Safety Data Sheet

R290

according to the REACH Regulation (EC) 1907/2006 amended by Regulation (EU) 2020/878
Reference number: 104x
Revision date: 02/03/2023
Supersedes version of: 30/09/2021
Version: 4.0

Danger

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

1.1. Product identifier

Trade name	:	R290
SDS no	:	104x
Other means of identification	:	R290
	CAS-No.	: 74-98-6
	EC-No.	: 200-827-9
	EC Index-No.	: 601-003-00-5
REACH registration No	:	01-2119486944-21
Chemical formula	:	C3H8

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. Test gas/Calibration gas. Laboratory use. Chemical reaction / Synthesis. Use as a fuel. Contact supplier for more information on uses.

1.3. Details of the supplier of the safety data sheet

Company identification	:	SOL SpA Via G. Borgazzi 27 20900 MONZA - Italia T +39 039 23.96.1 http:\\www.sol.it msds@sol.it
E-Mail address (competent person)	:	msds@sol.it

1.4. Emergency telephone number

Emergency telephone number	:	Linea verde SET - 800452661 (24h/24h, 365 giorni l'anno); Dall'estero +39 0283421263

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

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

Physical hazards	Flammable gases, Category 1A	H220
	Gases under pressure : Compressed gas	H280

2.2. Label elements

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

Hazard pictograms (CLP) :

GHS02 GHS04

Signal word (CLP) : Danger

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

Precautionary statements (CLP)
- Prevention : P210 - Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
- Response : P377 - Leaking gas fire: Do not extinguish, unless leak can be stopped safely.
P381 - In case of leakage, eliminate all ignition sources.
- Storage : P403 - Store in a well-ventilated place.
P410+P403 - Protect from sunlight. Store in a well-ventilated place.

2.3. Other hazards

Contact with liquid may cause cold burns/frostbite.

SECTION 3: Composition/information on ingredients

3.1. Substances

Name	%	Product identifier	Classification according to Regulation (EC) No. 1272/2008 [CLP]
R290	100	CAS-No.: 74-98-6 EC-No.: 200-827-9 EC Index-No.: 601-003-00-5 REACH registration No: 01-2119486944-21	Flam. Gas 1A, H220 Press. Gas (Comp.), H280

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

3.2. Mixtures

Not applicable

SECTION 4: First aid measures

4.1. Description of first aid measures

- 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 : For liquid spillage - flush with water for at least 15 minutes.
- Eye contact : Immediately flush eyes thoroughly with water for at least 15 minutes.
- 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.
In low concentrations may cause narcotic effects. Symptoms may include dizziness, headache, nausea and loss of co-ordination.

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.
Dry powder.
- Unsuitable extinguishing media : Do not use water jet to extinguish.
Carbon dioxide.

5.2. Special hazards arising from the substance or mixture

Specific hazards	:	Exposure to fire may cause containers to rupture/explode.
Hazardous combustion products	:	Incomplete combustion may form 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. Do not extinguish a leaking gas flame unless absolutely necessary. Spontaneous/explosive re-ignition may occur. Extinguish any other fire. Move containers away from the fire area if this can be done without risk.
Special protective equipment for fire fighters	:	In confined space use self-contained breathing apparatus. Standard protective clothing and equipment (Self Contained Breathing Apparatus) for fire fighters. Standard EN 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.
Consider the risk of potentially explosive atmospheres.
Wear self-contained breathing apparatus when entering area unless atmosphere is proved to be safe.
Eliminate ignition sources.
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.
Assess the risk of potentially explosive atmospheres and the need for explosion-proof equipment.
Purge air from system before introducing gas.
Take precautionary measures against static discharge.
Keep away from ignition sources (including static discharges).
Consider the use of only non-sparking tools.
Do not breathe gas.
Avoid release of product into work area.

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.

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.
Segregate from oxidant gases and other oxidants in store.
All electrical equipment in the storage areas should be compatible with the risk of a potentially explosive atmosphere.

7.3. Specific end use(s)

None.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

No additional information available

8.2. Exposure controls

8.2.1. Appropriate engineering controls

Provide adequate general and local exhaust ventilation.
Systems under pressure should be regularily checked for leakages.
Ensure exposure is below occupational exposure limits (where available).
Gas detectors should be used when flammable gases/vapours may be released.
The substance is not classified for human health hazards or for environment effects and it is not PBT or vPvB so that no exposure assessment or risk characterisation is required. For tasks where the intervention of workers is required, the substance must be handled in accordance with good industrial hygiene and safety procedures.
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.
  Wear goggles when transfilling or breaking transfer connections.
  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 : Consider the use of flame resistant anti-static safety clothing.
    Standard EN ISO 14116 - Limited flame spread materials.
    Standard EN 1149-5 - Protective clothing: Electrostatic properties.
    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.
  Consult respiratory device supplier´s product information for the selection of the appropriate device.
  Recommended: Filter AX (brown).
  Gas filters do not protect against oxygen deficiency.
  Standard EN 14387 - Gas filter(s), combined filter(s) and standard EN136, full face masks .
- 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	:	Colourless.
Odour	:	Stenchant often added. Sweetish. Poor warning properties at low concentrations. Odour threshold is subjective and inadequate to warn of overexposure.
Melting point / Freezing point	:	-188 °C -188 °C
Boiling point	:	-42.1 °C
Flammability	:	Not available
Lower explosion limit	:	Not available
Upper explosion limit	:	Not available
Flash point	:	Not applicable for gases and gas mixtures.
Auto-ignition temperature	:	470 °C
Decomposition temperature	:	Not available
pH	:	Not applicable.
Viscosity, kinematic	:	Not applicable.

