

SAFETY DATA SHEET

according to regulation (EG) Nr. 1907/2006



Date of issue: 19.09.2016

Revision date:

Version: 0

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

1.1 Product identifiers

Product name: Carbon Monoxide (C-13 labeled)
CAS No: 1641-69-6
Formula: CO
Other means of identification: Carbon Monoxide

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

Identified uses: Research purposes

1.3 Details of the supplier of the safety data sheet

Supplier: NUKEM Isotopes GmbH,
Industriestrasse 13,
63755 Alzenau, Germany
Telephone: +49 (0)6023 91 1726
Telefax: +49 (0)6023 91 1614
Email: Christian.Schuch@nukemisotopes.de

1.4 Emergency telephone number

24 hr. Emergency Telephone: +1-703-253-4254 (English / Contract No.: 01009)

2. HAZARDS INDICATION

2.1 Classification of the substance or mixture

Classification according to Regulation (EC) No 1272/2008

Fam. Gas 1 H220, Compressed gas H280, Acute Tox. 3 (Inhalation:gas) H331, Repr. 1A H360FD, STOT RE 1 H372

For the full text of the H-phrases mentioned in this Section, see Section 2.2.

Classification according to directive 67/548/EEG or directive 1999/45/EG

F+ Extremely flammable; T Toxic

R-Phrases:

R12 Extremely flammable.
R23 Toxic by inhalation.
R48/23 Toxic: danger of serious damage to health by prolonged exposure through inhalation.
R61 May cause harm to the unborn child.
Repr.Cat.1 Toxic to Reproduction Category 1

2.2 Label elements

Labeling according to Regulation (EG) Nr. 1272/2008

The substance is classified and labelled according to the CLP regulation.

Hazard statements:



GHS04



GHS02



GHS06



GHS07

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Signal word:

Danger

Hazard statement(s):

H220	Extremely flammable gas
H280	Contains gas under pressure; may explode if heated
H331	Toxic if inhaled
H360FD	May damage fertility. May damage the unborn child
H372	Causes damage to organs (blood) through prolonged or repeated exposure

Precautionary statement(s):

P201	Obtain special instructions before use
P202	Do not handle until all safety precautions have been read and understood
P210	Keep away from heat, hot surfaces, open flames, sparks. No smoking
P261	Avoid breathing dust, fume, gas, mist, spray, vapors
P264	Wash Both hands thoroughly after handling
P270	Do not eat, drink or smoke when using this product
P271	Use only outdoors or in a well - ventilated area
P280	Wear protective clothing, protective gloves
P304+P340	IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing
P308+P313	IF exposed or concerned: Get medical advice/attention
P311	Call a POISON CENTER or doctor/physician
P314	Get medical advice and attention if you feel unwell
P321	Specific treatment (see Hazard pictograms (CLP) on this label)
P377	Leaking gas fire: Do not extinguish, unless leak can be stopped safely
P381	In case of leaking gas fire, eliminate all ignition sources if safe to do so
P403+P233	Store in a well - ventilated place. Keep container tightly closed
P405	Store locked up
P410+P403	Protect from sunlight. Store in a well- ventilated place
P501	Dispose of contents/container to Comply with applicable regulations

2.3 Other hazards

Not information available

3. COMPOSITION / INFORMATION ON INGREDIENTS

3.1 Chemical characterization

Substance:

CAS No. (description):	1641-69-6 (C-13 labeled Carbon Monoxide)
EC-No.:	211-128-3
Index-No.:	006-001-00-2
Formula:	¹³ CO
Molar mass [g/mol]:	ca. 29 g/mol (depending on enrichment)

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4. FIRST AID MEASURES

4.1 Description of first aid measures

General advice

Consult a physician. Show this safety data sheet to the doctor in attendance.

First aid measures general: Consult a physician. Show this safety data sheet to the doctor in attendance. Move out of dangerous area.

First aid measures after inhalation: If breathed in, move person to fresh air. If not breathing, give artificial respiration. Consult a physician.

First aid measures after skin contact: Wash off with soap and plenty of water. Take victim immediately to hospital. Consult a physician.

First aid measures after eye contact: Flush eyes with water as a precaution.

First aid measures after ingestion: Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician

4.2 Most important symptoms and effects, both acute and delayed

Symptoms/injuries after inhalation: May be harmful if inhaled. May cause respiratory tract irritation.

Symptoms/injuries after skin contact: May be harmful if absorbed through skin. May cause skin irritation.

Symptoms/injuries after eye contact: May cause eye irritation.

Symptoms/injuries after ingestion: May be harmful if swallowed

4.3 Indication of any immediate medical attention and special treatment needed

No data available.

