Warning

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

1.1. Product identifier

SDS no : RS-CO2-O2-AR-01

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.

Uses advised against : Consumer use.

1.3. Details of the supplier of the safety data sheet

Company identification : Messer Tehnogas AD
Banjicki put 62
11090 Beograd Serbia
+38 111 353 7210

1.4. Emergency telephone number

Emergency telephone number : +381(0) 11 360 8440 (24h)
Emergency telephone number

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

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

Physical hazards Press. Gas (Comp.) H280 Calculation method

Full text of H-statements see section 16.

2.2. Label elements

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

Hazard pictograms (CLP) :

GHS04

Signal word (CLP) : Warning

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

Precautionary statements (CLP)

- Storage : P403 - Store in a well-ventilated place.

2.3. Other hazards

: Asphyxiant in high concentrations.

SECTION 3: Composition/information on ingredients

3.1. Substances : Not applicable

3.2. Mixtures

Name	Product identifier	%	Classification according to Regulation (EC) No. 1272/2008 [CLP]
Argon	(CAS No) 7440-37-1 (EC No) 231-147-0 (EC Index No) (REACH-no) *1	93	Press. Gas (Comp.), H280
Carbon dioxide	(CAS No) 124-38-9 (EC No) 204-696-9 (EC Index No) (REACH-no) *1	6	Press. Gas (Liq.), H280
Oxygen	(CAS No) 7782-44-7 (EC No) 231-956-9 (EC Index No) 008-001-00-8 (REACH-no) *1	1	Ox. Gas 1, H270 Press. Gas (Comp.), H280

Full text of H-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.*

**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. 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

: 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: Fire-fighting measures

5.1. Extinguishing media

- Suitable extinguishing media : Water spray or fog.
- 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 : None.

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

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

: Try to stop release.
Evacuate area.
Monitor concentration of released product.
Wear self-contained breathing apparatus when entering area unless atmosphere is proved to be safe.
Ensure adequate air ventilation.
Prevent from entering sewers, basements and workpits, or any place where its accumulation can be dangerous.
Act in accordance with local emergency plan.
Stay upwind.

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 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.
Use only properly specified equipment which is suitable for this product, its supply pressure and temperature. Contact your gas supplier if in doubt.
Do not breathe gas.
Avoid release of product into atmosphere.

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 them from falling over.

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)		
OEL : Occupational Exposure Limits		
Austria	TWA (AT) OEL 8h [mg/m³]	9000 mg/m³
	TWA (AT) OEL 8h [ppm]	5000 ppm
	STEL (AT) OEL 15min [mg/m³]	18000 mg/m³ (60' Mow / 3x)
	STEL (AT) OEL 15min [ppm]	10000 ppm (60' Mow / 3x)
Belgium	TWA (BE) OEL 8h [mg/m3]	9131 mg/m³
	TWA (BE) OEL 8h [ppm]	5000 ppm
	STEL (BE) OEL 15min [mg/m3]	54784 mg/m³
	STEL (BE) OEL 15min [ppm]	30000 ppm
Bulgaria	TWA (BG) OEL 8h [mg/m³]	9000 mg/m³
Cyprus	TWA (CY) OEL 8h [mg/m³]	9000 mg/m³
	TWA (CY) OEL 8h [ppm]	5000 ppm
Estonia	TWA (EE) OEL 8h [mg/m³]	9000 mg/m³
	TWA (EE) OEL 8h [ppm]	5000 ppm
France	TWA (FR) OEL 8h [mg/m³]	9000 mg/m³
	TWA (FR) OEL 8h [ppm]	5000 ppm
Germany	TWA (DE) OEL 8h [mg/m3] TRGS 900	9100 mg/m³
	TWA (DE) OEL 8h [ppm] TRGS 900	5000 ppm
	Peak exposure limitation factor (DE) OEL TRGS 900	2
Greece	TWA (GR) OEL 8h [mg/m³]	9000 mg/m³
	TWA (GR) OEL 8h [ppm]	5000 ppm
	STEL (GR) OEL 15min [mg/m³]	54000 mg/m³
	STEL (GR) OEL 15min [ppm]	30000 ppm
Italy	TWA (IT) OEL 8h [mg/m³]	9000 mg/m³

