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

1.1. Product identifier

Trade name : Lasal 105
SDS no : NOAL_1028
UFI: G8U2-N0FE-500S-MWU3

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

Relevant identified uses : Industrial and professional uses. Perform risk assessment prior to use.
Industrial and professional use for chemical analysis, calibration, (routine) quality control, laboratory use, under controlled conditions.
Contact supplier for more information on uses.

Uses advised against : Consumer use.
Uses other than those listed above are not supported, contact your supplier for more information on other uses.

1.3. Details of the supplier of the safety data sheet

Company identification

Supplier
AIR LIQUIDE GAS AB
Pulpetgatan 20
215 37 Malmö - SWEDEN
T +46 40 38 10 00
info.sweden@airliquide.com

E-Mail address (competent person) : eunordic-sds@airliquide.com

1.4. Emergency telephone number

Emergency telephone number : 112
Availability
(24 / 7)

Country	Organisation/Company	Address	Emergency number	Comment
Germany	Giftnotruf Erfurt Gemeinsames Giftinformationszentrum der Länder Mecklenburg-Vorpommern, Sachsen, Sachsen-Anhalt und Thüringen, c/o HELIOS Klinikum Erfurt	Nordhäuser Straße 74 99089 Erfurt	+49 (0) 361 730 730	

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

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

Physical hazards	Gases under pressure : Compressed gas	H280
Health hazards	Reproductive toxicity, Category 1A	H360D
	Specific target organ toxicity – Repeated exposure, Category 2	H373

2.2. Label elements

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

Hazard pictograms (CLP) :

GHS04 GHS08

Signal word (CLP) : Danger

Hazard statements (CLP) : H280 - Contains gas under pressure; may explode if heated.
H360D - May damage the unborn child.
H373 - May cause damage to organs through prolonged or repeated exposure.

Precautionary statements (CLP)

- Prevention : P280 - Wear protective gloves, protective clothing, eye protection.
P202 - Do not handle until all safety precautions have been read and understood.
P260 - Do not breathe gas, vapours.
- Response : P308+P313 - IF exposed or concerned: Get medical advice/attention.
- Storage : P405 - Store locked up.
P403 - Store in a well-ventilated place.

Supplemental information : Restricted to professional users.

2.3. Other hazards

None.
Not classified as PBT or vPvB.
The substance/mixture has no endocrine disrupting properties.

SECTION 3: Composition/information on ingredients

3.1. Substances Not established.

3.2. Mixtures

Name	Product identifier	Composition [V-%]:	Classification according to Regulation (EC) No. 1272/2008 [CLP]
Nitrogen	CAS-No.: 7727-37-9 EC-No.: 231-783-9 EC Index-No.: --- REACH-no: *1	60	Press. Gas (Comp.), H280
Helium	CAS-No.: 7440-59-7 EC-No.: 231-168-5 EC Index-No.: --- REACH-no: *1	28	Press. Gas (Comp.), H280
Carbon dioxide	CAS-No.: 124-38-9 EC-No.: 204-696-9 EC Index-No.: --- REACH-no: *1	8	Press. Gas (Liq.), H280
Carbon monoxide	CAS-No.: 630-08-0 EC-No.: 211-128-3 EC Index-No.: 006-001-00-2 REACH-no: 01-2119480165-39	4	Flam. Gas 1A, H220 Press. Gas (Comp.), H280 Acute Tox. 3 (Inhalation:gas), H331 Repr. 1A, H360D STOT RE 1, H372

Full text of H- and EUH-statements: 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.*

**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. Perform cardiopulmonary resuscitation 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

See 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.
  Product does not burn, use fire control measures appropriate for the surrounding fire.
- Unsuitable extinguishing media : 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 : Carbon monoxide.

5.3. Advice for firefighters

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.
Move containers away from the fire area if this can be done without risk.

Special protective equipment for fire fighters : Wear gas tight chemically protective clothing in combination with self contained breathing apparatus.
Standard EN 943-2: Protective clothing against liquid and gaseous chemicals, aerosols and solid particles. Gas-tight chemical protective suits for emergency teams.
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

For non-emergency personnel : Act in accordance with local emergency plan.
Try to stop release.
Evacuate area.
Ensure adequate air ventilation.
Stay upwind.
See section 8 of the SDS for more information on personal protective equipment

For emergency responders : Wear self-contained breathing apparatus when entering area unless atmosphere is proved to be safe.
See section 5.3 of the SDS for more information.

