

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

#### 1.1. Product identifier

Product form : Mixture  
Product name : Oxygen (0.0001% - 19.49%) in Tetrafluoromethane  
Product code : SG-2002-03071

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

Use of the substance/mixture : Test gas/Calibration gas.

#### 1.3. Details of the supplier of the safety data sheet

Air Liquide America Specialty Gases  
6141 Easton Rd  
Plumsteadville, PA 18949 - USA  
T 1.800.217.2688  
[www.airliquide.com](http://www.airliquide.com)

#### 1.4. Emergency telephone number

Emergency number : CHEMTREC: 1-800-424-9300

### SECTION 2: Hazards identification

#### 2.1. Classification of the substance or mixture

##### Classification (GHS-US)

Compressed gas H280

#### 2.2. Label elements

##### GHS-US labeling

Hazard pictograms (GHS-US) :



GHS04

Signal word (GHS-US) : Warning

Hazard statements (GHS-US) : H280 - Contains gas under pressure; may explode if heated  
OSHA-H01 - May displace oxygen and cause rapid suffocation

Precautionary statements (GHS-US) : P202 - Do not handle until all safety precautions have been read and understood  
P271 - Use only outdoors or in a well-ventilated area  
P304+P340 - If inhaled: Remove person to fresh air and keep comfortable for breathing  
P313 - Get medical advice/attention  
P403 - Store in a well-ventilated place  
P501 - Dispose of contents/container in accordance with local/regional/national/international regulations  
CGA-PG02 - Protect from sunlight when ambient temperature exceeds 52°C (125°F)  
CGA-PG05 - Use a back flow preventive device in the piping  
CGA-PG06 - Close valve after each use and when empty  
CGA-PG10 - Use only with equipment rated for cylinder pressure  
CGA-PG14 - Approach suspected leak area with caution  
CGA-PG21 - Open valve slowly

#### 2.3. Other hazards

No additional information available

#### 2.4. Unknown acute toxicity (GHS-US)

No data available

### SECTION 3: Composition/information on ingredients

#### 3.1. Substance

Not applicable

#### 3.2. Mixture

# Oxygen (0.0001% - 19.49%) in Tetrafluoromethane

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Name	Product identifier	%	Classification (GHS-US)
Tetrafluoromethane (R14)	(CAS No)75-73-0	80.51 - 99.9999	Liquefied gas, H280
Oxygen	(CAS No)7782-44-7	0.00001 - 19.49	Ox. Gas 1, H270 Compressed gas, H280

### SECTION 4: First aid measures

#### 4.1. Description of first aid measures

- First-aid measures after inhalation : Remove to fresh air and keep at rest in a position comfortable for breathing. If you feel unwell, seek medical advice.
- First-aid measures after skin contact : Adverse effects not expected from this product.
- First-aid measures after eye contact : Adverse effects not expected from this product.
- First-aid measures after ingestion : Ingestion is not considered a potential route of exposure.

#### 4.2. Most important symptoms and effects, both acute and delayed

- Symptoms/injuries : Symptoms similar to those listed under inhalation.
- Symptoms/injuries after inhalation : May displace oxygen and cause rapid suffocation. If you feel unwell, seek medical advice.
- Symptoms/injuries after skin contact : Adverse effects not expected from this product.
- Symptoms/injuries after eye contact : Adverse effects not expected from this product.
- Symptoms/injuries after ingestion : Ingestion is not considered a potential route of exposure.
- Symptoms/injuries upon intravenous administration : Not known.
- Chronic symptoms : Adverse effects not expected from this product.

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

If you feel unwell, seek medical advice. If breathing is difficult, give oxygen.

### SECTION 5: Firefighting measures

#### 5.1. Extinguishing media

- Suitable extinguishing media : Use extinguishing media appropriate for surrounding fire.
- Unsuitable extinguishing media : Do not use water jet.

#### 5.2. Special hazards arising from the substance or mixture

- Fire hazard : The product is not flammable.
- Explosion hazard : Product is not explosive. Heat may build pressure, rupturing closed containers, spreading fire and increasing risk of burns and injuries.
- Reactivity : None known.

#### 5.3. Advice for firefighters

- Firefighting instructions : In case of fire: Evacuate area. Fight fire remotely due to the risk of explosion. Use water spray or fog for cooling exposed containers. Exercise caution when fighting any chemical fire.
- Protection during firefighting : Standard protective clothing and equipment (e.g., Self Contained Breathing Apparatus) for fire fighters. Do not enter fire area without proper protective equipment, including respiratory protection.

### SECTION 6: Accidental release measures

#### 6.1. Personal precautions, protective equipment and emergency procedures

- General measures : Ensure adequate ventilation.

##### 6.1.1. For non-emergency personnel

- Protective equipment : Wear protective equipment consistent with the site emergency plan.
- Emergency procedures : Escape the danger area by the closest safe route. Close doors and windows of adjacent premises. Keep containers closed. Mark the danger area. Seal off low-lying areas. Keep upwind.

##### 6.1.2. For emergency responders

- Protective equipment : Standard protective clothing and equipment (e.g., Self Contained Breathing Apparatus) for fire fighters. Equip cleanup crew with proper protection.
- Emergency procedures : Evacuate and limit access. Ventilate area.

#### 6.2. Environmental precautions

Try to stop release if safe to do so.

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### 6.3. Methods and material for containment and cleaning up

- |                         |  |
|-------------------------|--|
| For containment         | : Try to stop release if safe to do so.  |
| Methods for cleaning up | : Dispose of this material and its container in accordance with local regulations. |

### 6.4. Reference to other sections

See also Sections 8 and 13.

