

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

1.1. Product identifier

Trade name : SH-5

SDS Nr :

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.
Test gas/Calibration gas.
Laboratory use.
Contact supplier for more information on uses.

1.3. Details of the supplier of the safety data sheet

Company identification : Oy Woikoski Ab
Virransalmentie 2023
52920 Voikoski Finland
+358 15 7700 700

E-Mail address (competent person) : info@woikoski.fi

1.4. Emergency telephone number

Country	Official advisory body	Address	Emergency number
FINLAND	Myrkytystietokeskus Gifinformationscentralen, Poison Information Centre	P.O.B 790 (Tukholmankatu 17) HUS SF - 00029 Helsinki	+358 9 471 977

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

Classification according to Regulation (EC) No. 1272/2008 [CLP]

Flam. Gas 1 H220

Compressed gas H280

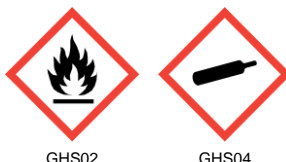
Classification according to Directive 67/548/EEC or 1999/45/EC

F+; R12

2.2. Label elements

Labelling according to Regulation (EC) No. 1272/2008 [CLP]

Hazard pictograms (CLP) :



GHS02

GHS04

Signal word (CLP) : Danger

Hazard statements (CLP) : H220 - Extremely flammable gas
H280 - Contains gas under pressure; may explode if heated

Precautionary statements (CLP) : P210 - Keep away from heat, hot surfaces, open flames, sparks. - No smoking
P377 - Leaking gas fire: Do not extinguish, unless leak can be stopped safely
P381 - In case of leaking gas fire, eliminate all ignition sources if safe to do so
P403 - Store in a well-ventilated place

2.3. Other hazards

: None.

SECTION 3: Composition/information on ingredients

3.1. Substances

Not applicable

3.2. Mixture



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Name	Product identifier	%	Classification according to Directive 67/548/EEC	Classification according to Regulation (EC) No. 1272/2008 [CLP]
Argon	(CAS No.) 7440-37-1 (EC no) 231-147-0 (REACH-no) *1	95	Not classified	Compressed gas, H280
Hydrogen	(CAS No.) 1333-74-0 (EC no) 215-605-7 (EC index no) 001-001-00-9 (REACH-no) *1	5	F+; R12	Flam. Gas 1, H220 Compressed gas, H280

Full text of R-, H- and EUH-phrases: see section 16

Contains no other components or impurities which will influence the classification of the product.

*1: Listed in Annex IV / V REACH, exempted from registration.

*2: Registration deadline not expired.

*3: Registration not required: Substance manufactured or imported < 1t/y.

SECTION 4: First aid measures

4.1. Description of first aid measures

- 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.
- Skin contact : Adverse effects not expected from this product.
- Eye contact : Adverse effects not expected from this product.
- 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. Refer to section 11.

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

- : None.

SECTION 5: Firefighting measures

5.1. Extinguishing media

- Suitable extinguishing media : Water spray or fog.
- Unsuitable extinguishing media : Carbon dioxide.
Do not use water jet to extinguish.

5.2. Special hazards arising from the substance or mixture

- Specific hazards : Exposure to fire may cause containers to rupture/explode.
- Hazardous combustion products : None.

5.3. Advice for fire-fighters

- Specific methods : Use fire control measures appropriate for the surrounding fire. Exposure to fire and heat radiation may cause gas receptacles to rupture. Cool endangered receptacles with water spray jet from a protected position. Prevent water used in emergency cases from entering sewers and drainage systems.
If possible, stop flow of product.
Use water spray or fog to knock down fire fumes if possible.
Do not extinguish a leaking gas flame unless absolutely necessary. Spontaneous/explosive re-ignition may occur. Extinguish any other fire.



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Special protective equipment for fire fighters : In confined space use self-contained breathing apparatus.
Standard protective clothing and equipment (Self Contained Breathing Apparatus) for fire fighters.
Standard EN 469 - Protective clothing for firefighters. Standard - EN 659: Protective gloves for firefighters.
Standard EN 137 - Self-contained open-circuit compressed air breathing apparatus with full face mask.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

: Try to stop release.
Evacuate area.
Consider the risk of potentially explosive atmospheres.
Eliminate ignition sources.
Ensure adequate air ventilation.
Prevent from entering sewers, basements and workpits, or any place where its accumulation can be dangerous.

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

Safe use of the product : The substance must be handled in accordance with good industrial hygiene and safety procedures.
Only experienced and properly instructed persons should handle gases under pressure.
Consider pressure relief device(s) in gas installations.
Ensure the complete gas system was (or is regularly) checked for leaks before use.
Do not smoke while handling product.
Use only properly specified equipment which is suitable for this product, its supply pressure and temperature. Contact your gas supplier if in doubt.
Assess the risk of potentially explosive atmospheres and the need for explosion-proof equipment.
Purge air from system before introducing gas.
Take precautionary measures against static discharge.
Keep away from ignition sources (including static discharges).
Consider the use of only non-sparking tools.