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 : Do not breathe gas.
Avoid release of product into atmosphere.
The product 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 regularily) checked for leaks before use.
Do not smoke while handling product.
Avoid exposure, obtain special instructions before use.
Use only properly specified equipment which is suitable for this product, its supply pressure and temperature. Contact your gas supplier if in doubt.
Avoid suck back of water, acid and alkalis.

Safe handling of the gas receptacle : Refer to supplier's container handling instructions.
Do not allow backfeed into the container.
Protect containers 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 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 content of the container.
Suck back of water into the container must be prevented.
Open valve slowly to avoid pressure shock.

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 them from falling over.
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.

7.3. Specific end use(s)

None.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Carbon monoxide (630-08-0)	
EU - Indicative Occupational Exposure Limit (IOEL)	
Local name	Carbon monoxide
IOEL TWA	23 mg/m³
IOEL TWA [ppm]	20 ppm
IOEL STEL	117 mg/m³
IOEL STEL [ppm]	100 ppm
Remark	SCOEL Recommendations (1995)
Austria - Occupational Exposure Limits	
Local name	Kohlenstoffmonoxid

MAK (mg/m³)	33 mg/m³
MAK (OEL TWA) [ppm]	30 ppm
MAK (OEL STEL)	66 mg/m³
MAK (OEL STEL) [ppm]	60 ppm
Belgium - Occupational Exposure Limits	
Local name	Carbone (oxyde de) # Koolstofmonoxide
OEL TWA	29 mg/m³
OEL TWA [ppm]	25 ppm
Bulgaria - Occupational Exposure Limits	
Local name	Въглероден оксид
OEL TWA	40 mg/m³
OEL STEL	200 mg/m³
Croatia - Occupational Exposure Limits	
Local name	Ugljikov monksid
GVI (OEL TWA) [1]	35 mg/m³
GVI (OEL TWA) [2]	30 ppm
KGVI (OEL STEL)	232 mg/m³
KGVI (OEL STEL) [ppm]	200 ppm
Remark	F+, T BVG
Czech Republic - Occupational Exposure Limits	
Local name	Oxid uhelnatý
PEL (OEL TWA)	30 mg/m³
PEL (OEL TWA) [ppm]	26.2 ppm
NPK-P (OEL C)	150 mg/m³
NPK-P (OEL C) [ppm]	131 ppm
Denmark - Occupational Exposure Limits	
Local name	Carbonmonoxid (Kulilte; Kulmonoxid)
OEL TWA [1]	29 mg/m³
OEL TWA [2]	25 ppm
Estonia - Occupational Exposure Limits	
Local name	Süsinikmonooksiid heitgaasina
OEL TWA	4025 mg/m³
OEL TWA [ppm]	3520 ppm
OEL STEL	120 mg/m³

OEL STEL [ppm]	100 ppm
Finland - Occupational Exposure Limits	
Local name	Hiilimonoksidi
HTP (OEL TWA) [1]	35 mg/m³
HTP (OEL TWA) [2]	30 ppm
HTP (OEL STEL)	87 mg/m³
HTP (OEL STEL) [ppm]	75 ppm
France - Occupational Exposure Limits	
Local name	Oxyde de carbone
VME (OEL TWA)	55 mg/m³
VME (OEL TWA) [ppm]	50 ppm
Remark	Valeurs recommandées/admises; substance classée toxique pour la reproduction de catégorie 1a
Germany - Occupational Exposure Limits (TRGS 900)	
Local name	Kohlenstoffmonoxid
AGW (OEL TWA) [1]	35 mg/m³
AGW (OEL TWA) [2]	30 ppm
Remark	DFG,Z
Greece - Occupational Exposure Limits	
OEL TWA	55 mg/m³
OEL TWA [ppm]	50 ppm
OEL STEL	330 mg/m³
OEL STEL [ppm]	300 ppm
Hungary - Occupational Exposure Limits	
Local name	SZÉN-MONOXID
AK (OEL TWA)	33 mg/m³
CK (OEL STEL)	66 mg/m³
Ireland - Occupational Exposure Limits	
Local name	Carbon monoxide
OEL TWA [1]	23 mg/m³
OEL TWA [2]	20 ppm
OEL STEL	115 mg/m³
OEL STEL [ppm]	100 ppm

