

# SAFETY DATA SHEET

Based upon Regulation (EC) No. 1907/2006, as amended by Regulation (EC) No. 453/2010

# sulfur hexafluoride

# SECTION 1: Identification of the substance/mixture and of the company/undertaking

#### 1.1 Product identifier:

Product name	: sulfur hexafluoride
Synonyms	: accudri Sf6; elegas; esaflon; sulfur fluoride (SF6), (OC-6-11)-; sulfur(VI) fluoride; sulphur hexafluoride
Registration number REACH	: 01-2119458769-17
Product type REACH	: Substance/mono-constituent
CAS number	: 2551-62-4
EC number	: 219-854-2
RTECS number	: WS4900000
Molecular mass	: 146.05 g/mol
Formula	: SF6

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

#### 1.2.1 Relevant identified uses

Insulant: electromagnetics Fire-retarding agent

#### 1.2.2 Uses advised against

No uses advised against

#### 1.3 Details of the supplier of the safety data sheet:

#### Supplier of the safety data sheet

BALCHEM NV Westvaartdijk 85 B-1850 Grimbergen Belgium +32 2 251 60 87 +32 2 252 17 51 info.grimbergen@balchem.com

#### Distributor of the product

BALCHEM NV Westvaartdijk 85 B-1850 Grimbergen Belgium +32 2 251 60 87 +32 2 252 17 51 info.grimbergen@balchem.com

#### 1.4 Emergency telephone number:

24h/24h (Telephone advice: English, French, German, Dutch):

+32 14 58 45 45 (BIG)

# SECTION 2: Hazards identification

#### 2.1 Classification of the substance or mixture:

#### 2.1.1 Classification according to Regulation EC No 1272/2008

Class	Category	Hazard statements	
Press. Gas	Liquefied gas	H280: Contains gas under pressure; may explode if heated.	
2 Classificatio	a according to Directiv	e 67/548/EEC-1999/45/EC	
Not classified a	as dangerous according	g to the criteria of Directive(s) 67/548/EEC and/or 1999/45/EC	
bel elemen	+c.		
bei elemen	15.		
elling accordin	g to Regulation EC No	1272/2008 (CLP)	

Contains gas under pressure; may explode if heated.

Created by: Brandweerinformatiecentrum voor gevaarlijke stoffen vzw (BIG) Technische Schoolstraat 43 A, B-2440 Geel http://www.big.be © BIG vzw Reason for revision: ATP4

Warning

Publication date: 2011-11-05 Date of revision: 2014-10-24 Reference number: 3700 134-16453-449-en

### Revision number: 0100

Signal word

H-statements H280

P-statements

P410 + P403

Protect from sunlight. Store in a well-ventilated place.

#### 2.3 Other hazards:

#### CLP

Heat may cause pressure rise in tanks/drums: explosion risk

May cause frostbites

Large spills/in enclosed spaces: risk of oxygen deficiency

Included in the list of fluorinated greenhouse gases (Regulation (EC) No 842/2006)

# SECTION 3: Composition/information on ingredients

#### 3.1 Substances:

	CAS No EC No	Conc (C)	Classification according to DSD/DPD	Classification according to CLP	Note	Remark
· · · · · · · · · · · · · · · · · · ·	2551-62-4 219-854-2	C>99 %		Press. Gas - Liquefied gas; H280	(1)(2)	Mono-constituent

(1) For R-phrases and H-statements in full: see heading 16

(2) Substance with a Community workplace exposure limit

#### 3.2 Mixtures:

Not applicable

# SECTION 4: First aid measures

#### 4.1 Description of first aid measures:

#### General:

Check the vital functions. Unconscious: maintain adequate airway and respiration. Respiratory arrest: artificial respiration or oxygen. Cardiac arrest: perform resuscitation. Victim conscious with laboured breathing: half-seated. Victim in shock: on his back with legs slightly raised. Vomiting: prevent asphyxia/aspiration pneumonia. Prevent cooling by covering the victim (no warming up). Keep watching the victim. Give psychological aid. Keep the victim calm, avoid physical strain. Depending on the victim's condition: doctor/hospital.

#### After inhalation:

Remove the victim into fresh air. Respiratory problems: consult a doctor/medical service.

#### After skin contact:

Rinse with water. Take victim to a doctor if irritation persists. In case of frostbites: Wash immediately with lots of water (15 minutes)/shower. Do not apply (chemical) neutralizing agents. Remove clothing while washing. Do not remove clothing if it sticks to the skin. Cover wounds with sterile bandage. Consult a doctor/medical service. If burned surface > 10%: take victim to hospital.

#### After eye contact:

Rinse immediately with plenty of water for 15 minutes. Cover eyes aseptically. Take victim to an ophthalmologist.

After ingestion:

Not applicable.

#### 4.2 Most important symptoms and effects, both acute and delayed:

#### 4.2.1 Acute symptoms

#### After inhalation:

EXPOSURE TO HIGH CONCENTRATIONS: Feeling of weakness. Headache. Dizziness. Excited/restless. Coordination disorders. Disturbed motor response. Nausea. Vomiting. Disturbances of consciousness. Accelerated heart action. Respiratory difficulties. Rapid respiration. ON HEATING: Irritation of the respiratory tract. Irritation of the nasal mucous membranes. Risk of lung oedema. After skin contact:

Frostbites. After eye contact: Frostbites.

After ingestion:

#### 4.2.2 Delayed symptoms

No effects known.

#### 4.3 Indication of any immediate medical attention and special treatment needed:

If applicable and available it will be listed below.

## SECTION 5: Firefighting measures

#### 5.1 Extinguishing media:

5.1.1 Suitable extinguishing media:

- Adapt extinguishing media to the environment.
- 5.1.2 Unsuitable extinguishing media:

No unsuitable extinguishing media known.

Reason for revision: ATP4

Publication date: 2011-11-05 Date of revision: 2014-10-24 Reference number: 3700 Product number: 10642

#### 5.2 Special hazards arising from the substance or mixture:

On burning: release of toxic and corrosive gases/vapours (sulphur oxides, hydrofluoric acid).