- Safe handling of the gas receptacle :
- Refer to supplier's container handling instructions.
 - Do not allow backfeed into the container.
 - Protect cylinders from physical damage; do not drag, roll, slide or drop.
 - 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.
 - If user experiences any difficulty operating cylinder valve discontinue use and contact supplier.
 - Never attempt to repair or modify container valves or safety relief devices.
 - Damaged valves should be reported immediately to the supplier.
 - Keep container valve outlets clean and free from contaminants particularly oil and water.
 - Replace valve outlet caps or plugs and container caps where supplied as soon as container is disconnected from equipment.
 - Close container valve after each use and when empty, even if still connected to equipment.
 - Never attempt to transfer gases from one cylinder/container to another.
 - 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.
 - Containers should be stored in the vertical position and properly secured to prevent toppling.

7.2. Conditions for safe storage, including any incompatibilities

- :
- Observe all regulations and local requirements regarding storage of containers.
 - Containers should not be stored in conditions likely to encourage corrosion.
 - Container valve guards or caps should be in place.
 - Containers should be stored in the vertical position and properly secured to prevent toppling.
 - Stored containers should be periodically checked for general condition and leakage.
 - Keep container below 50°C in a well ventilated place.
 - Store containers in location free from fire risk and away from sources of heat and ignition.
 - Keep away from combustible materials.
 - Segregate from oxidant gases and other oxidants in store.
 - All electrical equipment in the storage areas should be compatible with the risk of a potentially explosive atmosphere.

7.3. Specific end use(s)

- : None.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters No additional information available

8.2. Exposure controls

8.2.1. Appropriate engineering controls

- :
- Provide adequate general and local exhaust ventilation.
 - Systems under pressure should be regularly checked for leakages.
 - Ensure exposure is below occupational exposure limits (where available).
 - Keep concentrations well below lower explosion limits.
 - Gas detectors should be used when flammable gases/vapours may be released.
 - Consider work permit system e.g. for maintenance activities.

8.2.2. Individual protection measures, e.g. personal protective equipment

- :
- 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:
 - PPE compliant to the recommended EN/ISO standards should be selected.
- Eye/face protection :
- Wear safety glasses with side shields.
 - Standard EN 166 - Personal eye-protection.
- Skin protection
- Hand protection :
- Wear working gloves when handling gas containers.
 - Standard EN 388 - Protective gloves against mechanical risk.

- Other : Consider the use of flame resistant anti-static safety clothing.
Standard EN ISO 14116 - Limited flame spread materials.
Standard EN ISO 1149-5 - Protective clothing: Electrostatic properties.
Wear safety shoes while handling containers.
Standard EN ISO 20345 - Personal protective equipment - Safety footwear.
 - Respiratory protection : Self contained breathing apparatus (SCBA) or positive pressure airline with mask are to be used in oxygen-deficient atmospheres.
Standard EN 137 - Self-contained open-circuit compressed air breathing apparatus with full face mask.
 - Thermal hazards : None necessary.
- 8.2.3. Environmental exposure controls**
- : 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

- Appearance : No additional information available
- Physical state at 20°C / 101.3kPa : Gas
- Colour : Mixture contains one or more component(s) which have the following colour(s):
Colourless.
- Odour : There may be no odour warning properties, odour is subjective and inadequate to warn of overexposure.
Mixture contains one or more component(s) which have the following odour(s):
No odour warning properties., Odourless.
- Odour threshold : Odour threshold is subjective and inadequate to warn for overexposure.
- pH value : Not applicable for gas-mixtures.
- Molar mass : Not applicable for gas-mixtures.
- Melting point : Not applicable for gas-mixtures.
- Boiling point : Not applicable for gas-mixtures.
- Critical temperature : No additional information available
- Flash point : Not applicable for gas-mixtures.
- Evaporation rate (ether=1) : Not applicable for gas-mixtures.
- Flammability range [vol% in air] : Not applicable for gas-mixtures.
- Vapour pressure [20°C] : Not applicable.
- Relative density, gas (air=1) : Heavier than air.
- Relative density, liquid (water=1) : No data available
- Solubility in water [mg/l] : Solubility in water of component(s) of the mixture :
• Argon: 61 mg/l • Hydrogen: 1,6 mg/l
- Partition coefficient n-octanol/water [log Kow] : Not applicable for gas-mixtures.
- Auto-ignition temperature [°C] : No data available
- Viscosity at 20°C : Not applicable.
- Explosive Properties : Not applicable.
- Oxidising Properties : None.

9.2. Other information

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

SECTION 10: Stability and reactivity



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10.1. Reactivity

: No reactivity hazard other than the effects described in sub-sections below.

10.2. Chemical stability

: Stable under normal conditions.

10.3. Possibility of hazardous reactions

: Can form explosive mixture with air.
May react violently with oxidants.

10.4. Conditions to avoid

: None under recommended storage and handling conditions (see section 7).
Keep away from heat/sparks/open flames/hot surfaces. – No smoking.

10.5. Incompatible materials

: For additional information on compatibility refer to ISO 11114.