Latvia - Occupational Exposure Limits	
Local name	Oglekļa(II)oksīds (oglekļamonoksīds)
OEL TWA	20 mg/m³
Netherlands - Occupational Exposure Limits	
Local name	Koolmonoxide
TGG-8u (OEL TWA)	29 mg/m³
Poland - Occupational Exposure Limits	
Local name	Tlenek węgla
NDS (OEL TWA)	23 mg/m³
NDSCh (OEL STEL)	117 mg/m³
Portugal - Occupational Exposure Limits	
Local name	Monóxido de carbono
OEL TWA [ppm]	25 ppm
Romania - Occupational Exposure Limits	
Local name	Oxid de carbon
OEL TWA	20 mg/m³
OEL TWA [ppm]	17.5 ppm
OEL STEL	30 mg/m³
OEL STEL [ppm]	26 ppm
Slovakia - Occupational Exposure Limits	
NPHV (OEL TWA) [1]	35 mg/m³
NPHV (OEL TWA) [2]	30 ppm
NPHV (OEL STEL)	35 mg/m³
Slovenia - Occupational Exposure Limits	
Local name	ogljikov monoksid
OEL TWA	35 mg/m³
OEL TWA [ppm]	30 ppm
OEL STEL	70 mg/m³
OEL STEL [ppm]	60 ppm
Spain - Occupational Exposure Limits	
Local name	Monóxido de carbono
VLA-ED (OEL TWA) [1]	29 mg/m³
VLA-ED (OEL TWA) [2]	25 ppm

Remark	TR1A (Cuando las pruebas utilizadas para la clasificación procedan principalmente de datos en humanos), VLB® (Agente químico que tiene Valor Límite Biológico específico en este documento).
Sweden - Occupational Exposure Limits	
Local name	Avgaser som kolmonoxid
NGV (OEL TWA)	25 mg/m³ 25 mg/m³ Avgaser 40 mg/m³ Se även Avgaser
NGV (OEL TWA) [ppm]	20 ppm 20 ppm Avgaser 35 ppm Se även Avgaser
KTV (OEL STEL)	120 mg/m³ Se även Avgaser
KTV (OEL STEL) [ppm]	100 ppm Se även Avgaser
United Kingdom - Occupational Exposure Limits	
Local name	Carbon monoxide
WEL TWA (OEL TWA) [1]	35 mg/m³
WEL TWA (OEL TWA) [2]	30 ppm
WEL STEL (OEL STEL)	232 mg/m³
WEL STEL (OEL STEL) [ppm]	200 ppm
Remark	BMGV (Biological monitoring guidance values are listed in Table 2)
Iceland - Occupational Exposure Limits	
Local name	Kolmónoxíð (kolsýrlingur)
OEL TWA	29 mg/m³
OEL TWA [ppm]	25 ppm
Norway - Occupational Exposure Limits	
Local name	Karbonmonoksid
Grenseverdi (OEL TWA) [1]	29 mg/m³
Grenseverdi (OEL TWA) [2]	25 ppm
Switzerland - Occupational Exposure Limits	
Local name	Kohlenmonoxid
MAK (OEL TWA) [1]	35 mg/m³ 35 mg/m³
MAK (OEL TWA) [2]	30 ppm 30 ppm
KZGW (OEL STEL)	70 mg/m³ 70 mg/m³
KZGW (OEL STEL) [ppm]	60 ppm 60 ppm

Remark	O^{L} B SS_{B} - $COHb^{KT\ HU}$ - NIOSH
USA - ACGIH - Occupational Exposure Limits	
Local name	Carbon monoxide
ACGIH OEL TWA [ppm]	25 ppm