#### 5.3 Advice for firefighters:

#### 5.3.1 Instructions:

Cool tanks/drums with water spray/remove them into safety. Physical explosion risk: cool from behind cover. Do not move the load if exposed to heat. After cooling: persistant risk of physical explosion. Dilute toxic gases with water spray. Take account of toxic/corrosive precipitation water.

5.3.2 Special protective equipment for fire-fighters:

Insulating gloves. Protective clothing. Large spills/in enclosed spaces: compressed air apparatus. Heat/fire exposure: compressed air/oxygen apparatus.

## SECTION 6: Accidental release measures

#### 6.1 Personal precautions, protective equipment and emergency procedures:

Keep upwind. Seal off low-lying areas. Close doors and windows of adjacent premises. No naked flames. Carry out specific temperature controls. Large spills/in confined spaces: consider evacuation.

#### 6.1.1 Protective equipment for non-emergency personnel

See heading 8.2

#### 6.1.2 Protective equipment for emergency responders

Insulating gloves. Protective clothing. Large spills/in enclosed spaces: compressed air apparatus. Suitable protective clothing

See heading 8.2

#### 6.2 Environmental precautions:

Contain released substance, pump into suitable containers. Plug the leak, cut off the supply. Tip the container on one side to stop the leakage.

#### 6.3 Methods and material for containment and cleaning up:

Damaged/cooled tanks must be emptied. Wash clothing and equipment after handling.

#### 6.4 Reference to other sections:

See heading 13.

# SECTION 7: Handling and storage

The information in this section is a general description. If applicable and available, exposure scenarios are attached in annex. Always use the relevant exposure scenarios that correspond to your identified use.

#### 7.1 Precautions for safe handling:

Keep away from naked flames/heat. Gas/vapour heavier than air at 20°C. Observe normal hygiene standards.

#### 7.2 Conditions for safe storage, including any incompatibilities:

#### 7.2.1 Safe storage requirements:

Storage temperature: < 50 °C. Store in a cool area. Keep only in the original container. Keep out of direct sunlight. Ventilation at floor level. Fireproof storeroom. Meet the legal requirements.

7.2.2 Keep away from:

Heat sources.

#### 7.2.3 Suitable packaging material:

Steel, stainless steel, monel steel, aluminium.

#### 7.2.4 Non suitable packaging material:

Carbon steel, copper.

#### 7.3 Specific end use(s):

If applicable and available, exposure scenarios are attached in annex. See information supplied by the manufacturer.

# SECTION 8: Exposure controls/personal protection

#### 8.1 Control parameters:

8.1.1 Occupational exposure

a) Occupational exposure limit values

If limit values are applicable and available these will be listed below.

#### The Netherlands

Zwavelhexafluoride	Time-weighted average exposure limit 8 h (Private occupational exposure limit value)	988 ppm
	Time-weighted average exposure limit 8 h (Private occupational exposure limit value)	6000 mg/m <sup>3</sup>
Belgium		
<b>Belgium</b> Soufre (hexafluorure de)	Time-weighted average exposure limit 8 h	1000 ppm

Reason for revision: ATP4	Publication date: 2011-11-05		
	Date of revision: 2014-10-24		
	Reference number: 3700		
Revision number: 0100	Product number: 10642	3 / 10	

