TAZZETTI

SAFETY DATA SHEET (SDS)

SECTION 1. IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

1.1. Product identifier

Identification of the substance:

Name:	R290 - PROPANE
CAS Number:	74-98-6
EC Number:	200-827-9
REACH Number:	01-2119486944-21-0000

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

Recommended use:
Refrigerant
Industrial and professional
Use restrictions recommended: Application with open evaporation. Direct use of the substance da parte by consumers. Consumption filling of mobile units for air conditioning.

1.3. Details of the supplier of the safety data sheet

Company:
TAZZETTI S.P.A
CORSO EUROPA 600/A
10088 VOLPIANO (TO) - ITALY-
Tel. +39 011 97021
Fax +39 011 9702460
rsg.inquiry@tazzetti.com

1.4. Emergency telephone number

Regional: +44 20 3885 0382 (CHEMTREC)
USA Local: +1-703-527-3887 (CHEMTREC)

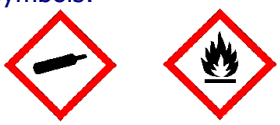
SECTION 2. HAZARDS IDENTIFICATION

2.1. Classification of the substance or mixture

EC regulation criteria 1272/2008 (CLP):
Warning, Flam. Gas 1, Extremely flammable gas.
Warning, Press. Gas, Contains gas under pressure.

2.2. Label elements

Symbols:



Danger
Hazard statements:
H220 Extremely flammable gas
H280 Contains gas under pressure; may explode if heated.
Precautionary statements:
P210 Keep away from heat/sparks/open flames/hot surfaces. - No smoking.
P377 Leaking gas fire: do not extinguish, unless leak can be stopped safely.

P381 Eliminate all ignition sources if safe to do so
P410+403: Protect from sunlight. Store in a well ventilated place
Special Provisions: -

2.3. Other Hazards

Contact with liquid may cause cold burns/frostbite.
This substance doesn't meet the criteria for persistent, bioaccumulative and toxic or very persistent and very bioaccumulative in accordance with Annex XIII
The substance was not included in the list established in accordance with Article 59(1) for having endocrine disrupting properties, and the substance is not a substance identified as having endocrine disrupting properties in accordance with the criteria set out in Commission Delegated Regulation (EU) 2017/2100 (3) or Commission Regulation (EU) 2018/605 (4).
The vapors are heavier than air and can cause suffocation, by reducing oxygen available for breathing.
Inappropriate use or abuse by intenzional inhalation can result in death withuot warning symptoms due to heart damage.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

3.1. Substances

Name:	R290
Chemical name:	Propano
CAS number:	74-98-6
EC:number	601-003-00-5
REACH:number	01-2119486944-21-0000

3.2. Mixtures

Not applicable

SECTION 4. FIRST AID MEASURES

4.1. Description of first aid measures

In case of skin contact:
In case of frostbite spray with water for at least 15 minutes. Apply a sterile dressing. Obtain medical assistance.
Take off all contaminated clothing immediately.
In case of eyes contact:
In case of contact with eyes, rinse immediately (for at least 15 minutes) with plenty of water and seek medical advice.
In case of ingestion:
Obtain medical assistance.
In case of inhalation:
Remove victim to uncontaminated area wearing self contained breathing apparatus. Keep victim warm and rested. Call a doctor. Apply artificial respiration if breathing stopped.

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. continuous exposure can cause loss of consciousness and or death.

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

Treatment: give oxygen if necessary.

SECTION 5. FIRE-FIGHTING MEASURES

5.1. Extinguishing media

Suitable extinguishing media:

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Powder fire extinguisher, carbon dioxide or foam.
Extinguishing media which must not be used for safety reasons:
None in particular.
Do not use direct water jets on the burning product as they may cause a steam explosion and spread of the fire.

5.2. Special hazards arising from the substance or mixture
Containers may explode if heated
Do not inhale explosion and combustion gases. Hazardous thermal decomposition products: carbon oxides, CO_X and incompletely burned hydrocarbons.
The vapor is heavier than air, spreads along the ground and distant ignition is possible. Sustained fire attack on vessels may lead to an explosion of boiling liquid expanding vapor and (BLEVE).

5.3. Advice for fire-fighters
Use special protective equipment for firefighters, such as boots, overalls, gloves, eye and face protection and breathing apparatus.
Collect separately contaminated water used to extinguish the fire. Not be discharged into drains.
If feasible in terms of safety, move from immediate danger undamaged containers.
Keep containers cool with water spray.

SECTION 6. ACCIDENTAL RELEASE MEASURES

6.1. Personal precautions, protective equipment and emergency procedures
Wear self-contained breathing apparatus when entering area unless atmosphere is proved to be safe.
Provide adequate ventilation.
Remove all sources of ignition.
Evacuate area.
Prevent from entering sewers, basements and workpits, or any place where its accumulation can be dangerous.
Wear breathing apparatus if exposed to vapours/dusts/aerosols.
See protective measures under point 7 and 8.

