

SAFETY DATA SHEET

1. SUBSTANCE AND SOURCE IDENTIFICATION

Product Identifier

SRM Number: 2751
SRM Name: Methane in Air (Nominal Amount-of-Substance Fraction 100 $\mu\text{mol/mol}$)
Other Means of Identification: Not applicable.

Recommended Use of This Material and Restrictions of Use

This Standard Reference Material (SRM) is a primary gas mixture for which the amount-of-substance fraction, expressed as concentration, may be related to secondary working standards. This SRM is intended for the calibration of instruments used for methane determinations and for other applications. This SRM mixture is supplied in a DOT 3AL-specification aluminum (6061 alloy) cylinder with a water volume of 6 L. Mixtures are shipped with a nominal pressure exceeding 12.4 MPa (1800 psig), which provides the user with 0.73 m³ (25.8 ft³) of useable mixture. The cylinder is the property of the purchaser and is equipped with a CGA-590 brass valve, which is the recommended outlet for this methane mixture.

Company Information

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2. HAZARDS IDENTIFICATION

Classification

Physical Hazard: Compressed Gas.
Health Hazard: Not Classified.

Label Elements**Symbol****Signal Word**

WARNING

Hazard Statement(s)

H280 Contains gas under pressure; may explode if heated.

Precautionary Statement(s)

P410 + P403 Protect from sunlight. Store in a well-ventilated place.

Hazards Not Otherwise Classified: Not applicable.

Ingredients(s) with Unknown Acute Toxicity: Not applicable.

3. COMPOSITION AND INFORMATION ON HAZARDOUS INGREDIENTS

Substance: Methane in air, compressed gas

Other Designations:

Methane: Natural gas; fire damp; marsh gas; methyl hydride.
Air: Compressed air.

Components are listed in compliance with OSHA 29 CFR 1910.1200; for the actual values see the Certificate of Analysis.

Hazardous Components	CAS Number	EC Number (EINECS)	Nominal Mass Concentration (%)
Air	132259-10-0	Not Assigned	>99
Methane	74-82-8	200-812-7	0.01

4. FIRST AID MEASURES

Description of First Aid Measures:

Inhalation: If adverse effects occur, remove to uncontaminated area. If not breathing, give artificial respiration or oxygen by qualified personnel. Seek immediate medical attention.

Skin Contact: Wash skin with soap and water for at least 15 minutes while removing contaminated clothing and shoes. Get medical attention, if needed.

Eye Contact: Immediately flush eyes, including under the eyelids with copious amounts of water for at least 15 minutes. Seek immediate medical attention.

Ingestion: Ingestion of a gas is unlikely. As this product is a gas, refer to the inhalation section.

Most Important Symptoms/Effects, Acute and Delayed: No adverse symptoms listed for this compressed gas mixture.

Indication of any immediate medical attention and special treatment needed, if necessary: If any of the above symptoms are present, seek immediate medical attention.

5. FIRE FIGHTING MEASURES

Fire and Explosion Hazards: Negligible fire hazard applicable to the identified NIST cylinder. Cylinders may rupture or explode if exposed to heat. See Section 9, "Physical and Chemical Properties" for flammability properties.

Extinguishing Media:

Suitable: Use extinguishing media appropriate to the surrounding fire.

Unsuitable: None listed.

Specific Hazards Arising from the Chemical: Oxides of carbon.

Special Protective Equipment and Precautions for Fire-Fighters: Move cylinder from fire area if it can be done without personal risk. Avoid inhalation of material or combustion byproducts. Wear full protective clothing and NIOSH approved self-contained breathing apparatus (SCBA).

NFPA Ratings (0 = Minimal; 1 = Slight; 2 = Moderate; 3 = Serious; 4 = Severe)

Health = 1

Fire = 0

Reactivity = 0

6. ACCIDENTAL RELEASE MEASURES

Personal Precautions, Protective Equipment and Emergency Procedures: Immediately contact emergency personnel. Keep unnecessary personnel away. Use suitable protective equipment; see Section 8, "Exposure Controls and Personal Protection". Shut off gas supply if this can be done safely. Isolate area until gas has dispersed.

Methods and Materials for Containment and Clean up: Stop leak if possible without personal risk. Isolate hazard area and deny entry. Stay upwind and keep out of low areas.