#### LI. 1. . .

	sulfur hexafluorio		
USA (TLV-ACGIH) Sulfur hexafluoride	Time-weighted average exposure limit 8 h (TLV -	1000 ppm	
	Adopted Value)	1000 ppm	
Gormany			
Germany Schwefelhexafluorid	Time-weighted average exposure limit 8 h (TRGS	1000 ppm	
	900)		
	Time-weighted average exposure limit 8 h (TRGS 900)	6100 mg/m <sup>3</sup>	
France			
France Soufre (hexafluorure de)	Time-weighted average exposure limit 8 h (VL:	1000 ppm	
	Valeur non réglementaire indicative)		
	Time-weighted average exposure limit 8 h (VL: Valeur non réglementaire indicative)	6000 mg/m³	
114			
UK Sulphur hexafluoride	Time-weighted average exposure limit 8 h	1000 ppm	
	(Workplace exposure limit (EH40/2005))	C070	
	Time-weighted average exposure limit 8 h (Workplace exposure limit (EH40/2005))	6070 mg/m³	
	Short time value (Workplace exposure limit	1250 ppm	
	(EH40/2005)) Short time value (Workplace exposure limit	7590 mg/m³	
	(EH40/2005))		
b) National biological limit values If limit values are applicable and	2 available these will be listed below.		
.2 Sampling methods			
Product name	Test	Number	
Sulfur Hexafluoride	NIOSH	6602	
L.4 DNEL/PNEC values DNEL - Workers sulfur hexafluoride	available these will be listed below.		
.4 DNEL/PNEC values DNEL - Workers sulfur hexafluoride Effect level (DNEL/DMEL)	Туре	Value	Remark
.4 DNEL/PNEC values DNEL - Workers sulfur hexafluoride	<b>Type</b> Long-term systemic effects inhalation	2535 mg/m³	Remark
.4 DNEL/PNEC values DNEL - Workers sulfur hexafluoride Effect level (DNEL/DMEL)	Туре		Remark
.4 DNEL/PNEC values DNEL - Workers sulfur hexafluoride Effect level (DNEL/DMEL) DNEL DNEL DNEL Sulfur hexafluoride	Type Long-term systemic effects inhalation Long-term local effects inhalation	2535 mg/m <sup>3</sup> 2535 mg/m <sup>3</sup>	
.4 DNEL/PNEC values DNEL - Workers sulfur hexafluoride Effect level (DNEL/DMEL) DNEL DNEL DNEL CNEL - General population sulfur hexafluoride Effect level (DNEL/DMEL)	Type Long-term systemic effects inhalation Long-term local effects inhalation Type	2535 mg/m <sup>3</sup> 2535 mg/m <sup>3</sup> Value	Remark
.4 DNEL/PNEC values DNEL - Workers sulfur hexafluoride Effect level (DNEL/DMEL) DNEL DNEL DNEL Sulfur hexafluoride	Type Long-term systemic effects inhalation Long-term local effects inhalation	2535 mg/m <sup>3</sup> 2535 mg/m <sup>3</sup> Value 631 mg/m <sup>3</sup>	
A DNEL/PNEC values DNEL - Workers sulfur hexafluoride Effect level (DNEL/DMEL) DNEL DNEL - General population sulfur hexafluoride Effect level (DNEL/DMEL) DNEL PNEC	Type         Long-term systemic effects inhalation         Long-term local effects inhalation         Type         Long-term systemic effects inhalation	2535 mg/m <sup>3</sup> 2535 mg/m <sup>3</sup> Value	
A DNEL/PNEC values DNEL - Workers sulfur hexafluoride Effect level (DNEL/DMEL) DNEL DNEL - General population sulfur hexafluoride Effect level (DNEL/DMEL) DNEL PNEC sulfur hexafluoride	Type         Long-term systemic effects inhalation         Long-term local effects inhalation         Type         Long-term systemic effects inhalation         Long-term local effects inhalation         Long-term local effects inhalation	2535 mg/m <sup>3</sup> 2535 mg/m <sup>3</sup> Value 631 mg/m <sup>3</sup> 631 mg/m <sup>3</sup>	Remark
A DNEL/PNEC values DNEL - Workers sulfur hexafluoride Effect level (DNEL/DMEL) DNEL DNEL - General population sulfur hexafluoride Effect level (DNEL/DMEL) DNEL PNEC	Type         Long-term systemic effects inhalation         Long-term local effects inhalation         Type         Long-term systemic effects inhalation	2535 mg/m <sup>3</sup> 2535 mg/m <sup>3</sup> Value 631 mg/m <sup>3</sup>	Remark
A DNEL/PNEC values DNEL - Workers sulfur hexafluoride Effect level (DNEL/DMEL) DNEL DNEL - General population sulfur hexafluoride Effect level (DNEL/DMEL) DNEL PNEC sulfur hexafluoride Compartments	Type         Long-term systemic effects inhalation         Long-term local effects inhalation         Type         Long-term systemic effects inhalation         Long-term local effects inhalation         Long-term local effects inhalation         Value	2535 mg/m <sup>3</sup> 2535 mg/m <sup>3</sup> Value 631 mg/m <sup>3</sup> 631 mg/m <sup>3</sup>	Remark
A DNEL/PNEC values DNEL - Workers sulfur hexafluoride Effect level (DNEL/DMEL) DNEL DNEL - General population sulfur hexafluoride Effect level (DNEL/DMEL) DNEL DNEL PNEC sulfur hexafluoride Compartments Fresh water Aqua (intermittent releases)5 Control banding	Type         Long-term systemic effects inhalation         Long-term local effects inhalation         Long-term systemic effects inhalation         Long-term local effects inhalation	2535 mg/m <sup>3</sup> 2535 mg/m <sup>3</sup> Value 631 mg/m <sup>3</sup> 631 mg/m <sup>3</sup>	Remark
A DNEL/PNEC values DNEL - Workers sulfur hexafluoride Effect level (DNEL/DMEL) DNEL DNEL - General population sulfur hexafluoride Effect level (DNEL/DMEL) DNEL PNEC sulfur hexafluoride Compartments Fresh water Aqua (intermittent releases) .5 Control banding If applicable and available it will b	Type         Long-term systemic effects inhalation         Long-term local effects inhalation         Long-term systemic effects inhalation         Long-term local effects inhalation	2535 mg/m <sup>3</sup> 2535 mg/m <sup>3</sup> Value 631 mg/m <sup>3</sup> 631 mg/m <sup>3</sup>	Remark
A DNEL/PNEC values     DNEL - Workers     sulfur hexafluoride     Effect level (DNEL/DMEL)     DNEL     DNEL - General population     sulfur hexafluoride     Effect level (DNEL/DMEL)     DNEL     DNEL     DNEL     Sulfur hexafluoride     Effect level (DNEL/DMEL)     DNEL     Sulfur hexafluoride     Effect level (DNEL/DMEL)     DNEL     Sulfur hexafluoride     Intermittent releases)     Sontrol banding     If applicable and available it will b     xposure controls:	Type         Long-term systemic effects inhalation         Long-term local effects inhalation         Long-term systemic effects inhalation         Long-term local effects inhalation         Long-term local effects inhalation         0.15 mg/l         1.5 mg/l         be listed below.	2535 mg/m <sup>3</sup> 2535 mg/m <sup>3</sup> 631 mg/m <sup>3</sup> 631 mg/m <sup>3</sup> Remark	Remark
A DNEL/PNEC values     DNEL - Workers     sulfur hexafluoride     Effect level (DNEL/DMEL)     DNEL     DNEL - General population     sulfur hexafluoride     Effect level (DNEL/DMEL)     DNEL     DNEL     DNEL     PNEC     sulfur hexafluoride     Compartments     Fresh water     Aqua (intermittent releases)     S Control banding     If applicable and available it will if xposure controls:     e information in this section is a get	Type         Long-term systemic effects inhalation         Long-term local effects inhalation         Long-term systemic effects inhalation         Long-term local effects inhalation         Long-term local effects inhalation         0.15 mg/l         1.5 mg/l         be listed below.	2535 mg/m <sup>3</sup> 2535 mg/m <sup>3</sup> 631 mg/m <sup>3</sup> 631 mg/m <sup>3</sup> Remark	Remark
A DNEL/PNEC values     DNEL - Workers     sulfur hexafluoride     Effect level (DNEL/DMEL)     DNEL     DNEL - General population     sulfur hexafluoride     Effect level (DNEL/DMEL)     DNEL     DNEL     DNEL     DNEL     DNEL     Sulfur hexafluoride     Effect level (DNEL/DMEL)     DNEL     Sulfur hexafluoride     e information in this section is a generation stat correspond to your identified	Type         Long-term systemic effects inhalation         Long-term local effects inhalation         Long-term systemic effects inhalation         Long-term local effects inhalation         Long-term local effects inhalation         0.15 mg/l         1.5 mg/l         be listed below.	2535 mg/m <sup>3</sup> 2535 mg/m <sup>3</sup> 631 mg/m <sup>3</sup> 631 mg/m <sup>3</sup> Remark	Remark
