calculated 96-h LC50 in freshwater fish is estimated to be 236 mg/L, which is higher than the water solubility. The calculated 48-h LC50 in daphnids is estimated to be 247 mg/L, which is higher than the water solubility.
12.2	Persistence and degradability	According to experiences this product is inert and not degradable.
12.3	Bioaccumulative potential	BCF = 89. The substance has low potential for bioaccumulation.
12.4	Mobility in soil	The product has high mobility in soil.
12.5	Results of PBT and VPvB assessment	Not classified as PBT or vPvB.
12.6	Other adverse effects	No information available.
	Other information	Mobility: Air: 458 kPa m ³ /mol (Henry's Law Constant). Water: half-life = 3.5 hour(s).

13. SECTION 13: DISPOSAL CONSIDERATIONS

13.1	Waste treatment methods	Dispose of contents in accordance with local, state or national legislation. Do not allow to enter drains, sewers or watercourses. Recover or recycle if possible. Recycle only completely emptied packaging.
13.2	Additional Information	WGK class 1 (official).
13.2.1	Regulatory information	References: Directive 2006/12/EC of the European Parliament and of the Council of 5 April 2006 on waste, Decision 2000/532/EC.
13.2.2	Waste code	Waste Product Code No. for uncontaminated product (European Waste Catalogue): 20 01 06, other plastic.

14. SECTION 14: TRANSPORT INFORMATION

14.1	ADR/RID	
	UN number	UN 1080
	Proper Shipping Name	Sulphur hexafluoride
	Transport hazard class(es)	2.2
	Packing Group	III
	Environmental hazards	None.
	Special Provisions	No information available

14.2	IMDG	
	UN number	UN 1080
	Proper Shipping Name	Sulphur hexafluoride
	Transport hazard class(es)	2.2
	Packing Group	III
	Marine Pollutant	Not classified as a Marine Pollutant.
	Special Provisions	No information available.
14.3	ICAO/IATA	
	UN number	UN 1080
	Proper Shipping Name	Sulphur hexafluoride
	Transport hazard class(es)	2.2
	Packing Group	III
	Special Provisions	No information available.
14.4	Additional Information	Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code: Not applicable.

15. SECTION 15: REGULATORY INFORMATION

15.1	Safety, health and environmental regulations/legislation specific for the substance or mixture	
15.1.1	EU regulations	Authorizations and/or restrictions on use None known.
15.1.2	National regulations	Hazard classification - In accordance with: State Standard of Russian Federation (GOST 12.1.007). Label elements - In accordance with: State Standard of Russian Federation (GOST 31340-07).
15.2	Chemical Safety Assessment	Not available.

16. SECTION 16: OTHER INFORMATION

16.1	Classification of the substance or mixture	Regulation (EC) No. 1272/2008 (CLP/GHP): Not classified as dangerous for supply/use.
16.1.1	Label elements	According to Regulation (EC) No. 1272/2008 (CLP/GHP).
	Product Name	Elegas
	Hazard Pictogram	
	Signal word(s)	Warning
	Hazard statement(s)	H280: Contains gas under pressure; may explode if heated.
	Precautionary statement(s)	P410 + P403: Protect from sunlight. Store in a well-ventilated place.

The following sections contain revisions or new statements: 1-16.

LEGEND

NIOSH	National Institute for Occupational Safety and Health
OSHA	Occupational Safety and Health Administration
AGS	German Committee on Hazardous Substances
DFG	German Research Foundation
STOT	Specific Target Organ Toxicity
DNEL	Derived No Effect Level
PNEC	Predicted No Effect Concentration
NOEL	No Observed Effect Level
WEL	Workplace Exposure Limit (UK HSE EH40)
PBT	PBT: Persistent, Bioaccumulative and Toxic

Additional Information

Occupational sanitary-hygienic standards of Russian Federation:

PDK = 5000 mg/m³, 4th dangerous class.

(PDK – Highest non-recurrent concentration in the air of working area).

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You should not use the product with the purposes other than those specified, without consultation with us.