7. HANDLING AND STORAGE

Safe Handling Precautions: Use only with adequate ventilation. Do not puncture or incinerate container. Close valve after each use and when empty. Keep valve protection cap on cylinder when not in use.

Storage: Store and handling in accordance with all current regulations and standards. Store cylinder upright. Secure cylinder to prevent physical damage. Keep separated from incompatible substances (oxidizing materials, halogens, combustible materials). Store in well-ventilated area. Subject to storage regulations, OSHA 29 CFR 1910.101.

8. EXPOSURE CONTROLS AND PERSONAL PROTECTION

Exposure Limits:

Methane

NIOSH (REL):	No exposure limits established.
ACGIH (TLV):	1000 ppm (8 h) (TWA)
OSHA (PEL):	No exposure limits established.

Engineering Controls: Provide local exhaust or process enclosure ventilation system. Ensure compliance with applicable exposure limits.

Personal Protection: In accordance with OSHA 29 CFR 1910.132, subpart I, wear appropriate Personal Protective Equipment (PPE) to minimize exposure to this material.

Respiratory Protection: If workplace conditions warrant a respirator, a respiratory protection program that meets OSHA 29 CFR 1910.134 must be followed. Refer to NIOSH 42 CFR 84 for applicable certified respirators.

Eye/Face Protection: Wear safety goggles. An eye wash station should be readily available near areas of use.

Skin and Body Protection: Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product. Chemical-resistant gloves should be worn at all times when handling chemicals.

9. PHYSICAL AND CHEMICAL PROPERTIES

Descriptive Properties:

Appearance (physical state, color, etc.):	Colorless compressed gas
Molecular Formula:	Not applicable
Molar Mass (g/mol):	Not applicable
Odor:	Odorless (air)
Odor threshold:	Not available
pH:	Not applicable
Evaporation rate:	Not applicable
Melting point/freezing point (°C):	-216 (-357 °F) (air)
Relative Density (g/L):	Not available
Density (g/cm³):	0.0012 (air)
Vapor Pressure (mmHg):	760 at -194 °C (air)
Vapor Density (air = 1):	1
Viscosity (cP):	0.01853 at 27 °C (air)
Solubility(ies):	Slightly soluble in water (air)
Partition coefficient (n-octanol/water):	Not available
Particle Size (if relevant)	Not applicable
Thermal Stability Properties:	
Autoignition Temperature:	Not applicable
Thermal Decomposition	Not applicable
Initial boiling point and boiling range (°C):	-194 (-317 °F) (air)
Explosive Limits, LEL:	Not applicable
Explosive Limits, UEL:	Not applicable
Flash Point	Not applicable
Flammability (solid, gas):	Not applicable

10. STABILITY AND REACTIVITY

Reactivity: Stable at normal temperature and pressure.

Stability: X Stable Unstable

Possible Hazardous Reactions: None listed.

Conditions to Avoid: Minimize contact with material. Containers may rupture or explode if exposed to heat.

Incompatible Materials: Oxidizing materials, halogens, combustible materials.

Fire/Explosion Information: See Section 5, "Fire Fighting Measures".

Hazardous Decomposition: Miscellaneous decomposition products.

Hazardous Polymerization: Will Occur X Will Not Occur

11. TOXICOLOGICAL INFORMATION

Route of Exposure: Inhalation Skin Ingestion

Symptoms Related to the Physical, Chemical and Toxicological Characteristics: No adverse symptoms listed for this compressed gas mixture.

Potential Health Effects (Acute, Chronic and Delayed):

Inhalation: Not applicable.

Skin Contact: Contact with rapidly expanding gases can cause frostbite.

Eye Contact: Contact with rapidly expanding gases can cause frostbite.

Ingestion: Ingestion of a gas is unlikely under normal conditions of use.

Numerical Measures of Toxicity:

Acute Toxicity: Not classified.

Methane: Mouse, Inhalation LC50: 500 000 ppm (2 h); 326 g/m³ (2 h)

Air: No data listed.

Skin Corrosion/Irritation: Not classified.

Serious Eye damage/ Eye irritation: Not classified.

Respiratory Sensitization: Not classified.

Skin Sensitization: Not classified.

Germ Cell Mutagenicity: Not classified.