A DNEL/PNEC values     DNEL - Workers     sulfur hexafluoride     Effect level (DNEL/DMEL)     DNEL     DNEL - General population     sulfur hexafluoride     Effect level (DNEL/DMEL)     DNEL     DNEL     PNEC     sulfur hexafluoride     Compartments     Fresh water     Aqua (intermittent releases)     S Control banding     If applicable and available it will I     xposure controls:     e information in this section is a generation stat correspond to your ide     2.1 Appropriate engineering control	Type         Long-term systemic effects inhalation         Long-term local effects inhalation         Long-term systemic effects inhalation         Long-term local effects inhalation         Long-term local effects inhalation         0.15 mg/l         1.5 mg/l         be listed below.	2535 mg/m <sup>3</sup> 2535 mg/m <sup>3</sup> 631 mg/m <sup>3</sup> 631 mg/m <sup>3</sup> Remark	Remark
A DNEL/PNEC values     DNEL - Workers     sulfur hexafluoride     Effect level (DNEL/DMEL)     DNEL     DNEL - General population     sulfur hexafluoride     Effect level (DNEL/DMEL)     DNEL     DNEL     PNEC     sulfur hexafluoride     Compartments     Fresh water     Aqua (intermittent releases)     S Control banding     If applicable and available it will I     xposure controls:     e information in this section is a generation stat correspond to your ide     2.1 Appropriate engineering control	Type         Long-term systemic effects inhalation         Long-term local effects inhalation         Long-term systemic effects inhalation         Long-term local effects inhalation         Long-term local effects inhalation         0.15 mg/l         1.5 mg/l         be listed below.         eneral description. If applicable and available, exposure scenentified use.         rols	2535 mg/m <sup>3</sup> 2535 mg/m <sup>3</sup> 631 mg/m <sup>3</sup> 631 mg/m <sup>3</sup> Remark	Remark
A DNEL/PNEC values     DNEL - Workers     sulfur hexafluoride     Effect level (DNEL/DMEL)     DNEL     DNEL - General population     sulfur hexafluoride     Effect level (DNEL/DMEL)     DNEL     DNEL     DNEL     DNEL     DNEL     Sulfur hexafluoride     Effect level (DNEL/DMEL)     DNEL     DNEL     Sulfur hexafluoride     Effect level (DNEL/DMEL)     DNEL     DNEL     Sulfur hexafluoride     Effect level (DNEL/DMEL)     DNEL     Sulfur hexafluoride     Effect level (DNEL/DMEL)     DNEL     Sulfur hexafluoride     Effect level (DNEL/DMEL)     DNEL     Sulfur hexafluoride     Ense water     Aqua (intermittent releases)     Sontrol banding     If applicable and available it will I     xposure controls:     e information in this section is a generator sthat correspond to your ide     Appropriate engineering contre     Keep away from naked flames/herespiratory protection.     J. Individual protection measure	Type         Long-term systemic effects inhalation         Long-term local effects inhalation         Long-term systemic effects inhalation         Long-term local effects inhalation         Long-term local effects inhalation         0.15 mg/l         1.5 mg/l         be listed below.         eneral description. If applicable and available, exposure scelentified use.         rols         eat. Measure the concentration in the air regularly. Carry op         s, such as personal protective equipment	2535 mg/m <sup>3</sup> 2535 mg/m <sup>3</sup> 631 mg/m <sup>3</sup> 631 mg/m <sup>3</sup> Remark	Remark
A DNEL/PNEC values     DNEL - Workers     sulfur hexafluoride     Effect level (DNEL/DMEL)     DNEL - General population     sulfur hexafluoride     Effect level (DNEL/DMEL)     DNEL     DNEL     DNEL     DNEL     DNEL     DNEL     DNEL     DNEL     DNEL     Sulfur hexafluoride     Effect level (DNEL/DMEL)     DNEL     DNEL     Sulfur hexafluoride     Compartments     Fresh water     Aqua (intermittent releases)     S Control banding     If applicable and available it will I     xposure controls:     e information in this section is a generation stat correspond to your ide     Appropriate engineering contr     Keep away from naked flames/he     respiratory protection.     Jandividual protection measure     Observe normal hygiene standard	Type         Long-term systemic effects inhalation         Long-term local effects inhalation         Long-term systemic effects inhalation         Long-term local effects inhalation         Long-term local effects inhalation         0.15 mg/l         1.5 mg/l         be listed below.         eneral description. If applicable and available, exposure scenentified use.         rols         eat. Measure the concentration in the air regularly. Carry openation	2535 mg/m <sup>3</sup> 2535 mg/m <sup>3</sup> 631 mg/m <sup>3</sup> 631 mg/m <sup>3</sup> Remark	Remark
A DNEL/PNEC values     DNEL - Workers     sulfur hexafluoride     Effect level (DNEL/DMEL)     DNEL - General population     sulfur hexafluoride     Effect level (DNEL/DMEL)     DNEL     DNE     DNE     DNE     DNE     DNE     DNE	Type         Long-term systemic effects inhalation         Long-term local effects inhalation         Long-term systemic effects inhalation         Long-term local effects inhalation         Long-term local effects inhalation         0.15 mg/l         1.5 mg/l         the listed below.         eneral description. If applicable and available, exposure scelentified use.         rols         eat. Measure the concentration in the air regularly. Carry op         s, such as personal protective equipment         ds. Do not eat, drink or smoke during work.	2535 mg/m <sup>3</sup> 2535 mg/m <sup>3</sup> 631 mg/m <sup>3</sup> 631 mg/m <sup>3</sup> Remark	Remark
A DNEL/PNEC values     DNEL - Workers     sulfur hexafluoride     Effect level (DNEL/DMEL)     DNEL - General population     sulfur hexafluoride     Effect level (DNEL/DMEL)     DNEL     DNEL     DNEL     DNEL     Compartments     Fresh water     Aqua (intermittent releases)     S Control banding     If applicable and available it will I     xposure controls:     e information in this section is a generation stat correspond to your ide     Appropriate engineering contre     Keep away from naked flames/he     respiratory protection.     Wear gas mask with filter type B     Hand protection:	Type         Long-term systemic effects inhalation         Long-term local effects inhalation         Long-term systemic effects inhalation         Long-term local effects inhalation         Long-term local effects inhalation         0.15 mg/l         1.5 mg/l         the listed below.         eneral description. If applicable and available, exposure scelentified use.         rols         eat. Measure the concentration in the air regularly. Carry op         s, such as personal protective equipment         ds. Do not eat, drink or smoke during work.	2535 mg/m <sup>3</sup> 2535 mg/m <sup>3</sup> 631 mg/m <sup>3</sup> 631 mg/m <sup>3</sup> Remark	Remark