6.2. Environmental precautions
Do not allow to enter into soil/subsoil. Do not allow to enter into surface water or drains.
Retain contaminated washing water and dispose it.
In case of gas escape or of entry into waterways, soil or drains, inform the responsible authorities.

6.3. Methods and materials for containment and cleaning up
Reduce vapour with fog or fine water spray.
Provide containment for water used
Ventilate area

6.4. Reference to other sections
See also section 8 and 13

SECTION 7. HANDLING AND STORAGE

7.1. Precautions for safe handling
Do not allow backfeed into the container.
Use only equipment suitable for the product and the operating pressure
Take precautionary measures against static discharge.
Keep away from ignition sources (including static discharges).
Avoid contact with skin and eyes, inhalation of vapours and mists.
Use localized ventilation system.
Don’t use empty container before they have been cleaned.

Before making transfer operations, assure that there aren't any incompatible material residuals in the containers.
Contaminated clothing should be changed before entering eating areas.
Do not eat or drink while working.
Do not smoke while working.
Only experienced and properly instructed persons should handle compressed gases.
The substance must be handled in accordance with good industrial hygiene and safety procedures.
Close container valve after each use and when empty, even if still connected to equipment.
Never attempt to repair or modify container valves or safety relief devices.
Replace valve outlet caps or plugs and container caps where supplied as soon as container is disconnected from equipment.
Do not remove or deface labels provided by the supplier for the identification of the cylinder contents.
Never use direct flame to raise the pressure of a container.
See also section 8 for recomened protective equipment.
Purge air from system before introducing gas.
Ensure the complete gas system was (or is regularily) checked for leaks before use.
Assess the risk of potentially explosive atmosphere and the need for explosion-proof equipment.
Consider the use only non-sparking tools.
Protect cylinders from physical damage; do not drag, roll, slide or drop.
If user experiences any difficulty operating cylinder valve discontinue use and contact supplier.

7.2. Conditions for safe storage, including any incompatibilities

Observe all regulations and local requirements regarding storage of containers.
All electrical equipment in the storage areas should be compatible with the risk of potentially explosive atmosphere.
Keep container below 50°C in a well ventilated area.
Keep away from ignition sources (including static discharges).
Do not store near oxidizing containers.
Always keep in a well ventilated place.
Keep away from unguarded flame, sparks, and heat sources.
Keep away from food, drink and feed.
Segregate from oxidant gases and other oxidants in store.
Incompatible materials:
None in particular. See also section 10.
Instruction as regards storage premises:
Adequately ventilated.
Containers should not be stored in conditions likely to encourage corrosion.

7.3. Specific end use(s)

If annexed, please make reference to the scenario

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1. Control parameters

TLV TWA 8h: 1000 ppm (1800 mg/m3)
Substance with systemic effects category II
Pregnancy group D
Classification according A-C groups is not possible, because no data are avaible or the data available are not sufficient for a final assessment.
DNEL according to European Regulation (CE) Num. 1907/2006:
non-derivate as it is not dangerous for health
PNEC according to European Regulation (CE) Num. 1907/2006:
not contain dangerous components for the enviroment

8.2. Exposure controls

The product should be handled in a closed circuit.

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Provide adequate general and local ventilation.
Make sure the exposure is well below the occupational exposure limits.
If the risk assessment indicates this is necessary, use the following protection
Eye protection:
If foreseeable a risk of spurts or squirts, please wear safety glasses with lateral protection in compliance with rule of law EN 166.
Protection for skin:
Protective clothing
Protection for hands:
If foreseeable a direct contact with liquid or with cold machineries/equipments for which exist a risk of cold burn, please use cold protection gloves in compliance with rule of law EN511 – 020.
Respiratory protection:
Wear self-contained breathing apparatus in compliance with EN 137 when entering area unless atmosphere is proved to be safe.
Thermal Hazards:
Contact with liquid may cause cold burns/frostbite.
Environmental exposure controls:
Refer to environment legislation
Contact with liquid may cause cold burns/frostbite.
In high concentrations may cause asphyxiation.
Vapour heavier than air, may accumulate below ground level and cause choking.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

9.1. Information on basic physical and chemical properties

Physical state:	liquified gas
Colour:	Incolour
Odour:	inodour
pH:	Not applicable, because in not i water solution.
Melting point / freezing point:	-188 °C
Initial boiling point and boiling range:	-42.1 °C
Solid/gas flammability:	Extremely flammable
Upper/lower flammability or explosive limits:	from 1.8 to 11.2 % (V)
Vapour density:	>1
Flash point:	-104 °C
Evaporation rate:	Not available
Vapor pressure:	8.3 bar (absolute at 20 °C)
Density:	0.508 kg/l (liquid)
Solubility in water:	<0.1 g/l (at 20 °C)
Partition coefficient (n-octanol/water):	2.35
Autoignition temperature:	470 °C
Decomposition temperature:	Not available
Viscosity:	$11x10^{-5}$ Pa x s a 15°C (liquid phase)

9.2. Other informations

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

SECTION 10. STABILITY AND REACTIVITY

10.1. Reactivity

There is no danger of reactivity in addition to those described in the paragraphs below.