Carbon dioxide (124-38-9)	
EU - Indicative Occupational Exposure Limit (IOEL)	
Local name	Carbon dioxide
IOEL TWA	9000 mg/m³
IOEL TWA [ppm]	5000 ppm
Austria - Occupational Exposure Limits	
Local name	Kohlenstoffdioxid
MAK (mg/m³)	9000 mg/m³
MAK (OEL TWA) [ppm]	5000 ppm
MAK (OEL STEL)	18000 mg/m³
MAK (OEL STEL) [ppm]	10000 ppm
Belgium - Occupational Exposure Limits	
Local name	Carbone (dioxyde de) # Koolstofdioxide
OEL TWA	9131 mg/m³
OEL TWA [ppm]	5000 ppm
OEL STEL	54784 mg/m³
OEL STEL [ppm]	30000 ppm
Remark	A: La mention A signifie que l'agent libère un gaz ou une vapeur qui n'ont en eux-mêmes aucun effet physiologique mais peuvent diminuerm.Le taux d'oxygène dans l'air. Lorsque le taux d'oxygène descend en dessous de 17-18 % (vol/vol) le manque d'oxygène provoque des suffocations qu'aucun symptôme préalable n'annonce. # De vermelding A betekent dat dit agens gas of damp vrijgeeft dat of die op zich geen fysiologische werking heeft, maar het zuurstofgehalte in de lucht verlaagt. Wanneer het zuurstofgehalte daalt onder de 17-18 % (vol/vol), veroorzaakt het zuurstoftekort verstikking, die zich manifesteert zonder dat er een waarschuwing aan voorafgaat.
Bulgaria - Occupational Exposure Limits	
Local name	Въглероден диоксид
OEL TWA	9000 mg/m³
OEL TWA [ppm]	5000 ppm
Remark	• (Химични агенти, за които са определени гранични стойности във въздуха на работната среда за Европейската общност)

Croatia - Occupational Exposure Limits	
Local name	Ugljikov dioksid
GVI (OEL TWA) [1]	9000 mg/m³
GVI (OEL TWA) [2]	5000 ppm
Remark	EU**
Czech Republic - Occupational Exposure Limits	
Local name	Oxid uhli itý
PEL (OEL TWA)	9000 mg/m³
PEL (OEL TWA) [ppm]	5000 ppm
NPK-P (OEL C)	45000 mg/m³
NPK-P (OEL C) [ppm]	25020 ppm
Denmark - Occupational Exposure Limits	
Local name	Carbondioxid (Kuldioxid; Kulsyre)
OEL TWA [1]	9000 mg/m³
OEL TWA [2]	5000 ppm
Estonia - Occupational Exposure Limits	
Local name	Süsinikdioksiid
OEL TWA	9000 mg/m³
OEL TWA [ppm]	5000 ppm
Finland - Occupational Exposure Limits	
Local name	Hiilidioksidi
HTP (OEL TWA) [1]	9100 mg/m³
HTP (OEL TWA) [2]	5000 ppm
France - Occupational Exposure Limits	
Local name	Dioxyde de carbone
VME (OEL TWA)	9000 mg/m³
VME (OEL TWA) [ppm]	5000 ppm
Remark	Valeurs règlementaires indicatives
Germany - Occupational Exposure Limits (TRGS 900)	
Local name	Kohlenstoffdioxid
AGW (OEL TWA) [1]	9100 mg/m³
AGW (OEL TWA) [2]	5000 ppm
Remark	DFG,EU

Greece - Occupational Exposure Limits	
OEL TWA	9000 mg/m³
OEL TWA [ppm]	5000 ppm
OEL STEL	54000 mg/m³
Hungary - Occupational Exposure Limits	
Local name	SZÉN-DIOXID
AK (OEL TWA)	9000 mg/m³
Ireland - Occupational Exposure Limits	
Local name	Carbon dioxide
OEL TWA [1]	9000 mg/m³
OEL TWA [2]	5000 ppm
OEL STEL	27000 mg/m³
OEL STEL [ppm]	15000 ppm
Italy - Occupational Exposure Limits	
Local name	Anidride carbonica
OEL TWA	9000 mg/m³
OEL TWA [ppm]	5000 ppm
Latvia - Occupational Exposure Limits	
Local name	Oglekļadioksīds
OEL TWA	9000 mg/m³
OEL TWA [ppm]	5000 ppm
Lithuania - Occupational Exposure Limits	
Local name	Anglies dioksidas
IPRV (OEL TWA)	9000 mg/m³
IPRV (OEL TWA) [ppm]	5000 ppm
Luxembourg - Occupational Exposure Limits	
Local name	Dioxyde de carbone
OEL TWA	9000 mg/m³
OEL TWA [ppm]	5000 ppm
Malta - Occupational Exposure Limits	
Local name	Carbondioxide
OEL TWA	9000 mg/m³
OEL TWA [ppm]	5000 ppm

