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

### 1.1. Product identifier

Trade name : Lasal 201
SDS no : NOAL_1030
UFI: 4EU2-N0U6-S00S-XM07

### 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<br>Gemeinsames Giftinformationszentrum der Länder Mecklenburg-Vorpommern, Sachsen, Sachsen-Anhalt und Thüringen, c/o HELIOS Klinikum Erfurt | Nordhäuser Straße 74<br>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] |
|---|---|---|---|
| Helium | CAS-No.: 7440-59-7<br>EC-No.: 231-168-5<br>EC Index-No.: ---<br>REACH-no: *1 | 65 | Press. Gas (Comp.), H280 |
| Nitrogen | CAS-No.: 7727-37-9<br>EC-No.: 231-783-9<br>EC Index-No.: ---<br>REACH-no: *1 | 19 | Press. Gas (Comp.), H280 |
| Carbon monoxide | CAS-No.: 630-08-0<br>EC-No.: 211-128-3<br>EC Index-No.: 006-001-00-2<br>REACH-no: 01-2119480165-39 | 6 | Flam. Gas 1A, H220<br>Press. Gas (Comp.), H280<br>Acute Tox. 3 (Inhalation:gas), H331<br>Repr. 1A, H360D<br>STOT RE 1, H372 |
| Carbon dioxide | CAS-No.: 124-38-9<br>EC-No.: 204-696-9<br>EC Index-No.: ---<br>REACH-no: *1 | 4 | Press. Gas (Liq.), H280 |

| | | | |
|---|---|---|---|
| Xenon | CAS-No.: 7440-63-3<br>EC-No.: 231-172-7<br>EC Index-No.: ---<br>REACH-no: *1 | 3 | Press. Gas (Liq.), H280 |
| Oxygen | CAS-No.: 7782-44-7<br>EC-No.: 231-956-9<br>EC Index-No.: 008-001-00-8<br>REACH-no: *1 | 3 | Ox. Gas 1, H270<br>Press. Gas (Comp.), H280 |

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.
Use only oxygen approved lubricants and oxygen approved sealings.
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 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)** | |
|---|---|
| **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<br>25 mg/m³ Avgaser<br>40 mg/m³ Se även Avgaser |
| NGV (OEL TWA) [ppm] | 20 ppm<br>20 ppm Avgaser<br>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<br>35 mg/m³ |
| MAK (OEL TWA) [2] | 30 ppm<br>30 ppm |
| KZGW (OEL STEL) | 70 mg/m³<br>70 mg/m³ |
| KZGW (OEL STEL) [ppm] | 60 ppm<br>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 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.<br>Standard EN 166 - Personal eye-protection - specifications. |
| • Skin protection | | |
| - Hand protection | : | Wear working gloves when handling gas containers.<br>Standard EN 388 - Protective gloves against mechanical risk, performance level 1 or higher. |
| - Other | : | Wear safety shoes while handling containers.<br>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.<br>Use gas filters with full face mask, where exposure limits may be exceeded for a short-term period, e.g. connecting or disconnecting containers.<br>Standard EN 137 - Self-contained open-circuit compressed air breathing apparatus with full face mask.<br>Consult respiratory device supplier´s product information for the selection of the appropriate device.<br>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.<br>Gas filters do not protect against oxygen deficiency.<br>Standard EN 14387 - Gas filter(s), combined filter(s) and standard EN136, full face masks .<br>Keep self contained breathing apparatus readily available for emergency use.<br>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.<br>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 :<br>• Xenon: 644 mg/l • Oxygen: 39 mg/l • Carbon dioxide: 2000 mg/l Completely soluble. • Carbon monoxide: 30 mg/l • Nitrogen: 20 mg/l • Helium: 1.5 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 : Violently oxidises organic material. 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.

| **Carbon monoxide (630-08-0)** | |
|---|---|
| LC50 Inhalation - Rat [ppm] | 3760 ppm/1h<br>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 : 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. (Helium, Carbon monoxide)
**Transport by air (ICAO-TI / IATA-DGR)** : Compressed gas, n.o.s. (Helium, Carbon monoxide)
**Transport by sea (IMDG)** : COMPRESSED GAS, N.O.S. (Helium, 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. |
| H270 | May cause or intensify fire; oxidiser. |
| 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. |
| Ox. Gas 1 | Oxidising Gases, Category 1 |
| 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.

**End of document**