10.2. Chemical stability

Stable.

10.3. Possibility of hazardous reactions
Vapours may form flammable mixture with air.
May react violently with oxidants.

10.4. Conditions to avoid
Keep away from heat / sparks / open flames / hot surfaces - No smoking.
Avoid the accumulation of electrostatic charges.
Avoid rapid decompression of the containers.
Avoid leakage.
Avoid the accumulation of the substance in confined spaces.
Keep away from strong oxidizing agents, strong acids or alkalis.
Avoid bumps, drops, friction conditions of the containers resulting in the formation of friction and / or sparks.

10.5. Incompatible materials
Strong oxidizing agents
Strong acids and alkalis

10.6. Hazardous decomposition products
In case of fire and explosion of the container can form organic compounds not completely combusted as carbon monoxide

SECTION 11. TOXICOLOGICAL INFORMATION

11.1. Information on hazard classes as defined in Regulation (EC) No 1272/2008
Toxicological information of the substance:
Acute toxicity:
CL50/15 min - Inhalation - Rat = 800000 ppm
CL50/15 min - Inhalation - Rat = 14442738 mg/mc
CL50/15 min - Inhalation - Rat = 1443mg/l
CL50/4h - Inhalation - Rat= 260000 ppm

Skin corrosion/irritation: extremely flammable at standard conditions of temperature and pressure, it could form explosive mixtures with air; high risk of fire and explosion would be associated with any significant concentration test. Literature data regarding dose-response studies conducted on humans have highlighted that propane does not have irritating and corrosive effects on skin and mucous.
Explosion of the compressed gas may cause cold burns at the point of contact, the symptoms are redness, burning, itching, blisters and possible subsequent infection
Serious eye damage/irritation: Explosion of the compressed gas may cause cold burns and serious eye damage.
Respiratory sensitisation: suffocating, cause headaches and drowsiness.
Skin sensitisation: cause burning/itching
Germ cell mutagenicity: no effects known for this product
In vitro genotoxicity:
Test type: Reverse bacterical mutation test (AMES)
Method: Guidelines 471 for OECD test
Risult: no signs of mutagenic action.

In vivo genotoxicity: Test: Micronucleus assay in mammalian erythrocytes (in vivo cytogenetic assay)
Species: Mouse - Exposure routes: inhalation (gas)
Method: Guidelines 474 OECD Test - Result: negative
Carcinogenicity - Assessment: Evidence does not support classification as carcinogenic.
Reproductive toxicity:
screening for reproductive toxicity and development with daily inhalation on rat:
NOAEL (No Observed Adverse Effect Level) parents 21641mg/l method OECD TG 422

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In animal research (OECD 422 research screening) there were no indications of effects impairing development.

STOT — repeated exposure: no effects known for this product
Aspiration hazard: no effects known for this product

SECTION 12. ECOLOGICAL INFORMATION

12.1. Toxicity
Toxicity to fish: LC50=49.47 mg/l
Toxicity to aquatic invertebrates: LC50=27.14 mg/l
Algae: EC50 72h = 11.89mg/l

12.2. Persistence and degradability:
Rapidly degrades air through photochemical reactions. The life of the product in the atmosphere can be considered a very few days, with ozone-depleting potential virtually zero. Only under certain conditions, through the complex interaction with other air pollutants that may be present and in certain weather conditions and weather, near the surface, photochemical degradation, could contribute to the formation of ground-level ozone

12.3. Bioaccumulative potential:
Partition coefficient n-octanol/water: log Pow: 2,35 (25 °C)
Not considered susceptible to bioaccumulation due to low log Pow

12.4. Mobility in soil:
During the escape from the container, due to the cryogenic properties, in dispersing it can threaten animals and vegetation. At atmospheric temperature and pressure, the substance is in the gaseous state, odorless and colourless, extremely volatile, it tends to disperse rapidly in the air without causing soil pollution. Therefore, no adsorption/absorption phenomena in the soil are expected.

12.5. Results of PBT and vPvB assessment
In accordance with the criteria set out in Annex XIII of the REACH Regulation, the substance is not defined as persistent, bioaccumulative and toxic to the environment

12.6 Endocrine-disrupting properties
The substance does not contain components with endocrine disrupting properties in accordance with article 57(f) of REACH or in accompliance with EU Regulations 2017/2100 and 2018/605 (<0,1% concentration).