Netherlands - Occupational Exposure Limits	
Local name	Kooldioxide
TGG-8u (OEL TWA)	9000 mg/m³
Poland - Occupational Exposure Limits	
Local name	Ditlenek węgla 7
NDS (OEL TWA)	9000 mg/m³
NDSCh (OEL STEL)	27000 mg/m³
Portugal - Occupational Exposure Limits	
Local name	Dióxido de carbono
OEL TWA [ppm]	5000 ppm
OEL STEL [ppm]	30000 ppm
Romania - Occupational Exposure Limits	
Local name	Bioxid de carbon
OEL TWA	9000 mg/m³
OEL TWA [ppm]	5000 ppm
Slovenia - Occupational Exposure Limits	
Local name	ogljikov dioksid
OEL TWA	9000 mg/m³
OEL TWA [ppm]	5000 ppm
Spain - Occupational Exposure Limits	
Local name	Dióxido de carbono
VLA-ED (OEL TWA) [1]	9150 mg/m³
VLA-ED (OEL TWA) [2]	5000 ppm
Remark	VLI (Agente químico para el que la U.E. estableció en su día un valor límite indicativo. Todos estos agentes químicos figuran al menos en una de las directivas de valores límite indicativos publicadas hasta ahora (ver Anexo C. Bibliografía). Los estados miembros disponen de un tiempo fijado en dichas directivas para su transposición a los valores límites de cada país miembro. Una vez adoptados, estos valores tienen la misma validez que el resto de los valores adoptados por el país).
Sweden - Occupational Exposure Limits	
Local name	Koldioxid
NGV (OEL TWA)	9000 mg/m³
NGV (OEL TWA) [ppm]	5000 ppm
KTV (OEL STEL)	18000 mg/m³
KTV (OEL STEL) [ppm]	10000 ppm

United Kingdom - Occupational Exposure Limits	
Local name	Carbon dioxide
WEL TWA (OEL TWA) [1]	9150 mg/m³
WEL TWA (OEL TWA) [2]	5000 ppm
WEL STEL (OEL STEL)	27400 mg/m³
WEL STEL (OEL STEL) [ppm]	15000 ppm
Iceland - Occupational Exposure Limits	
Local name	Koldíoxíð (koltvísýringur, kolsýra)
OEL TWA	9000 mg/m³
OEL TWA [ppm]	5000 ppm
Norway - Occupational Exposure Limits	
Local name	Karbondioksid
Grenseverdi (OEL TWA) [1]	9000 mg/m³
Grenseverdi (OEL TWA) [2]	5000 ppm
Switzerland - Occupational Exposure Limits	
Local name	Kohlendioxid
MAK (OEL TWA) [1]	9000 mg/m³
MAK (OEL TWA) [2]	5000 ppm
Remark	Asphyxie - NIOSH
USA - ACGIH - Occupational Exposure Limits	
Local name	Carbon dioxide
ACGIH OEL TWA [ppm]	5000 ppm
ACGIH OEL STEL [ppm]	30000 ppm
Remark (ACGIH)	Asphyxia

Carbon monoxide (630-08-0)	
DNEL: Derived no effect level (Workers)	
Acute - local effects, inhalation	100 ppm
Acute - systemic effects, inhalation	100 ppm
Long-term - local effects, inhalation	20 ppm
Long-term - systemic effects, inhalation	20 ppm

PNEC (Predicted No-Effect Concentration) : None established.

8.2. Exposure controls

8.2.1. Appropriate engineering controls

Product to be handled in a closed system and under strictly controlled conditions.
Provide adequate general and local exhaust ventilation.
Preferably use permanent leak-tight installations (e.g. welded pipes).
Systems under pressure should be regularly checked for leakages.
Ensure exposure is below occupational exposure limits (where available).
Consider the use of a 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 - specifications.