A DNEL/PNEC values     DNEL - Workers     sulfur hexafluoride     Effect level (DNEL/DMEL)     DNEL - General population     sulfur hexafluoride     Effect level (DNEL/DMEL)     DNEL     DNEL     DNEL     DNEL     Compartments     Fresh water     Aqua (intermittent releases)     S Control banding     If applicable and available it will If     xposure controls:     e information in this section is a generation stat correspond to your ide     Appropriate engineering contre     Keep away from naked flames/he     respiratory protection.     Wear gas mask with filter type B     Hand protection:     Insulated gloves.	Type         Long-term systemic effects inhalation         Long-term local effects inhalation         Long-term systemic effects inhalation         Long-term local effects inhalation         Long-term local effects inhalation         0.15 mg/l         1.5 mg/l         the listed below.         eneral description. If applicable and available, exposure scelentified use.         rols         eat. Measure the concentration in the air regularly. Carry op         s, such as personal protective equipment         ds. Do not eat, drink or smoke during work.	2535 mg/m <sup>3</sup> 2535 mg/m <sup>3</sup> 631 mg/m <sup>3</sup> 631 mg/m <sup>3</sup> Remark	Remark
A DNEL/PNEC values     DNEL - Workers     sulfur hexafluoride     Effect level (DNEL/DMEL)     DNEL     DNEL - General population     sulfur hexafluoride     Effect level (DNEL/DMEL)     DNEL     DNEL	Type         Long-term systemic effects inhalation         Long-term local effects inhalation         Long-term systemic effects inhalation         Long-term local effects inhalation         Long-term local effects inhalation         0.15 mg/l         1.5 mg/l         the listed below.         eneral description. If applicable and available, exposure scelentified use.         rols         eat. Measure the concentration in the air regularly. Carry op         s, such as personal protective equipment         ds. Do not eat, drink or smoke during work.	2535 mg/m <sup>3</sup> 2535 mg/m <sup>3</sup> 631 mg/m <sup>3</sup> 631 mg/m <sup>3</sup> Remark	Remark
A DNEL/PNEC values     DNEL - Workers     sulfur hexafluoride     Effect level (DNEL/DMEL)     DNEL     DNEL - General population     sulfur hexafluoride     Effect level (DNEL/DMEL)     DNEL     DNEL	Type         Long-term systemic effects inhalation         Long-term local effects inhalation         Long-term systemic effects inhalation         Long-term local effects inhalation         Long-term local effects inhalation         Value         0.15 mg/l         1.5 mg/l         be listed below.         eneral description. If applicable and available, exposure scelentified use.         rols         eat. Measure the concentration in the air regularly. Carry op         s, such as personal protective equipment         ds. Do not eat, drink or smoke during work.         if conc. in air > exposure limit.	2535 mg/m <sup>3</sup> 2535 mg/m <sup>3</sup> 631 mg/m <sup>3</sup> 631 mg/m <sup>3</sup> Remark	Remark
A DNEL/PNEC values     DNEL - Workers     sulfur hexafluoride     Effect level (DNEL/DMEL)     DNEL - General population     sulfur hexafluoride     Effect level (DNEL/DMEL)     DNEL     DNEL     DNEL     DNEL     DNEL     Sulfur hexafluoride     Effect level (DNEL/DMEL)     DNEL     DNEL     Sulfur hexafluoride     Effect level (DNEL/DMEL)     DNEL     DNEL     Sulfur hexafluoride     Effect level (DNEL/DMEL)     DNEL     Sulfur hexafluoride     Effect level (DNEL/DMEL)     DNEL     Sulfur hexafluoride     Effect level (DNEL/DMEL)     DNEL     Sulfur hexafluoride     Sulfur hexafluoride     Compartments     Fresh water     Aqua (intermittent releases)     Sontrol banding     If applicable and available it will lex     xposure controls:     e information in this section is a genarios that correspond to your id     Appropriate engineering contr     Keep away from naked flames/he     respiratory protection.     S.2 Individual protection measure     Observe normal hygiene standard     Respiratory protection:     Insulated gloves.     haterials (good resistance)     Butyl rubber, chloroprene rubber     haterials (poor resistance)     Viton.	Type         Long-term systemic effects inhalation         Long-term local effects inhalation         Long-term systemic effects inhalation         Long-term local effects inhalation         Long-term local effects inhalation         Value         0.15 mg/l         1.5 mg/l         be listed below.         eneral description. If applicable and available, exposure scelentified use.         rols         eat. Measure the concentration in the air regularly. Carry op         s, such as personal protective equipment         ds. Do not eat, drink or smoke during work.         if conc. in air > exposure limit.	2535 mg/m <sup>3</sup> 2535 mg/m <sup>3</sup> 631 mg/m <sup>3</sup> 631 mg/m <sup>3</sup> Remark	nnex. Always use the relevant
A DNEL/PNEC values     DNEL - Workers     sulfur hexafluoride     Effect level (DNEL/DMEL)     DNEL     DNEL - General population     sulfur hexafluoride     Effect level (DNEL/DMEL)     DNEL     DNEL	Type         Long-term systemic effects inhalation         Long-term local effects inhalation         Long-term systemic effects inhalation         Long-term local effects inhalation         Long-term local effects inhalation         Value         0.15 mg/l         1.5 mg/l         be listed below.         eneral description. If applicable and available, exposure scelentified use.         rols         eat. Measure the concentration in the air regularly. Carry op         s, such as personal protective equipment         ds. Do not eat, drink or smoke during work.         if conc. in air > exposure limit.	2535 mg/m <sup>3</sup> 2535 mg/m <sup>3</sup> 631 mg/m <sup>3</sup> 631 mg/m <sup>3</sup> Remark narios are attached in a berations in the open/un Publication date: 20	nnex. Always use the relevant of the inder local exhaust/ventilation exhaust/ventilation of the inder local exhaust/ventilation of the
A DNEL/PNEC values     DNEL - Workers     sulfur hexafluoride     Effect level (DNEL/DMEL)     DNEL - General population     sulfur hexafluoride     Effect level (DNEL/DMEL)     DNEL     DNEL     DNEL     DNEL     DNEL     Sulfur hexafluoride     Effect level (DNEL/DMEL)     DNEL     DNEL     Sulfur hexafluoride     Effect level (DNEL/DMEL)     DNEL     DNEL     Sulfur hexafluoride     Effect level (DNEL/DMEL)     DNEL     Sulfur hexafluoride     Effect level (DNEL/DMEL)     DNEL     Sulfur hexafluoride     Effect level (DNEL/DMEL)     DNEL     Sulfur hexafluoride     Sulfur hexafluoride     Compartments     Fresh water     Aqua (intermittent releases)     Sontrol banding     If applicable and available it will lex     xposure controls:     e information in this section is a genarios that correspond to your id     Appropriate engineering contr     Keep away from naked flames/he     respiratory protection.     S.2 Individual protection measure     Observe normal hygiene standard     Respiratory protection:     Insulated gloves.     haterials (good resistance)     Butyl rubber, chloroprene rubber     haterials (poor resistance)     Viton.	Type         Long-term systemic effects inhalation         Long-term local effects inhalation         Long-term systemic effects inhalation         Long-term local effects inhalation         Long-term local effects inhalation         Value         0.15 mg/l         1.5 mg/l         be listed below.         eneral description. If applicable and available, exposure scelentified use.         rols         eat. Measure the concentration in the air regularly. Carry op         s, such as personal protective equipment         ds. Do not eat, drink or smoke during work.         if conc. in air > exposure limit.	2535 mg/m <sup>3</sup> 2535 mg/m <sup>3</sup> 631 mg/m <sup>3</sup> 631 mg/m <sup>3</sup> Remark	nnex. Always use the relevant of the inder local exhaust/ventilation exhaust/ventilation of the inder local exhaust/ventilation of the