12.7 Other adverse effects
Global Warming Potential (GWP) = 3
Ozone Deleting Potential (ODP) = 0

SECTION 13. DISPOSAL CONSIDERATIONS

13.1. Waste treatment methods
Product: Dispose of in compliance with current legislation on the subject. According to the European Waste Catalogue, waste codes are not product specific, but application specific. Waste codes should be assigned by the user, preferably in discussion with the responsible waste disposal authorities.
Contaminated Containers: Empty containers should be taken to an approved site for recycling or disposal. Depressurized containers should be returned to the supplier. Dispose of as unused product unless otherwise specified.

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SECTION 14. TRANSPORT INFORMATIONS

14.1. UN Number
ONU ADR/RID/IMDG/IATA -Number: 1978

14.2. UN proper shipping name
ADR/RID/IMDG - shipping name: PROPANE
IATA Technical name: PROPANE

14.3. Transport hazard class(es)
ADR/RID - Class: 2
ADR - Label: 2.1
RID - Labe: 2.1 (+13)
ADR/RID - Hazard identification number: 23
Classification code: 2F
IATA/IMDG - Class: 2.1

14.4. Packing group
ADR - Packing group: -

14.5. Environmental hazards: No

14.6. Special precautions for user
ADR-Tunnel restriction code: B/D
IATA - Passenger aircraft: Not available
IATA - Cargo Aircraft: Not available
Ensure there is adequate ventilation
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.
Compliance with applicable regulations.
Before transporting product containers :
- 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.

Avoid transport on vehicles where the load space is not separated from the driver's compartment.

14.7. Transport in bulk according to annex II of MARPOL 73/78 and the IBC code:
Not available

SECTION 15. REGULATORY INFORMATION

15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture
Reg. (CE) n. 1907/2006 (REACH), Reg. (CE) n. 1272/2008 (CLP), Reg. (UE) n. 2015/830, Reg. (UE) n. 2020/878.
Where applicable, refer to the following regulatory provisions :
Directive 2003/105/CE ('Activities linked to risks of serious accidents') and subsequent amendments.
1999/13/EC (VOC directive)

15.2. Chemical safety assessment: yes

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SECTION 16. OTHER INFORMATION

Revised safety and technical data in accordance with commisssion regulation 878/2020 and technical data sheet.
Points that have changed since the previous version are highlighted with a vertical line in the body of this document.
Ensure operators understand the flammability hazard.
Users of breathing apparatus must be trained.
Ensure operators understand the toxicity hazard.
This document was prepared by a competent person who has received appropriate training.
Main bibliographic sources:
ECDIN - Environmental Chemicals Data and Information Network - Joint Research Centre, Commission of the European Communities
SAX's DANGEROUS PROPERTIES OF INDUSTRIAL MATERIALS - Eight Edition - Van Nostrand Reinold
CCNL - Appendix 1
EIGA
The information contained herein is based on our state of knowledge at the above-specified date. It refers solely to the product indicated and constitutes no guarantee of particular quality.
It is the duty of the user to ensure that this information is appropriate and complete with respect to the specific use intended.
Classification in accordance with calculation methods of regulation (EC) 1272/2008 CLP / (EC) 1999/45 DPD.
The MSDS cancels and replaces any preceding release.

ADR:	European Agreement concerning the International Carriage of Dangerous Goods by Road.
CAS:	Chemical Abstracts Service (divisione della American Chemical Society).
CLP:	Classification, Labeling, Packaging.
DNEL:	Derived No Effect Level.
EINECS:	European Inventory of Existing Commercial Chemical Substances.
GHS:	Globally Harmonized System of Classification and Labeling of Chemicals.
IATA:	International Air Transport Association.
IATA-DGR:	Dangerous Goods Regulation by the "International Air Transport Association" (IATA).
ICAO:	International Civil Aviation Organization.
ICAO-TI:	Technical Instructions by the "International Civil Aviation Organization" (ICAO).
IMDG:	International Maritime Code for Dangerous Goods.
INCI:	International Nomenclature of Cosmetic Ingredients.
KSt:	Explosion coefficient.
LC50:	Lethal concentration, for 50 percent of test population.
LD50:	Lethal dose, for 50 percent of test population.
LTE:	Long-term exposure.
PNEC:	Predicted No Effect Concentration.
RID:	Regulation Concerning the International Transport of Dangerous Goods by Rail.
STE:	Short-term exposure.
STEL:	Short Term Exposure limit.
STOT:	Specific Target Organ Toxicity.
TLV:	Threshold Limiting Value.
TWATLV:	Threshold Limit Value for the Time Weighted Average 8 hour day. (ACGIH Standard).

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