4.4 Indication of any immediate medical attention and special treatment needed

No further relevant information available.

5. FIRE FIGHTING MEASURES

5.1 Extinguishing media

Suitable extinguishing agents:

Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

5.2 Special hazards arising from the substance or mixture

Fire hazard: Flammable in the presence of an oxidizing gas (eg air), a source of ignition, and when the concentration of the gas is between the lower and upper explosive limits. Keep away from heat, sparks, open flames, hot surfaces, oxidizing gases. No smoking.

Reactivity: Not available

5.3 Advice for firefighters

Firefighting instructions: Use water spray to cool unopened containers (only). Use dry powder or foam.

Protection during firefighting: Do not enter fire area without proper protective equipment, including respiratory protection

5.4 Further information

No further information available.

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6. ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures

Emergency procedures: Wear respiratory protection. Avoid breathing vapors, mist or gas. Ensure adequate ventilation. Remove all sources of ignition. Evacuate personnel to safe areas. Beware of vapors accumulating to form explosive concentrations. Vapours can accumulate in low area.

6.2 Environmental precautions

Do not let product enter drains. Discharge into the environment must be avoided..

6.3 Reference to other sections

See Section 13 for further disposal information.

7. HANDLING AND STORAGE

7.1 Precautions for safe handling

Additional hazards when processed: Avoid contact with skin and eyes. Avoid inhalation of vapour or mist. Use explosion - proof equipment. Keep away from sources of ignition - No smoking. Take measures to prevent the build-up of electrostatic charge.

Hygiene measures: Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday.

7.2 Conditions for safe storage, including any incompatibilities

Contents under pressure. Store in cool place and keep the container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage. Store at room temperature away from light and moisture.

7.3 Specific end use(s)

No further relevant information available.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

8.1 Control Parameters

Italy-Portugal-USA ACGIH	ACGIH TWA	25 ppm
USA OSHA	OSHA PEL (TWA)	50 ppm

8.2 Exposure controls

Personal protective equipment: Gloves. Protective clothing. Protective goggles. Self - contained breathing apparatus.

Eye protection: Wear safety glasses with side shields (or goggles) and a face shield.

Skin and body protection: Wear complete suit protecting against chemicals according to concentration and amount of substance.

Respiratory protection: When appropriate, use NIOSH/CEN approved respirator

8.3 Environmental exposure controls:

Do not let product enter drains.

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9. PHYSICAL/CHEMICAL PROPERTIES

General Information

Appearance:	Form: Gaseous at 20°C
Odor:	No information available.
Odor threshold:	No information available.
pH-value (50 g/l) at 20 °C:	No information available.
Melting point:	-205 °C
Boiling point:	-191.5 °C
Flash point:	No information available.
Flammability (solid, gaseous):	No information available.
Ignition temperature:	No information available.
Decomposition temperature:	No information available.
Self-igniting:	609 °C.
Danger of explosion:	No information available.
Explosion limits:	Lower: No information available. Upper: No information available.
Oxidizing properties:	The substance or mixture is classified as oxidizing with the category 3.
Relative vapor density at 20 °C:	0.97 – (Air = 1)
Evaporation rate:	No information available.
Partition coefficient: n-octanol/water:	No information available.
Viscosity, dynamic:	No information available.
Explosive limits:	12.5% – 74% (V)

10. STABILITY AND REACTIVITY

10.1 Reactivity

No additional information available

10.2 Chemical stability

No additional information available

10.3 Possibility of hazardous reactions

The substance can react dangerously with:

No additional information available

10.4 Conditions to avoid

Heat, moisture, flames and sparks. Extremes of temperature and direct sunlight.

10.5 Incompatible materials

Sodium/sodium oxides, Potassium, Strong oxidizing agents.

10.6 Hazardous decomposition products

Formed under fire condition: Carbon Oxides

11. TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

<u>Acute toxicity:</u>	Toxic if inhaled
LC50 inhalation rat (4h):	1807 ppm

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ATE (gases) (4h) 700.000 ppm (V)

Chronic and sub chronic data

Skin corrosion/irritation:	Not classified/No data available
Serious eye damage/irritation:	Not classified/ No data available
Respiratory or skin sensitization:	Not available/No data available
Germ cell mutagenicity:	Not available
Carcinogenicity:	Not classified
Reproductive toxicity:	Not available
Specific target organ toxicity (single exposure):	Not classified/No data available
(repeated exposure):	Causes damage to organs (blood) through prolonged or repeated exposure. Inhalation - Causes damage to organs through prolonged or repeated exposure.
Aspiration hazard:	Not classified
Potential Adverse human health effects and symptoms:	Blood disorders.
Symptoms/injuries after inhalation:	May be harmful if inhaled. May cause respiratory tract irritation.
Symptoms/injuries after skin contact:	May be harmful if absorbed through skin. May cause skin irritation

11.2 Additional toxicological information

No further data available

11.3 Further information

The product should be handled with the care usual when dealing with chemicals.