Product number: 10642

c) Eye protection:

Safety glasses.

<u>d) Skin protection:</u> Protective clothing.

8.2.3 Environmental exposure controls:

See headings 6.2, 6.3 and 13

# SECTION 9: Physical and chemical properties

### 9.1 Information on basic physical and chemical properties:

Physical form	Liquefied gas
Odour	Odourless
Odour threshold	No data available
Colour	Colourless
Particle size	Not applicable (gas)
Explosion limits	No data available
Flammability	Non combustible
Log Kow	1.64 ; Calculated ; EPIWIN ; 20 °C
Dynamic viscosity	0.01576 mPa.s ; 25 °C
Kinematic viscosity	0.008383 mm²/s ; 25 °C
Melting point	-50.8 °C
Boiling point	No data available
Flash point	No data available
Evaporation rate	No data available
Relative vapour density	No data available
Vapour pressure	23670 hPa ; 25 °C
Solubility	water ; 0.031 g/l ; 25 °C
	ethanol ; soluble
	ether ; soluble
	potassium hydroxide ; soluble
	oils/fats ; soluble
Relative density	1.88 ; -50 °C
Decomposition temperature	800 °C
Auto-ignition temperature	No data available
Explosive properties	No chemical group associated with explosive properties
Oxidising properties	No chemical group associated with oxidising properties
рН	7;0.031 g/l;25 °C

#### 9.2 Other information:

other mornation.		
Critical temperature	46 °C	
Critical pressure	37590 hPa	
Surface tension	0.012 N/m ; -50 °C	
Absolute density	1910 kg/m³ ; -50 °C	
Sublimation temperature	-64 °C	

# SECTION 10: Stability and reactivity

#### 10.1 Reactivity:

Substance has neutral reaction.

#### 10.2 Chemical stability:

Stable under normal conditions.

#### 10.3 Possibility of hazardous reactions:

No data available.

#### 10.4 Conditions to avoid:

Keep away from naked flames/heat.

### 10.5 Incompatible materials:

No data available.

#### 10.6 Hazardous decomposition products:

On burning: release of toxic and corrosive gases/vapours (sulphur oxides, hydrofluoric acid).

## SECTION 11: Toxicological information

### 11.1 Information on toxicological effects:

11.1.1 Test results

#### Acute toxicity

Reason for revision: ATP4

Publication date: 2011-11-05 Date of revision: 2014-10-24 Reference number: 3700 Product number: 10642

#### sulfur hexafluoride

Route of exposure	Parameter	Method	Value	Exposure time	 Value determination	Remark
Oral					Data waiving	
Dermal					Data waiving	
Inhalation (gases)	LC0		>800000 ppm	23 h	Inconclusive, insufficient data	

As the substance is a gas, inhalation is the most appropriate route of exposure

#### **Conclusion**

Low acute toxicity by the inhalation route

#### Corrosion/irritation

#### sulfur hexafluoride

Result	Method	Exposure time	Time point	Species	Value	Remark
					determination	
					Data waiving	
					Data waiving	
Not irritating		23 h		Rat	Literature study	
						determination       Data waiving       Data waiving       Data waiving

The liquid form can cause frostbites, typical for all liquified gases

#### **Conclusion**

Not classified as irritating to the skin

Not classified as irritating to the eyes

Not classified as irritating to the respiratory system

#### Respiratory or skin sensitisation

#### sulfur hexafluoride

Route of exposure	Result	Method	 Observation time point	Species	Value determination	Remark
Skin					Data waiving	

The study on skin sensitisation does not need to be conducted as the substance is a gas

#### **Conclusion**

Not classified as sensitizing for skin

#### Specific target organ toxicity

#### sulfur hexafluoride

Route of exposure	Parameter	Method	Value	Organ	Effect	Exposure time	Species	Value
								determination
Oral								Data waiving
Dermal								Data waiving
Inhalation (gases)	NOAEC	OECD 412	302687 mg/m³ air		No effect	28 days (6h/day)	Rat (male/female)	Experimental value

As the substance is a gas, inhalation is the most appropriate route of exposure

#### **Conclusion**

Not classified for subchronic toxicity

#### Mutagenicity (in vitro)

#### sulfur hexafluoride

Result	Method	Test substrate	Effect	Value determination
Negative with metabolic	OECD 471	Bacteria (S.typhimurium)	No effect	Experimental value
activation, negative without				
metabolic activation				
Negative with metabolic	OECD 476	Mouse (lymphoma L5178Y	No effect	Experimental value
activation, negative without		cells)		
metabolic activation				