It is the Customer's responsibility to make an assessment of this product and use it observing safety precautions and requirements of relevant laws and legal norms.

The Buyer of the product intended for a third party's usage is obliged to take all reasonable steps to afford access to all information contained in this SDS for any person making use of this product.

An Employer must inform employees and other persons of the dangers they can be incurred and precautionary measures they should apply.

Annex to the extended Safety Data Sheet (eSDS)
Table 1. Uses by workers in industrial settings

IU number	Identified Use (IU) name	Substance supplied to that use	Use descriptors
1	Manufacture of substance		Process category (PROC): PROC 1: Use in closed process, no likelihood of exposure Environmental release category (ERC): ERC 1: Manufacture of substances Sector of end use (SU): SU 8: Manufacture of bulk, large scale chemicals (including petroleum products) Subsequent service life relevant for that use?: yes
2	Formulation/blending		Process category (PROC): PROC 3: Use in closed batch process (synthesis or formulation) Environmental release category (ERC): ERC 2: Formulation of preparations Subsequent service life relevant for that use?: yes
3	Packaging/repackaging		Process category (PROC): PROC 8b: Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities PROC 9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing) Environmental release category (ERC): ERC 7: Industrial use of substances in closed systems Subsequent service life relevant for that use?: yes
4	Manufacture of charged electrical transformers		Process category (PROC): PROC 9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing) Environmental release category (ERC): ERC 7: Industrial use of substances in closed systems Sector of end use (SU): SU 17: General manufacturing, e.g. machinery, equipment, vehicles, other transport equipment Subsequent service life relevant for that use?: yes Article category related to subsequent service life (AC): AC 01: Other (non intended to be released): TARIC 8535
5	Recovery operations: recycling/reclamation/destruction		Process category (PROC): PROC 3: Use in closed batch process (synthesis or formulation) Environmental release category (ERC): ERC 1: Manufacture of substances Subsequent service life relevant for that use?: yes
6	Plasma etching in semiconductor industry		Process category (PROC): PROC 1: Use in closed process, no likelihood of exposure PROC 9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing) Environmental release category (ERC): ERC 6b: Industrial use of reactive processing aids Sector of end use (SU): SU 16: Manufacture of computer, electronic and optical products, electrical equipment Subsequent service life relevant for that use?: no
7	Metal refining/cover gas		Process category (PROC): PROC 22: Potentially closed processing operations with minerals/metals at elevated temperature. Industrial setting Environmental release category (ERC): ERC 4: Industrial use of processing aids in processes and products, not becoming part of articles Subsequent service life relevant for that use?: no
8	Glass fibre production		Process category (PROC): PROC 2: Use in closed, continuous process with occasional controlled exposure Environmental release category (ERC):

			ERC 7: Industrial use of substances in closed systems Subsequent service life relevant for that use?: no
9	Tracer gas in wind channels		Process category (PROC): PROC 7: Industrial spraying Environmental release category (ERC): ERC 4: Industrial use of processing aids in processes and products, not becoming part of articles Subsequent service life relevant for that use?: no

Table 2. Uses by professional workers

IU number	Identified Use (IU) name	Substance supplied to that use	Use descriptors
10	Electrical transformer		Process category (PROC): PROC 9: Transfer of substance or preparation into small containers (dedicated filling line, including weighing) Environmental release category (ERC): ERC 9b: Wide dispersive outdoor use of substances in closed systems Subsequent service life relevant for that use?: yes Article category related to subsequent service life (AC):
11	Laboratory Use		Process category (PROC): PROC 15: Use as laboratory reagent Market sector by type of chemical product: PC 21: Laboratory chemicals Environmental release category (ERC): ERC 9a: Wide dispersive indoor use of substances in closed systems Subsequent service life relevant for that use?: no

An exposure assessment is not required as SF6 is not classified according to Regulation (EC) No. 1272/2008.

A risk characterisation is not required as SF6 is not classified according to Regulation (EC) No. 1272/2008.