12. ECOLOGICAL INFORMATION

12.1 Toxicity

No information available.

12.2 Persistence and degradability

No information available.

12.3 Bioaccumulative potential

No information available.

12.4 Mobility in soil

No information available.

12.5 Results of PBT and vPvB assessment

PBT: Not applicable. vPvB: Not applicable.

12.6 Other adverse effects

No information available.

13. DISPOSAL CONSIDERATIONS

13.1 Waste Treatment methods

Regional legislation (waste):	Waste materials should be disposed of under conditions which meet Federal, State, and Local environmental control regulations
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14. TRANSPORT INFORMATION

14.1 UN-Number

ADR/RID, IMDG, IATA: UN1016

14.2 UN proper shipping name

DOT Proper Shipping Name: Carbon monoxide, compressed

Department of Transportation (DOT)

Hazard Classes: 2.3 - Class 2.3 - Poisonous gas 49 CFR 173.115

Hazard labels (DOT): 2.3 - Poison gas

2.1 - Flammable gas



DOT Special Provisions
(49 CFR 172.102):

4 - This material is poisonous by inhalation (see 171.8 of this subchapter) in Hazard Zone D (see 173.116(a) of this subchapter), and must be described as an inhalation hazard under the provisions of this subchapter.

DOT Packaging Exceptions
(49 CFR 173.xxx):

None

DOT Packaging Non Bulk
(49 CFR 173.xxx):

302

DOT Packaging Bulk (49 CFR 173.xxx):

314; 315

Marine pollutant:

No

14.3 Additional Information

Other information:

No supplementary information available.

Special transport precautions:

IATA/DOT: Not permitted on passenger aircraft.

Overland transport

Class (ADR): 2 - Gases

Hazard identification number (Kemler No.): 263

Classification code (ADR): 1TF

Danger labels (ADR): 2.3 - Toxic gases

2.1 - Flammable gases



Orange plates: 263

1016

Tunnel restriction code: B/D

Limited quantities (ADR) : 0

EAC: 2SE

Excepted quantities (ADR): E0

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Transport by sea

DOT Vessel Stowage Location: D - The material must be stowed "on deck only" on a cargo vessel and on a passenger vessel carrying a number of passengers limited to not more than the larger of 25 passengers or one passenger per each 3 m of overall vessel length, but the material is prohibited on passenger vessels in which the limiting number of passengers is exceeded.

DOT Vessel Stowage Other: 40 - Stow "clear of living quarters"

MFAG-No: 119

Air transport

DOT Quantity Limitations Passenger aircraft/rail (49 CFR 173.27): Forbidden

DOT Quantity Limitations Cargo aircraft only (49 CFR 175.75): 25 kg

Civil Aeronautics Law: Gases under pressure/Gases toxic under pressure

14.4 Environmental hazards:

ADR/RID, IMDG, IATA: No supplementary information available

14.5 Special precautions for user

Special transport precautions: IATA/DOT: Not permitted on passenger aircraft

14.6 Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code:

No

15. REGULATORY INFORMATION

15.1 US Federal regulations

SARA Section 311/312 Hazard Classes: Fire hazard, Sudden release of pressure hazard, Immediate (acute) health hazard, Delayed (chronic) health hazard

15.2 Chemical safety assessment

A Chemical Safety Assessment has not been carried out.

16. OTHER INFORMATION

NFPA health hazard: 2 - Intense or continued exposure could cause temporary incapacitation or possible residual injury unless prompt medical attention is given.

NFPA fire hazard: 4 - Will rapidly or completely vaporize at normal pressure and temperature, or is readily dispersed in air and will burn readily.

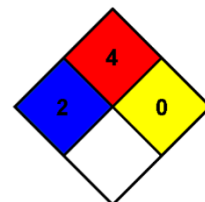
NFPA reactivity: 0 - Normally stable, even under fire exposure conditions, and are not reactive with water.

HMIS III Rating

Health: 2 Moderate Hazard - Temporary or minor injury may occur

Flammability: 4 Severe Hazard

Physical: 0 Minimal Hazard



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Disclaimer

Product is supplied for research and laboratory use only. Not for drug, household or other uses.

Warranty

The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. See invoice or packing slip for additional terms and conditions of sale.