#### Mutagenicity (in vivo)

#### sulfur hexafluoride

[	Result	Method	Exposure time	Test substrate	Organ	Value determination
[	Negative	OECD 474	28 days (6h/day)	Rat (male/female)		Experimental value

#### Carcinogenicity

#### sulfur hexafluoride

Route of	Parameter	Method	Value	Exposure time	Species	Value	Organ	Effect
exposure						determination		
Inhalation						Data waiving		
Dermal						Data waiving		

Reason for revision: ATP4Publication date: 2011-11-05Date of revision: 2014-10-24Reference number: 3700Revision number: 0100Product number: 10642

Oral			Data waiving	

#### Reproductive toxicity

#### sulfur hexafluoride

	Parameter	Method	Value	Exposure time	Species	Effect	- 0-	Value determination
Developmental toxicity	NOAEC	OECD 422	302687 mg/m <sup>3</sup>	28 days	Rat	No effect		Experimental
			air	(6h/day)	(male/female)			value
Maternal toxicity	NOAEC	OECD 422	302867 mg/m <sup>3</sup>	28 days	Rat	No effect		Experimental
			air	(6h/day)				value
Effects on fertility	NOAEC (P/F1)	OECD 422	302867 mg/m <sup>3</sup>	28 days	Rat	No effect		Experimental
			air	(6h/day)	(male/female)			value

### Conclusion CMR

Not classified for reprotoxic or developmental toxicity Not classified for mutagenic or genotoxic toxicity

Not classified for carcinogenicity

#### **Toxicity other effects**

sulfur hexafluoride No (test)data available

#### Chronic effects from short and long-term exposure

sulfur hexafluoride No effects known.

# SECTION 12: Ecological information

#### 12.1 Toxicity:

sulfur hexafluoride

	Parameter	Method	Value	Duration	Species	Test design	Fresh/salt	Value determination
							water	
Acute toxicity fishes	LC50	ECOSAR	236 mg/l	96 h	Pisces		Fresh water	QSAR
Acute toxicity invertebrates	LC50	ECOSAR	247 mg/l	48 h	Daphnia sp.	Static system	Fresh water	QSAR
Toxicity algae and other aquatic	ErC50	ECOSAR	151 mg/l	96 h	Algae	Static system	Fresh water	QSAR
plants								

#### **Conclusion**

Slightly harmful to fishes (LC50(96h) 100-1000 mg/l)

Slightly harmful to invertebrates (Daphnia)

Slightly harmful to algae (EC50: 100 - 1000 mg/l)

Not classified as dangerous for the environment according to the criteria of Regulation (EC) No 1272/2008

#### 12.2 Persistence and degradability:

#### sulfur hexafluoride

Phototransformation air (DT50 air)

Method	Value	Conc. OH-radicals	Value determination
Other	891 day(s)	500000 /cm³	Experimental value
alf-life water (t1/2 water)			
Method	Value	Primary	Value determination
		degradation/mineralisation	
	3.5 h		Calculated value
lalf-life soil (t1/2 soil)			
Method	Value	Primary	Value determination
		degradation/mineralisation	
			Not applicable (gas)

#### **Conclusion**

Biodegradability: not applicable

#### 12.3 Bioaccumulative potential:

#### sulfur hexafluoride

Log Kow

Vethod	Remark	Value	Temperature	Value determination			
PIWIN		1.64	20 °C	Calculated			

#### **Conclusion**

Low potential for bioaccumulation (Log Kow < 4)

Reason for revision: ATP4	Publication date: 2011-11-05	
	Date of revision: 2014-10-24	
	Reference number: 3700	
Revision number: 0100	Product number: 10642	7 / 10

#### 12.4 Mobility in soil:

#### sulfur hexafluoride

#### Volatility (Henry's Law constant H)

	Value Method		d	Temperature F				Value determination	
	4.52 atm m <sup>3</sup> /mol			25 °C				Experimental value	
P	Percent distribution								
	Method	Fraction air	Fraction biota	Fraction	Fraction soil	Fraction water	Value dete	ermination	
	s			sediment					
	Mackay level III	100 %		0 %	0 %	0 %	Calculated	value	

#### **Conclusion**

Not applicable (gas)

#### 12.5 Results of PBT and vPvB assessment:

The criteria of PBT and vPvB as listed in Annex XIII of Regulation (EC) No 1907/2006 do not apply to inorganic substances.

#### 12.6 Other adverse effects:

#### sulfur hexafluoride

Globa	l warming	potential	(GWP)	)
-------	-----------	-----------	-------	---

Fluorinated greenhouse gases	Lifetime	Radiative efficiency	SAR‡ (100-yr)	Global warming	GWP 500-yr time
				potential (GWP)	horizon
Sulphur hexafluoride				22800	

Included in the list of fluorinated greenhouse gases (Regulation (EC) No 842/2006)

#### **Ozone-depleting potential (ODP)**

Not classified as dangerous for the ozone layer (Regulation (EC) No 1005/2009)

## SECTION 13: Disposal considerations

The information in this section is a general description. If applicable and available, exposure scenarios are attached in annex. Always use the relevant exposure scenarios that correspond to your identified use.

#### 13.1 Waste treatment methods:

#### 13.1.1 Provisions relating to waste

Waste material code (Directive 2008/98/EC, Decision 2000/0532/EC).

16 05 05 (gases in pressure containers and discarded chemicals: gases in pressure containers other than those mentioned in 16 05 04). Depending on branch of industry and production process, also other waste codes may be applicable. Can be considered as non hazardous waste according to Directive 2008/98/EC.

#### 13.1.2 Disposal methods

Refer to manufacturer/supplier for information on recovery/ recycling. Remove waste in accordance with local and/or national regulations. Use appropriate containment to avoid environmental contamination.

#### 13.1.3 Packaging/Container

Waste material code packaging (Directive 2008/98/EC). 15 01 04 (metallic packaging).