• Skin protection
- Hand protection : Wear working gloves when handling gas containers.
Standard EN 388 - Protective gloves against mechanical risk, performance level 1 or higher.
- Other : Wear safety shoes while handling containers.
Standard EN ISO 20345 - Personal protective equipment - Safety footwear.

• Respiratory protection : Gas filters may be used if all surrounding conditions e.g. type and concentration of the contaminant(s) and duration of use are known.
Use gas filters with full face mask, where exposure limits may be exceeded for a short-term period, e.g. connecting or disconnecting containers.
Standard EN 137 - Self-contained open-circuit compressed air breathing apparatus with full face mask.
Consult respiratory device supplier´s product information for the selection of the appropriate device.
When indicated by a risk assessment, Respiratory Protective Equipment must be used. The selection of the Respiratory Protective Device (RPD) must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected RPD.
Gas filters do not protect against oxygen deficiency.
Standard EN 14387 - Gas filter(s), combined filter(s) and standard EN136, full face masks .
Keep self contained breathing apparatus readily available for emergency use.
Self contained breathing apparatus is recommended, where unknown exposure may be expected, e.g. during maintenance activities on installation systems.

• Thermal hazards : None in addition to the above sections.

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
- Physical state at 20°C / 101.3kPa : Gas
- Colour : Colourless

Odour : Odourless.
Odour threshold is subjective and inadequate to warn of overexposure.

pH : Not applicable for gases and gas mixtures.

Melting point / Freezing point : Not applicable for gas mixtures.

Boiling point : Not applicable for gas mixtures.

Flash point	:	Not applicable for gases and gas mixtures.
Flammability	:	Non flammable.
Explosive limits	:	Non flammable.
Lower explosion limit	:	Not available
Upper explosion limit	:	Not available
Vapour pressure [20°C]	:	Not applicable.
Vapour pressure [50°C]	:	Not applicable.
Density	:	Not applicable
Vapour density	:	Not applicable for gases and gas mixtures.
Relative density, liquid (water=1)	:	Not applicable
Relative density, gas (air=1)	:	Lighter or similar to air.
Water solubility	:	Solubility in water of component(s) of the mixture : • Carbon monoxide: 30 mg/l • Carbon dioxide: 2000 mg/l Completely soluble. • Helium: 1.5 mg/l • Nitrogen: 20 mg/l
Partition coefficient n-octanol/water (Log Kow)	:	Not applicable for gas mixtures.
Auto-ignition temperature	:	Non flammable.
Decomposition temperature	:	Not applicable.
Viscosity, kinematic	:	No reliable data available.
Particle characteristics	:	Not applicable for gases and gas mixtures.

9.2. Other information

9.2.1. Information with regard to physical hazard classes

Explosive properties	:	Not applicable.
Oxidising properties	:	Not applicable.

9.2.2. Other safety characteristics

Molar mass	:	Not applicable for gas mixtures.
Evaporation rate	:	Not applicable for gases and gas mixtures.
Other data	:	None.

SECTION 10: Stability and reactivity

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

None.

Reactivity	:	This mixture contains components with the following reactivity : 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).
Avoid moisture in installation systems.

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 hazard classes as defined in Regulation (EC) No 1272/2008

Acute toxicity : Classification criteria are not met.
Unlike simple asphyxiants, carbon dioxide has the ability to cause death even when normal oxygen levels (20-21%) are maintained. 5% CO2 has been found to act synergistically to increase the toxicity of certain other gases (CO, NO2). CO2 has been shown to enhance the production of carboxy- or met-hemoglobin by these gases possibly due to carbon dioxide's stimulatory effects on the respiratory and circulatory systems.
For more information, see 'EIGA Safety Info 24: Carbon Dioxide, Physiological Hazards' at www.eiga.eu.

Carbon monoxide (630-08-0)	
LC50 Inhalation - Rat [ppm]	3760 ppm/1h 1300 ppm/4h

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 : May damage fertility.

Toxic for reproduction : unborn child : May damage the unborn child.

STOT-single exposure : No known effects from this product.

STOT-repeated exposure : May cause damage to organs through prolonged or repeated exposure.

Aspiration hazard : Not applicable for gases and gas mixtures.