	TWA (IT) OEL 8h [ppm]	5000 ppm
Latvia	TWA (LV) OEL 8h [mg/m³]	9000 mg/m³
	TWA (LV) OEL 8h [ppm]	5000 ppm
Spain	TWA (ES) OEL 8h [mg/m3]	9150 mg/m³
	TWA (ES) OEL 8h [ppm]	5000 ppm
Switzerland	TWA (CH) OEL 8h [mg/m³]	9000 mg/m³
	TWA (CH) OEL 8h [ppm]	5000 ppm
Netherlands	MAC TWA 8H (NL) [mg/m³]	9000 mg/m³
United Kingdom	WEL - LTEL - UK [mg/m³]	9150 mg/m³
	WEL - LTEL - UK [ppm]	5000 ppm
	WEL - STEL - UK [mg/m³]	27400 mg/m³
	WEL - STEL - UK [ppm]	15000 ppm
Czech Republic	TWA (CZ) OEL 8h [mg/m³]	9000 mg/m³
	TWA (CZ) OEL 8h [ppm]	5000 ppm
	STEL (CZ) OEL 15min [mg/m³]	45000 mg/m³
	STEL (CZ) OEL 15min [ppm]	25000 ppm
Denmark	TWA (DK) OEL 8h [mg/m³]	9000 mg/m³
	TWA (DK) OEL 8h [ppm]	5000 ppm
Finland	TWA (FI) OEL 8h [mg/m³]	9100 mg/m³
	TWA (FI) OEL 8h [ppm]	5000 ppm
Hungary	TWA (HU) OEL 8h [mg/m3]	9000 mg/m³
Ireland	OEL (IE)-(8-hour reference period) [mg/m3]	9000 mg/m³
	OEL (IE)-(8-hour reference period) [ppm]	5000 ppm
	OEL (IE)-(15min reference period) [mg/m3]	27000 mg/m³
	OEL (IE)-(15min reference period) [ppm]	15000 ppm
Lithuania	TWA (LT) OEL 8h [mg/m3]	9000 mg/m³
	TWA (LT) OEL 8h [ppm]	5000 ppm
Malta	TWA (MT) OEL 8h [mg/m³]	9000 mg/m³
	TWA (MT) OEL 8h [ppm]	5000 ppm
Norway	TWA (NO) OEL 8h [mg/m³]	9000 mg/m³
	TWA (NO) OEL 8h [ppm]	5000 ppm
Poland	TWA (PL) OEL 8h [mg/m³]	9000 mg/m³
	STEL (PL) OEL 15min [mg/m³]	27000 mg/m³
Romania	TWA (RO) OEL 8h [mg/m³]	9000 mg/m³
	TWA (RO) OEL 8h [ppm]	5000 ppm
Slovakia	Maximum permissible exposure limit, average, 8h (SK) [mg/m³]	9000 mg/m³
	Maximum permissible exposure limit, average, 8h (SK) [ppm]	5000 ppm
Sweden	Maximum permissible exposure limit, average, 8h (SK) [ppm]	9000 mg/m³
	Maximum permissible exposure limit, average, 8h (SK) [ppm]	5000 ppm
	Maximum permissible exposure limit, average, 8h (SK) [ppm]	18000 mg/m³
	Maximum permissible exposure limit, average, 8h (SK) [ppm]	10000 ppm
Portugal	TWA (PT) OEL 8h [ppm]	5000 ppm
	STEL (PT) OEL 15min [ppm]	30000 ppm

DNEL (Derived-No Effect Level) : No data available.

PNEC (Predicted No-Effect Concentration) : No data 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).
Oxygen detectors should be used when asphyxiating gases may be released.
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.

- Other : 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

- Physical state at 20°C / 101.3kPa : Gas.
- Colour : Mixture contains one or more component(s) which have the following colour(s):
Colourless.

Odour : Odourless.

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

Flash point : Not applicable for gas mixtures.

Evaporation rate (ether=1) : Not applicable for gas mixtures.

Flammability range : Non flammable.

Vapour pressure [20°C] : Not applicable.

Vapour pressure [50°C] : Not applicable.

Relative density, gas (air=1) : Heavier than air.

Solubility in water : No data available

Partition coefficient n-octanol/water [log Kow] : Not applicable for gas mixtures.

Auto-ignition temperature : Non flammable.

Viscosity [20°C]	:	Not applicable.
Explosive Properties	:	Not applicable.
Oxidising Properties	:	Not applicable.

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

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.

10.4. Conditions to avoid

: None under recommended storage and handling conditions (see section 7).

10.5. Incompatible materials

: None.

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

Assessment : Classification criteria are not met.

12.2. Persistence and degradability

Assessment : No data available.

12.3. Bioaccumulative potential

Assessment : No data available.

12.4. Mobility in soil

Assessment : No data available.

12.5. Results of PBT and vPvB assessment

Assessment : Not classified as PBT or vPvB.

12.6. Other adverse effects

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.
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 waste codes (from Commission Decision 2001/118/EC) : 16 05 05 : Gases in pressure containers other than those mentioned in 16 05 04.

13.2. Additional information

: None.

SECTION 14: Transport information

14.1. UN number

UN-No. : 1956

14.2. UN proper shipping name

Transport by road/rail (ADR/RID) : COMPRESSED GAS, N.O.S. (Argon, Oxygen)

Transport by air (ICAO-TI / IATA-DGR) : Compressed gas, n.o.s. (Argon, Oxygen)

Transport by sea (IMDG) : COMPRESSED GAS, N.O.S. (Argon, Oxygen)

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 applicable
Transport by air (ICAO-TI / IATA-DGR) : Not applicable
Transport by sea (IMDG) : Not applicable

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 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.

14.7. Transport in bulk according to Annex II of Marpol and the IBC Code

: Not applicable.

SECTION 15: Regulatory information

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

EU-Regulations

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

National regulations

National legislation : Ensure all national/local regulations are observed.
Water hazard class (WGK) : nwg - Non-hazardous to water

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 2015/830.
Training advice	:	Receptacle under pressure.
Further information	:	This Safety Data Sheet has been established in accordance with the applicable European Union legislation. Classification in accordance with the calculation methods of Regulation (EC) 1272/2008 CLP.

Full text of H- and EUH-statements

Ox. Gas 1	Oxidising Gases, Category 1
Press. Gas (Comp.)	Gases under pressure : Compressed gas
Press. Gas (Liq.)	Gases under pressure : Liquefied gas
H270	May cause or intensify fire; oxidizer
H280	Contains gas under pressure; may explode if heated

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