# SECTION 14: Transport information

#### Road (ADR)

14.1 UN number:		
UN number	1080	
14.2 UN proper shipping name:		
Proper shipping name	Sulphur hexafluoride	
14.3 Transport hazard class(es):		
Hazard identification number	20	
Class	2	
Classification code	2A	
.4 Packing group:		
Packing group		
Labels	2.2	
14. <u>5 Environmental hazards:</u>		
Environmentally hazardous substance mark	no	
14.6 Special precautions for user:		
Special provisions		
Limited quantities	Combination packagings: not more than 120 ml per inner packaging for liquids. A package shall not weigh more than 30 kg. (gross mass)	

#### Rail (RID)

14.1 UN number: UN number	1080	
Reason for revision: ATP4	Publication date: 2011-11-05	
	Date of revision: 2014-10-24	
	Reference number: 3700	
Revision number: 0100	Product number: 10642	8 / 10

Proper shipping name	Sulphur hexafluoride
14.3 Transport hazard class(es):	
Hazard identification number	20
Class	2
Classification code	2A
.4.4 Packing group:	
Packing group	
Labels	2.2 (+13)
4.5 Environmental hazards:	
Environmentally hazardous substance mark	no
4.6 Special precautions for user:	
Special provisions	
Limited quantities	Combination packagings: not more than 120 ml per inner packaging fo liquids. A package shall not weigh more than 30 kg. (gross mass)
and waterways (ADN)	
14.1 UN number:	
UN number	1080

	1080
14.2 UN proper shipping name:	
Proper shipping name	Sulphur hexafluoride
14.3 Transport hazard class(es):	
Class	2
Classification code	2A
14.4 Packing group:	
Packing group	
Labels	2.2
14.5 Environmental hazards:	
Environmentally hazardous substance mark	no
14.6 Special precautions for user:	
Special provisions	
Limited quantities	Combination packagings: not more than 120 ml per inner packaging for liquids. A package shall not weigh more than 30 kg. (gross mass)

# Sea (IMDG/IMSBC)

14.1 UN number:	
UN number	1080
14.2 UN proper shipping name:	
Proper shipping name	Sulphur hexafluoride
14.3 Transport hazard class(es):	
Class	2.2
14.4 Packing group:	
Packing group	
Labels	2.2
14.5 Environmental hazards:	
Marine pollutant	-
Environmentally hazardous substance mark	no
14.6 Special precautions for user:	
Special provisions	
Limited quantities	Combination packagings: not more than 120 ml per inner packaging for
	liquids. A package shall not weigh more than 30 kg. (gross mass)
14.7 Transport in bulk according to Annex II of MARPOL 73/78	and the IBC Code:
Annex II of MARPOL 73/78	Not applicable

### Air (ICAO-TI/IATA-DGR)

UN number	1080
14.2 UN proper shipping name:	
Proper shipping name	Sulphur hexafluoride
14.3 Transport hazard class(es):	
Class	2.2
14.4 Packing group:	
Packing group	
Labels	2.2
14.5 Environmental hazards:	
Environmentally hazardous substance mark	no
14.6 Special precautions for user:	
Special provisions	
for revision: ATP4	Publication date: 2011-11-05
	Date of revision: 2014-10-24
	Reference number: 3700

Product number: 10642

Passenger and cargo transport: limited quantities: maximum net quantity Forbidden per packaging

# SECTION 15: Regulatory information

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

#### European legislation:

VOC content Directive 2010/75/EU

	VOC content	Remark
		Not applicable (inorganic)
Eur	opean drinking water standards (Directive 98/83/EC)	

#### sulfur hexafluoride

Param	neter	Parametric value	Note	Reference
Fluorio	ide	1,5 mg/l		Listed in Annex I, Part B, of Directive 98/83/EC on the quality of
				water intended for human consumption.

### National legislation The Netherlands

uo	Sharlegislation me Nethenands		
ŀ	Waste identification (the	LWCA (the Netherlands): KGA category 06	
	Netherlands)		
[	Waterbezwaarlijkheid	11	

#### National legislation Germany

Schwangerschaft Gruppe	D
WGK	nwg; Classification non-water polluting in compliance with Verwaltungsvorschrift wassergefährdender Stoffe (VwVwS) of
	27 July 2005 (Anhang 1)
TA-Luft	5.2.4; II

#### National legislation France

No data available

#### National legislation Belgium

No data available

#### Other relevant data

No data available

#### 15.2 Chemical safety assessment:

A chemical safety assessment has been performed.

### SECTION 16: Other information

#### Labelling according to Directive 67/548/EEC-1999/45/EC (DSD/DPD)

Not classified as dangerous in compliance with Directive 67/548/EEC and/or Directive 1999/45/EC

#### Full text of any H-statements referred to under headings 2 and 3:

H280 Contains gas under pressure; may explode if heated.

(\*) = INTERNAL CLASSIFICATION BY BIG

PBT-substances = persistent, bioaccumulative and toxic substances

DSD Dangerous Substance Directive

DPD Dangerous Preparation Directive

CLP (EU-GHS) Classification, labelling and packaging (Globally Harmonised System in Europe)

The information in this safety data sheet is based on data and samples provided to BIG. The sheet was written to the best of our ability and according to the state of knowledge at that time. The safety data sheet only constitutes a guideline for the safe handling, use, consumption, storage, transport and disposal of the substances/preparations/mixtures mentioned under point 1. New safety data sheets are written from time to time. Only the most recent versions may be used. Old versions must be destroyed. Unless indicated otherwise word for word on the safety data sheet, the information does not apply to substances/preparations/mixtures in purer form, mixed with other substances or in processes. The safety data sheet offers no quality specification for the substances/preparations/mixtures in question. Compliance with the instructions in this safety data sheet does not release the user from the obligation to take all measures dictated by common sense, regulations and recommendations or which are necessary and/or useful based on the real applicable circumstances. BIG does not guarantee the accuracy or exhaustiveness of the information provided and cannot be held liable for any changes by third parties. This safety data sheet is only to be used within the European Union, Switzerland, Iceland, Norway and Liechtenstein. Any use outside of this area is at your own risk. Use of this safety data sheet is subject to the licence and liability limiting conditions as stated in your BIG licence agreement or when this is failing the general conditions of BIG. All intellectual property rights to this sheet are the property of BIG and its distribution and reproduction are limited. Consult the mentioned agreement/conditions for details.

Reason for revision: ATP4