10.6. Hazardous decomposition products

: Under normal conditions of storage and use, hazardous decomposition products should not be produced.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute toxicity	: No toxicological effects from this product.
Skin corrosion/irritation	: No known effects from this product.
Serious eye damage/irritation	: No known effects from this product.
Respiratory or skin sensitisation	: No known effects from this product.
Germ cell mutagenicity	: No known effects from this product.
Carcinogenicity	: No known effects from this product.
Toxic for reproduction : Fertility	: No known effects from this product.
Toxic for reproduction : unborn child	: No known effects from this product.
STOT-single exposure	: No known effects from this product.
STOT-repeated exposure	: No known effects from this product.
Aspiration hazard	: Not applicable for gases and gas-mixtures.

SECTION 12: Ecological information

12.1. Toxicity

Ecology - general : Classification criteria are not met.

12.2. Persistence and degradability

SH-5	
Persistence and degradability	No data available.

Argon (7440-37-1)

Persistence and degradability	No ecological damage caused by this product.
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Hydrogen (1333-74-0)

Persistence and degradability	No ecological damage caused by this product.
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12.3. Bioaccumulative potential

SH-5	
Log Pow	Not applicable for gas-mixtures.
Log Kow	Not applicable for gas-mixtures.
Bioaccumulative potential	No data available.

Argon (7440-37-1)

Log Pow	Not applicable for inorganic gases.
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SDS Ref.:

Bioaccumulative potential	No ecological damage caused by this product.
Hydrogen (1333-74-0)	
Log Pow	Not applicable for inorganic gases.
Bioaccumulative potential	No ecological damage caused by this product.

12.4. Mobility in soil

SH-5	
Mobility in soil	No data available.

Argon (7440-37-1)	
Ecology - soil	No ecological damage caused by this product.

Hydrogen (1333-74-0)	
Ecology - soil	No ecological damage caused by this product.

12.5. Results of PBT and vPvB assessment

No data available.

12.6. Other adverse effects

Effect on ozone layer : None.
Effect on the global warming : No known ecological damage caused by this product.

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Contact supplier if guidance is required.
Do not discharge into areas where there is a risk of forming an explosive mixture with air. Waste gas should be flared through a suitable burner with flash back arrestor.
Do not discharge into any place where its accumulation could be dangerous.
Ensure that the emission levels from local regulations or operating permits are not exceeded.
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.

List of hazardous wastes : 16 05 04: Gases in pressure containers (including halons) containing dangerous substances.

13.2. Additional information

: None.

SECTION 14: Transport information

In accordance with ADR / RID / ADNR / IMDG / ICAO / IATA

14.1. UN number

UN-No. : 1954

14.2. UN proper shipping name

Proper Shipping Name : COMPRESSED GAS, FLAMMABLE, N.O.S.
Transport document description : UN 1954 COMPRESSED GAS, FLAMMABLE, N.O.S. (Hydrogen, Argon), 2, (B/D)

14.3. Transport hazard class(es)

Class (UN) : 2

14.4. Packing group

Not applicable

14.5. Environmental hazards

IMDG-Marine pollutant : No
Environmental hazards : None.
Other information : No supplementary information available.

14.6. Special precautions for user

Special transport precautions : 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 there is adequate ventilation.
 - Ensure that containers are firmly secured.
 - Ensure cylinder valve is closed and not leaking.
 - Ensure valve outlet cap nut or plug (where provided) is correctly fitted.
 - Ensure valve protection device (where provided) is correctly fitted.

14.6.1. Overland transport

Hazard identification number (Kemler No.) : 23
 Classification code (UN) : 1F
 Orange plates :



Special provision (ADR) 274
 Transport category (ADR) 2
 Tunnel restriction code : B/D
 Limited quantities (ADR) 0
 Excepted quantities (ADR) : E0

14.6.2. Transport by sea

No additional information available

14.6.3. Air transport

No additional information available

14.7. Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

No additional information available

SECTION 15: Regulatory information

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

EU-Regulations

No REACH Annex XVII restrictions
 Contains no REACH candidate substance
 Seveso directive 96/82/EC : Covered.

National regulations

National legislation : Ensure all national/local regulations are observed.
 Water hazard class (WGK) : -

15.2. Chemical safety assessment

A CSA does not need to be carried out for this product.

SECTION 16: Other information

Indication of changes : Revised safety data sheet in accordance with commission regulation (EU) No 453/2010.
 Training advice : Ensure operators understand the flammability hazard. Receptacle under pressure.
 Other information : This Safety Data Sheet has been established in accordance with the applicable European Union legislation. Classification in accordance with calculation methods of regulation (EC) 1272/2008 CLP / (EC) 1999/45 DPD.

Full text of R-, H- and EUH-phrases:



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SDS Ref.:

Compressed gas	Gases under pressure Compressed gas
Flam. Gas 1	Flammable gases Category 1
H220	Extremely flammable gas
H280	Contains gas under pressure; may explode if heated
R12	Extremely flammable.
F+	Extremely flammable

DISCLAIMER OF LIABILITY

: Before using this product in any new process or experiment, a thorough material compatibility and safety study should be carried out. Details given in this document are believed to be correct at the time of going to press. 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.