## SECTION 7: Handling and storage

### 7.1. Precautions for safe handling

- |                                   |   |
|-----------------------------------|---|
| Additional hazards when processed | : Pressurized container: Do not pierce or burn, even after use. Use equipment rated for cylinder pressure.                  |
| Precautions for safe handling     | : Do not handle until all safety precautions have been read and understood. Use only outdoors or in a well-ventilated area. |
| Hygiene measures                  | : Do not eat, drink or smoke when using this product.   |

### 7.2. Conditions for safe storage, including any incompatibilities

- |                        |  |
|------------------------|--|
| Technical measures     | : Comply with applicable regulations.  |
| Storage conditions     | : Do not expose to temperatures exceeding 52°C (125°F). Keep container closed when not in use. Protect cylinder from physical damage. Store in well ventilated area. |
| Incompatible products  | : None known.  |
| Incompatible materials | : None known.  |

### 7.3. Specific end use(s)

Test gas/Calibration gas.

## SECTION 8: Exposure controls/personal protection

### 8.1. Control parameters

No additional information available

### 8.2. Exposure controls

- |                                  |   |
|----------------------------------|---|
| 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. Oxygen detectors should be used when asphyxiating gases may be released. Consider work permit system e.g. for maintenance activities. |
| Hand protection                  | : Wear working gloves when handling gas containers. 29CFR 1910.138: Hand Protection.  |
| Eye protection                   | : Wear safety glasses with side shields. 29 CFR 1910.133: Eye and Face Protection.  |
| Skin and body protection         | : Wear suitable protective clothing, e.g. - lab coats, coveralls or flame resistant clothing.   |
| Respiratory protection           | : None necessary during normal and routine operations. See sections 5 & 6.  |
| Thermal hazard protection        | : None necessary during normal and routine operations.  |
| Environmental exposure controls  | : Refer to local regulations for restriction of emissions to the atmosphere. See section 13 for specific methods for waste gas treatment.   |
| Other information                | : Wear safety shoes while handling containers. 29 CFR 1910.136: Foot Protection.  |

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### SECTION 9: Physical and chemical properties

#### 9.1. Information on basic physical and chemical properties

Physical state	: Gas
Appearance	: Clear, colorless gas.
Molecular mass	: Not applicable for gas-mixtures.
Color	: Colorless
Odor	: odorless
Odor threshold	: No data available
pH	: No data available
Relative evaporation rate (butyl acetate=1)	: No data available
Relative evaporation rate (ether=1)	: Not applicable for gas-mixtures.
Melting point	: No data available
Freezing point	: No data available
Boiling point	: No data available
Flash point	: No data available
Auto-ignition temperature	: No data available
Decomposition temperature	: No data available
Flammability (solid, gas)	: Not applicable - not flammable
Vapor pressure	: Not applicable.
Relative vapor density at 20 °C	: No data available
Relative density	: No data available
Relative gas density	: Heavier than air.
Solubility	: Water: Solubility in water of component(s) of the mixture : • : 39 mg/l • : 20 mg/l
Log Pow	: Not applicable for gas-mixtures.
Log Kow	: Not applicable for gas-mixtures.
Viscosity, kinematic	: Not applicable.
Viscosity, dynamic	: Not applicable.
Explosive properties	: Not applicable - not flammable.
Oxidizing properties	: None.
Explosive limits	: Not applicable - not flammable

#### 9.2. Other information

Additional information	: Gas/vapour heavier than air. May accumulate in confined spaces, particularly at or below ground level.
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### SECTION 10: Stability and reactivity

#### 10.1. Reactivity

None known.

#### 10.2. Chemical stability

Stable under normal conditions.

#### 10.3. Possibility of hazardous reactions

None known.

#### 10.4. Conditions to avoid

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

#### 10.5. Incompatible materials

None known.

#### 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

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Acute toxicity : Not classified

### Oxygen (7782-44-7)

LC50 inhalation rat (ppm)	400000 ppm/4h
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Skin corrosion/irritation : Not classified

Serious eye damage/irritation : Not classified

Respiratory or skin sensitization : Not classified

Germ cell mutagenicity : Not classified

Carcinogenicity : Not classified

Reproductive toxicity : Not classified

Specific target organ toxicity (single exposure) : Not classified

Specific target organ toxicity (repeated exposure) : Not classified  
No known effects from this product.

Aspiration hazard : Not classified  
Not applicable for gases and gas-mixtures.

Symptoms/injuries after inhalation : May displace oxygen and cause rapid suffocation. If you feel unwell, seek medical advice.

Symptoms/injuries after skin contact : Adverse effects not expected from this product.

Symptoms/injuries after eye contact : Adverse effects not expected from this product.

Symptoms/injuries after ingestion : Ingestion is not considered a potential route of exposure.

Symptoms/injuries upon intravenous administration : Not known.

Chronic symptoms : Adverse effects not expected from this product.

## SECTION 12: Ecological information

### 12.1. Toxicity

Ecology - general : No ecological damage caused by this product.

### 12.2. Persistence and degradability

#### Oxygen (0.0001% - 19.49%) in Tetrafluoromethane

Persistence and degradability	No data available.
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#### Oxygen (7782-44-7)

Persistence and degradability	No ecological damage caused by this product.
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#### Tetrafluoromethane (R14) (75-73-0)

Persistence and degradability	No data available.
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### 12.3. Bioaccumulative potential

#### Oxygen (0.0001% - 19.49%) in Tetrafluoromethane

Log Pow	Not applicable for gas-mixtures.
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Log Kow	Not applicable for gas-mixtures.
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Bioaccumulative potential	No data available.
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#### Oxygen (7782-44-7)

Log Pow	Not applicable for inorganic gases.
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Bioaccumulative potential	No ecological damage caused by this product.
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#### