# Safety data sheet
# Sulphur hexafluoride.



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

**1.1. Product identifier**
**Product name**
Sulphur hexafluoride.

EC No (from EINECS): 219-854-2
CAS No: 2551-62-4
Index-Nr.
**Chemical formula** SF6
**REACH Registration number**:
Not available.

**1.2. Relevant identified uses of the substance or mixture and uses advised against**
**Relevant identified uses**
Industrial and professional. Perform risk assessment prior to use.
**Uses advised against**
Consumer use.

**1.3. Details of the supplier of the safety data sheet**
**Company identification**
BOC, PO Box 1201, Bluebell, Dublin
**E-Mail Address** ReachSDS@boc.com

**1.4. Emergency telephone number**
**Emergency phone numbers (24h):** 1850 333 435

**SECTION 2: Hazards identification**

**2.1. Classification of the substance or mixture**

**Classification acc. to Regulation (EC) No 1272/2008/EC (CLP/GHS)**
Press. Gas (Liquefied gas) - Contains gas under pressure; may explode if heated.

**Classification acc. to Directive 67/548/EEC & 1999/45/EC:** Proposed by the industry
Not classified as dangerous substance.
Asphyxiant in high concentrations.
**Risk advice to man and the environment**
Liquefied gas.
Contact with liquid may cause cold burns/frost bite.

**2.2. Label elements**
**- Labelling Pictograms**

**- Signal word**
Warning

**- Hazard Statements**

| | |
|---|---|
| H280 | Contains gas under pressure; may explode if heated. |
| EIGA-As | Asphyxiant in high concentrations. |

**- Precautionary Statements**

**Precautionary Statement Prevention**
None.

**Precautionary Statement Response**
None.

**Precautionary Statement Storage**
P403 Store in a well-ventilated place.

**Precautionary Statement Disposal**
None.

**2.3. Other hazards**
None.

**SECTION 3: Composition/information on ingredients**

**Substance / Mixture**: Substance.

**3.1. Substances**
Sulphur hexafluoride.
**CAS No:** 2551-62-4
**Index-Nr.**:
**EC No (from EINECS):** 219-854-2
**REACH Registration number**:
Not available.
Contains no other components or impurities which will influence the classification of the product.

**3.2. Mixtures**
Not applicable.

**SECTION 4: First aid measures**

**4.1. Description of first aid measures**
**First Aid General Information:**
Remove victim to uncontaminated area wearing self contained breathing apparatus. Keep victim warm and rested. Call a doctor. Apply artificial respiration if breathing stopped.
**First Aid Inhalation:**
Remove victim to uncontaminated area wearing self contained breathing apparatus. Keep victim warm and rested. Call a doctor. Apply artificial respiration if breathing stopped.
**First Aid Skin / Eye:**
In case of frostbite spray with water for at least 15 minutes. Apply a sterile dressing. Obtain medical assistance. Immediately flush eyes thoroughly with water for at least 15 minutes.
**First Aid Ingestion:**
Ingestion is not considered a potential route of

exposure.

**4.2. Most important symptoms and effects, both acute and delayed**
In high concentrations may cause asphyxiation.
Symptoms may include loss of mobility/consciousness.
Victim may not be aware of asphyxiation.

**4.3. Indication of any immediate medical attention and special treatment needed**
None.

## SECTION 5: Fire fighting measures

**5.1. Extinguishing media**
**Suitable extinguishing media**
All known extinguishants can be used.

**5.2. Special hazards arising from the substance or mixture**
**Specific hazards**
Exposure to fire may cause containers to rupture/explode.
Non flammable.
**Hazardous combustion products**
If involved in a fire the following toxic and/or corrosive fumes may be produced by thermal decomposition:
Sulphur dioxide, Hydrogen fluoride.

**5.3. Advice for firefighters**
**Specific methods**
If possible, stop flow of product. Move container away or cool with water from a protected position.
**Special protective equipment for fire fighters**
Use self-contained breathing apparatus and chemically protective clothing. Clothing for fire-fighters (including helmets, protective boots and gloves) conforming to EN 469 will provide a basic level of protection from chemical incidents. EN 469:2005: Protective clothing for fire-fighters. Performance requirements for protective clothing for fire-fighting.

## SECTION 6: Accidental release measures

**6.1. Personal precautions, protective equipment and emergency procedures**
Evacuate area. Wear self-contained breathing apparatus when entering area unless atmosphere is proved to be safe. Ensure adequate air ventilation. Prevent from entering sewers, basements and workpits, or any place where its accumulation can be dangerous. Monitor concentration of released product.

**6.2. Environmental precautions**
Try to stop release.

**6.3. Methods and material for containment and cleaning up**
Ventilate area.

**6.4. Reference to other sections**
See also sections 8 and 13.

## SECTION 7: Handling and storage

**7.1. Precautions for safe handling**
Suck back of water into the container must be prevented. Do not allow backfeed into the container. Use only properly specified equipment which is suitable for this product, its supply pressure and temperature. Contact your gas supplier if in doubt. Refer to supplier's handling instructions. Purge system with dry inert gas (e.g. helium or nitrogen) before gas is introduced and when system is placed out of service. Do not smoke while handling product. Only experienced and properly instructed persons should handle gases under pressure. Protect cylinders from physical damage; do not drag, roll, slide or drop. Never use direct flame or electrical heating devices to raise the pressure of a container. Do not remove or deface labels provided by the supplier for the identification of the cylinder contents. When moving cylinders, even for short distances, use a cart (trolley, hand truck, etc.) designed to transport cylinders. Leave valve protection caps in place until the container has been secured against either a wall or bench or placed in a container stand and is ready for use. Ensure the complete gas system has been (or is regularly) checked for leaks before use. If user experiences any difficulty operating cylinder valve discontinue use and contact supplier. Close container valve after each use and when empty, even if still connected to equipment. Never attempt to repair or modify container valves or safety relief devices. Damaged valves should be reported immediately to the supplier. Replace valve outlet caps or plugs and container caps where supplied as soon as container is disconnected from equipment. Keep container valve outlets clean and free from contaminates particularly oil and water. Never attempt to transfer gases from one cylinder/container to another. The substance must be handled in accordance with good industrial hygiene and safety procedures.

**7.2. Conditions for safe storage, including any incompatibilities**
Secure cylinders to prevent them falling. Keep container below 50°C in a well ventilated place. Observe all regulations and local requirements regarding storage of containers. Containers should not be stored in conditions likely to encourage corrosion. Containers should be stored in the vertical position and properly secured to prevent falling over. Stored containers should be periodically checked for general conditions and leakage. Container valve guards or caps should be in place. Store containers in location free from fire risk and away from sources of heat and ignition. Keep away from combustible materials.

**7.3. Specific end use(s)**
None.

## SECTION 8: Exposure controls/personal protection

### 8.1. Control parameters

**Exposure limit value**

| Value type | value | Note |
|---|---|---|
| Great Britain - STEL | 1.250 ppm | EH 40/07 |
| Great Britain - LTEL | 1.000 ppm | EH 40/07 |

DNEL not available

**Predicted No Effect Concentrations**

| Type | Compartment Detail | Value | Method Detail |
|---|---|---|---|
| PNEC | Fresh water | 0,15 mg/l | Calculated value |
| PNEC | Marine water | 0,015 mg/l | Calculated value |

### 8.2. Exposure controls

**Appropriate engineering controls**

A risk assessment should be conducted and documented in each work area to assess the risks related to the use of the product and to select the PPE that matches the relevant risk. The following recommendations should be considered. Product to be handled in a closed system. Keep concentrations well below occupational exposure limits. The substance must be handled in accordance with good industrial hygiene and safety procedures. Consider work permit system e.g. for maintenance activities. Systems under pressure should be regularly checked for leakages. Provide adequate general or local ventilation. Oxygen detectors should be used when asphyxiating gases may be released.

**Personal protective equipment**

**Eye and face protection**

Protect eyes, face and skin from contact with product. Wear eye protection to EN 166 when using gases. Wear safety glasses with side shields.

**Skin protection**

**Hand protection**

Advice: Wear working gloves and safety shoes while handling gas cylinders.

**Body protection**

Personal protective equipment for the body should be selected based on the task being performed and the risks involved.

**Other protection**

Wear working gloves and safety shoes while handling gas cylinders. Wear safety glasses with side shields or goggles when transfilling or breaking transfer connections.

**Respiratory protection**

Not required

**Thermal hazards**

If there is a risk of contact with the liquid, all protective equipment should be suitable for extremely low temperatures.

**Environmental Exposure Controls**

Specific risk management measures are not required beyond good industrial hygiene and safety procedures. Refer to local regulations for restriction of emissions to the atmosphere. See section 13 for specific methods for waste gas treatment.

## SECTION 9: Physical and chemical properties

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

**General information**

**Appearance/Colour:** Colourless gas.

**Odour:** No odour warning properties.

**Odour threshold:**

Odour threshold is subjective and inadequate to warn for over exposure.

**Melting point:** -50,8 °C

**Boiling point:** -63,8 °C

**Flash point:** Not applicable for gases and gas mixtures.

**Evaporation rate**:

Not applicable for gases and gas mixtures.

**Flammability range:** Non flammable.

**Vapour Pressure 20 °C:** 21 bar

**Relative density, gas:** 5

**Partition coefficient: n-octanol/water:**

Not applicable.

**Autoignition temperature:** Not applicable.

**Explosive properties:**

Explosive acc. EU legislation: Not explosive.

Explosive acc. transp. reg.: Not explosive.

**Oxidising properties:** Not applicable.

**Molecular weight:** 146 g/mol

**Sublimation point:** -64 °C

**Critical temperature:** 45,5 °C

**Relative density, liquid:** 1,4

### 9.2. Other information

Gas/vapour heavier than air. May accumulate in confined spaces, particularly at or below ground level.

## SECTION 10: Stability and reactivity

### 10.1. Reactivity

Decomposition under influence of moisture is highly accelerated by heating.

### 10.2. Chemical stability

Stable under normal conditions.

### 10.3. Possibility of hazardous reactions

None.

### 10.4. Conditions to avoid

None.

### 10.5. Incompatible materials

No reaction with any common materials in dry or wet conditions.

**10.6. Hazardous decomposition products**
Under normal conditions of storage and use, hazardous decomposition products should not be produced. If involved in a fire the following toxic and/or corrosive fumes may be produced by thermal decomposition:
Sulphur dioxide, Hydrogen fluoride.

## SECTION 11: Toxicological information

**11.1. Information on toxicological effects**
**Acute oral toxicity**
No known effects from this product.
**Acute inhalation toxicity**
No known effects from this product.
**Acute dermal toxicity**
No known effects from this product.
**Acute toxicity other routes**
No known effects from this product.
**Skin irritation**
No known effects from this product.
**Eye irritation**
No known effects from this product.
**Sensitization**
No known effects from this product.
**Repeated dose toxicity**
Species: Rat
Route of application: Inhalation
Exposure time numeric value: 672 h
No known effects from this product.
**Assessment mutagenicity**
Memo: There is no evidence of mutagenic potential.
**Assessment carcinogenicity**
No evidence of carcinogenic effects.
**Assessment toxicity to reproduction**
No indication of toxic effects.
**Assessment teratogenicity**
No indication of teratogenic effects.
**Other relevant toxicity information**
None.
**Experiences with human exposure**
None.

## SECTION 12: Ecological information

**12.1. Toxicity**
When discharged in large quantities may contribute to the greenhouse effect.
**Acute and prolonged toxicity fish**
Species: Fish (Various)
Exposure time: 2.304 h
Value type: LC50
Value in standard unit mg/l: 236 mg/l
**Acute toxicity aquatic invertebrates**
Species: Crustaceans
Exposure time: 48 h
Value type: LC50
Value in standard unit mg/l: 247 mg/l
**Toxicity aquatic plants**
Species: Algae
Exposure time: 96 h
Value type: EC50
Value in standard unit mg/l: 151 mg/l

**12.2. Persistence and degradability**

**Abiotic degradation**
Air, t 1/2 > 1,000 y
Result: non-significant photolysis
- Water/soil, t 1/2 (Hydrolysis) 1,000 y
Result: non-significant hydrolysis
- Water Result: non-significant hydrolysis
**Biodegradation**
Not readily biodegradable. Inorganic compound.