11.2. Information on other hazards

Other information : For more information, see 'EIGA Safety Info 24: Carbon Dioxide, Physiological Hazards' at www.eiga.eu.
Unlike simple asphyxiants, carbon dioxide has the ability to cause death even when normal oxygen levels (20-21%) are maintained. 5% CO2 has been found to act synergistically to increase the toxicity of certain other gases (CO, NO2). CO2 has been shown to enhance the production of carboxy- or met-hemoglobin by these gases possibly due to carbon dioxide's stimulatory effects on the respiratory and circulatory systems.
The substance/mixture has no endocrine disrupting properties.

SECTION 12: Ecological information

12.1. Toxicity

Assessment : No ecological damage caused by this product.

EC50 48h - Daphnia magna [mg/l] : No data available.

EC50 72h - Algae [mg/l] : No data available.

LC50 96 h - Fish [mg/l] : No data available.

Carbon monoxide (630-08-0)	
EC50 48h - Daphnia magna [mg/l]	Study scientifically unjustified.
EC50 72h - Algae [mg/l]	Study scientifically unjustified.
LC50 96 h - Fish [mg/l]	Study scientifically unjustified.

12.2. Persistence and degradability

Assessment : No data available.

12.3. Bioaccumulative potential

Assessment : No data available.

12.4. Mobility in soil

Assessment : Because of its high volatility, the product is unlikely to cause ground or water pollution. Partition into soil is unlikely.

12.5. Results of PBT and vPvB assessment

Assessment : Not classified as PBT or vPvB.

12.6. Endocrine disrupting properties

The substance/mixture has no endocrine disrupting properties.

12.7. Other adverse effects

Other adverse effects : No known effects from this product.
Effect on the ozone layer : None.
Effect on global warming : Contains greenhouse gas(es).

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Contact supplier if guidance is required.
Must not be discharged to atmosphere.
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.
Return unused product in original container to supplier.

List of hazardous waste codes (from Commission Decision 2000/532/EC as amended) : 16 05 04 *: Gases in pressure containers (including halons) containing hazardous substances.

13.2. Additional information

External treatment and disposal of waste should comply with applicable local and/or national regulations.

SECTION 14: Transport information

14.1. UN number or ID number

In accordance with ADR / RID / IMDG / IATA / ADN
UN-No. : 1956

14.2. UN proper shipping name

Transport by road/rail (ADR/RID) : COMPRESSED GAS, N.O.S. (Nitrogen, Carbon monoxide)

Transport by air (ICAO-TI / IATA-DGR) : Compressed gas, n.o.s. (Nitrogen, Carbon monoxide)

Transport by sea (IMDG) : COMPRESSED GAS, N.O.S. (Nitrogen, Carbon monoxide)

14.3. Transport hazard class(es)

Labelling :

2.2 : Non-flammable, non-toxic gases.

Transport by road/rail (ADR/RID)

Class : 2

Classification code : 1A

Hazard identification number : 20

Tunnel Restriction : E - Passage forbidden through tunnels of category E

Transport by air (ICAO-TI / IATA-DGR)

Class / Div. (Sub. risk(s)) : 2.2

Transport by sea (IMDG)

Class / Div. (Sub. risk(s)) : 2.2

Emergency Schedule (EmS) - Fire : F-C

Emergency Schedule (EmS) - Spillage : S-V

14.4. Packing group

Transport by road/rail (ADR/RID) : Not established.

Transport by air (ICAO-TI / IATA-DGR) : Not established.

Transport by sea (IMDG) : Not established.

14.5. Environmental hazards

Transport by road/rail (ADR/RID) : None.

Transport by air (ICAO-TI / IATA-DGR) : None.

Transport by sea (IMDG) : None.

14.6. Special precautions for user

Packing Instruction(s)

Transport by road/rail (ADR/RID) : P200

Transport by air (ICAO-TI / IATA-DGR)

Passenger and Cargo Aircraft : 200.

Cargo Aircraft only : 200.

Transport by sea (IMDG) : P200

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 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.

14.7. Maritime transport in bulk according to IMO instruments

Not applicable.

SECTION 15: Regulatory information

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

EU-Regulations

Restrictions on use : Restricted to professional users (Annex XVII REACH).
Contains no substance(s) listed on the REACH Candidate List

National legislation : Ensure all national/local regulations are observed.