Water solubility [20°C]	:	75 mg/l
Partition coefficient n-octanol/water (Log Kow)	:	Not available
Vapour pressure [20°C]	:	8.3 bar(a)
Vapour pressure [50°C]	:	17 bar(a)
Density and/or relative density	:	Not applicable.
Relative vapour density (air=1)	:	1.5
Particle characteristics	:	Not applicable.

9.2. Other information

9.2.1. Information with regard to physical hazard classes

Explosive properties	:	Not applicable.
Explosion limits	:	1.7 – 10.8 vol %
Oxidising properties	:	None.
Tci	:	3.7 %
Critical temperature [°C]	:	96.7 °C

9.2.2. Other safety characteristics

Molar mass	:	44 g/mol
Evaporation rate	:	Not applicable for gases and gas mixtures.
Gas group	:	Press. Gas (Liq.).
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

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

10.4. Conditions to avoid

Keep away from heat/sparks/open flames/hot surfaces. – No smoking.

10.5. Incompatible materials

Air, Oxidisers.
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 : No known toxicological effects from this product.

LC50 Inhalation - Rat [ppm]	20000 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	:	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.

11.2. Information on other hazards

No additional information available

SECTION 12: Ecological information

12.1. Toxicity

EC50 48h - Daphnia magna [mg/l]	:	27.1 mg/l
EC50 72h - Algae [mg/l]	:	11.9 mg/l
LC50 96 h - Fish [mg/l]	:	49.9 mg/l

12.2. Persistence and degradability

Assessment	:	The substance is readily biodegradable. Unlikely to persist.

12.3. Bioaccumulative potential

Assessment	:	Not expected to bioaccumulate due to the low log Kow (log Kow < 4). See section 9.

12.4. Mobility in soil

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

12.5. Results of PBT and vPvB assessment

Assessment	:	Not classified as PBT or vPvB.

12.6. Endocrine disrupting properties

Assessment	:	

12.7. Other adverse effects

Effect on the ozone layer	:	None.
Global warming potential [CO2=1]	:	3
Effect on global warming	:	No known effects from this product.

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Do not discharge into areas where there is a risk of forming an explosive mixture with air.
Waste gas should be flared through a suitable burner with flash back arrestor.
Do not discharge into any place where its accumulation could be dangerous.
Ensure that the emission levels from local regulations or operating permits are not exceeded.
Refer to the EIGA code of practice Doc.30 "Disposal of Gases", downloadable at http://www.eiga.org for more guidance on suitable disposal methods.

List of hazardous 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

None.

SECTION 14: Transport information

14.1. UN number or ID number

In accordance with ADR / RID / IMDG / IATA / ADN

UN-No.	:	1978

14.2. UN proper shipping name

Transport by road/rail (ADR/RID) : PROPANE
Transport by air (ICAO-TI / IATA-DGR) : PROPANE
Transport by sea (IMDG) : PROPANE

14.3. Transport hazard class(es)

Labelling :

2.1 : Flammable gases.

Transport by road/rail (ADR/RID)
Class : 2
Classification code : 2F
Hazard identification number : 23
Tunnel Restriction : B/D - Tank carriage : Passage forbidden through tunnels of category B, C, D and E. Other carriage : Passage forbidden through tunnels of category D and E

Transport by air (ICAO-TI / IATA-DGR)
Class / Div. (Sub. risk(s)) : 2.1

Transport by sea (IMDG)
Class / Div. (Sub. risk(s)) : 2.1
Emergency Schedule (EmS) - Fire : F-D
Emergency Schedule (EmS) - Spillage : S-U

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 : Forbidden.
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 : None.

Other information, restriction and prohibition regulations : Ensure all national/local regulations are observed.
Not listed on the PIC list (Regulation EU 649/2012).

Seveso Directive : 2012/18/EU (Seveso III) : Listed.

National regulations

No additional information available

15.2. Chemical safety assessment

A CSA has been carried out.
Refer to section 8.2.

SECTION 16: Other information

Indication of changes : Revised safety data sheet in accordance with commission regulation (EU) No 2015/830.

Training advice : Ensure operators understand the flammability hazard.
The hazard of asphyxiation is often overlooked and must be stressed during operator training.

Further information : This Safety Data Sheet has been established in accordance with the applicable European Union legislation.

Full text of H- and EUH-statements	
Flam. Gas 1A	Flammable gases, Category 1A
H220	Extremely flammable gas.
H280	Contains gas under pressure; may explode if heated.
Press. Gas (Comp.)	Gases under pressure : Compressed gas

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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