Carcinogenicity: Not classified.

Listed as a Carcinogen/Potential Carcinogen Yes No

Methane is not listed by NTP, IARC or OSHA as a carcinogen.

Reproductive Toxicity: Not classified.

Specific Target Organ Toxicity, Single Exposure: Not classified.

Specific Target Organ Toxicity, Repeated Exposure: Not classified.

Aspiration Hazard: Not applicable.

12. ECOLOGICAL INFORMATION

Ecotoxicity Data: No data available.

Persistence and Degradability: No data available.

Bioaccumulative Potential: No data available.

Mobility in Soil: No data available.

Other Adverse effects: No data available.

13. DISPOSAL CONSIDERATIONS

Waste Disposal: Dispose of waste in accordance with all applicable federal, state, and local regulations.

14. TRANSPORTATION INFORMATION

U.S. DOT and IATA: UN1956; Compressed gas, n.o.s. (methane in air); Hazard Class 2.2.

15. REGULATORY INFORMATION

U.S. Regulations:

CERCLA Sections 102a/103 (40 CFR 302.4): Identified cylinder not regulated.

SARA Title III Section 302 (40 CFR 355.30): Identified cylinder not regulated.

SARA Title III Section 304 (40 CFR 355.40): Identified cylinder not regulated

SARA Title III Section 313 (40 CFR 372.65): Identified cylinder not regulated.

OSHA Process Safety (29 CFR 1910.119): Identified cylinder not regulated.

SARA Title III Sections 311/312 Hazardous Categories (40 CFR 370.21):

ACUTE HEALTH:	No.
CHRONIC HEALTH:	No.
FIRE:	No.
REACTIVE:	No.
PRESSURE:	Yes.

State Regulations:

California Proposition 65: Not listed.

U.S. TSCA Inventory: Methane listed.

TSCA 12(b), Export Notification: No components are listed.

Canadian Regulations:

WHMIS Information: Not provided for this material.

16. OTHER INFORMATION

Issue Date: 29 January 2021

Sources: ChemADVISOR, Inc., MSDS, *Compressed Air, Breathing Air*, 09 December 2015.

ChemADVISOR, Inc., MSDS, *Methane*, 09 December 2015.

Vendor MSDS, Airgas, Inc., MSDS, *Nonflammable Gas Mixture: Methane/Nitrogen/Oxygen*, 27 August 2009

Key of Acronyms:

ACGIH	American Conference of Governmental Industrial Hygienists	NRC	Nuclear Regulatory Commission
ALI	Annual Limit on Intake	NTP	National Toxicology Program
CAS	Chemical Abstracts Service	OSHA	Occupational Safety and Health Administration
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act	PEL	Permissible Exposure Limit
CFR	Code of Federal Regulations	RCRA	Resource Conservation and Recovery Act
DOT	Department of Transportation	REL	Recommended Exposure Limit
EINECS	European Inventory of Existing Commercial Chemical Substances	RQ	Reportable Quantity
EPCRA	Emergency Planning and Community Right-to-Know Act	RTECS	Registry of Toxic Effects of Chemical Substances
IARC	International Agency for Research on Cancer	SARA	Superfund Amendments and Reauthorization Act
IATA	International Air Transport Association	SCBA	Self-Contained Breathing Apparatus
IDLH	Immediately Dangerous to Life and Health	SRM	Standard Reference Material
LC50	Lethal Concentration	STEL	Short Term Exposure Level
LD50	Median Lethal Dose or Lethal Dose, 50 %	TLV	Threshold Limit Value
LEL	Lower Explosive Limit	TPQ	Threshold Planning Quantity
MSDS	Material Safety Data Sheet	TSCA	Toxic Substances Control Act
NFPA	National Fire Protection Association	TWA	Time Weighted Average
NIOSH	National Institute for Occupational Safety and Health	UEL	Upper Explosive Limit
NIST	National Institute of Standards and Technology	WHMIS	Workplace Hazardous Materials Information System
n.o.s.	Not Otherwise Specified		

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Users of this SRM should ensure that the SDS in their possession is current. This can be accomplished by contacting the SRM Program: telephone (301) 975-2200; e-mail srmmsds@nist.gov; or via the Internet at <https://www.nist.gov/srm>.