Seveso Directive : 2012/18/EU (Seveso III) : Not covered.

National regulations

Ensure all national/local regulations are observed.

France	
Occupational diseases	
Code	**Description**
RG 64	Professional poisoning by carbon monoxide
RG 66	Occupational rhinitis and asthma

Germany

Water hazard class (WGK) : WGK 1, Slightly hazardous to water (Classification according to AwSV, Annex 1)

National Rules and Recommendations : [German regulations] BetriebssicherheitsV mit TRBSen insbesondere TRBS 3145 / TRGS 725 Ortsbewegliche Druckgasbehälter", TRBS 2141, BGRegel 500 Teil 2.33: "Umgang mit Gasen", GefahrstoffV mit Technischen Regeln Gefährliche Stoffe TRGS insbesondere TRGS 407 "Tätigkeiten mit Gasen - Gefährdungsbeurteilung", TRGS 400, 500, 510, 900."

Netherlands

SZW-lijst van kankerverwekkende stoffen : None of the components are listed

SZW-lijst van mutagene stoffen : None of the components are listed

SZW-lijst van reprotoxische stoffen – Borstvoeding : None of the components are listed

SZW-lijst van reprotoxische stoffen – Vruchtbaarheid : None of the components are listed

SZW-lijst van reprotoxische stoffen – Ontwikkeling : None of the components are listed

Denmark

Danish National Regulations : Young people below the age of 18 years are not allowed to use the product
Pregnant/breastfeeding women working with the product must not be in direct contact with the product

15.2. Chemical safety assessment

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

SECTION 16: Other information

Indication of changes : Safety data sheet in accordance with commission regulation (EU) No 2020/878.

Section	Changed item	Change	Comments
1.3	Company	Modified	Version 5.0. New address in Sweden. (This change only applies to the Swedish (SE) version of this SDS)

Abbreviations and acronyms : ATE - Acute Toxicity Estimate
CLP - Classification Labelling Packaging Regulation; Regulation (EC) No 1272/2008
REACH - Registration, Evaluation, Authorisation and Restriction of Chemicals Regulation (EC) No 1907/2006
EINECS - European Inventory of Existing Commercial Chemical Substances
CAS# - Chemical Abstract Service number
PPE - Personal Protection Equipment
LC50 - Lethal Concentration to 50 % of a test population
RMM - Risk Management Measures
PBT - Persistent, Bioaccumulative and Toxic
vPvB - Very Persistent and Very Bioaccumulative
STOT- SE : Specific Target Organ Toxicity - Single Exposure
CSA - Chemical Safety Assessment
EN - European Standard
UN - United Nations
ADR - European Agreement concerning the International Carriage of Dangerous Goods by Road
IATA - International Air Transport Association
IMDG code - International Maritime Dangerous Goods
RID - Regulations concerning the International Carriage of Dangerous Goods by Rail
WGK - Water Hazard Class
STOT - RE : Specific Target Organ Toxicity - Repeated Exposure
UFI : Unique Formula Identifier

Training advice : None.

Further information : Classification using data from databases maintained by the European Industrial Gases Association (EIGA). Data is maintained in EIGA doc 169 : 'Classification and Labelling Guide', downloadable at : http://www.eiga.eu.
Classification in accordance with the procedures and calculation methods of Regulation (EC) 1272/2008 (CLP).

Full text of H- and EUH-statements	
Acute Tox. 3 (Inhalation:gas)	Acute toxicity (inhalation:gas) Category 3
Flam. Gas 1A	Flammable gases, Category 1A
H220	Extremely flammable gas.
H280	Contains gas under pressure; may explode if heated.
H331	Toxic if inhaled.
H360D	May damage the unborn child.
H372	Causes damage to organs through prolonged or repeated exposure.
H373	May cause damage to organs through prolonged or repeated exposure.
Press. Gas (Comp.)	Gases under pressure : Compressed gas
Press. Gas (Liq.)	Gases under pressure : Liquefied gas
Repr. 1A	Reproductive toxicity, Category 1A
STOT RE 1	Specific target organ toxicity – Repeated exposure, Category 1
STOT RE 2	Specific target organ toxicity – Repeated exposure, Category 2

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.

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