**12.3. Bioaccumulative potential**
The substance has no potential for bioaccumulation.

**12.4. Mobility in soil**
Soil/sediments non-significant adsorption
- Water, t1/2: 3.5 h
Conditions: calculated value
The product evaporates readily.
Air, Henry's law constant (H), ca. 458 kPa.m³/mol, 25 °C
Conditions: calculated value
Considerable volatility

**12.5. Results of PBT and vPvB assessment**
No data available.

**12.6. Other adverse effects**
**Global Warming Potential GWP**
Contains fluorinated greenhouse gases covered by the Kyoto protocol.
22.200

## SECTION 13: Disposal considerations

**13.1. Waste treatment methods**
Must not be discharged to atmosphere. Do not discharge into any place where its accumulation could be dangerous. Refer to the EIGA code of practice (Doc.30 “Disposal of Gases", downloadable at http://www.eiga.org) for more guidance on suitable disposal methods.
Contact supplier if guidance is required. Dispose of cylinder via gas supplier only. Gases in pressure containers excluding those, which are mentioned under 16 05 04.
**EWC Nr. 16 05 05**

## SECTION 14: Transport information

**ADR/RID**

**14.1. UN number**
1080

**14.2. UN proper shipping name**
Sulphur hexafluoride

**14.3. Transport hazard class(es)**
Class: 2
Classification Code: 2A
Labels: 2.2
Hazard number: 20
Tunnel restriction code: (C/E)
Emergency Action Code: 2TE

**14.4. Packing group (Packing Instruction)**
P200

**14.5. Environmental hazards**
None.

**14.6. Special precautions for user**
None.

**IMDG**

**14.1. UN number**
1080

**14.2. UN proper shipping name**
Sulphur hexafluoride

**14.3. Transport hazard class(es)**
Class: 2.2
Labels: 2.2
EmS: F-C, S-V

**14.4. Packing group (Packing Instruction)**
P200

**14.5. Environmental hazards**
None.

**14.6. Special precautions for user**
None.

**14.7. Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code**
Not applicable.

**IATA**

**14.1. UN number**
1080

**14.2. UN proper shipping name**
Sulphur hexafluoride

**14.3. Transport hazard class(es)**
Class: 2.2
Labels: 2.2

**14.4. Packing group (Packing Instruction)**
P200

**14.5. Environmental hazards**
None.

**14.6. Special precautions for user**
None.

**Other transport information**
Avoid transport on vehicles where the load space is not separated from the driver's compartment. Ensure vehicle driver is aware of the potential hazards of the load and knows what to do in the event of an accident or an emergency. Before transporting product containers ensure that they are firmly secured. Ensure that the cylinder valve is closed and not leaking. Ensure that the valve outlet cap nut or plug (where provided) is correctly fitted. Ensure that the valve protection device (where provided) is correctly fitted. Ensure adequate ventilation. Ensure compliance with applicable regulations.

## SECTION 15: Regulatory information

**15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture**
Seveso Directive 96/82/EC: Not covered.

**Other regulations**
Regulation on Fluorinated greenhouse gases 842/2006/EC: Listed.

**15.2. Chemical safety assessment**
A CSA does not need to be carried out for this product.

## SECTION 16: Other information

Ensure all national/local regulations are observed. The hazard of asphyxiation is often overlooked and must be stressed during operator training. Before using this product in any new process or experiment, a thorough material compatibility and safety study should be carried out.

**Advice**
Whilst proper care has been taken in the preparation of this document, no liability for injury or damage resulting from its use can be accepted. Details given in this document are believed to be correct at the time of going to press.

**Further information**
Note:
When using this document care should be taken, as the decimal sign and its position complies with rules for the structure and drafting of international standards, and is a comma on the line.
As an example 2,000 is two (to three decimal places)

and not two thousand, whilst 1.000 is one thousand and not one (to three decimal places).

**End of document**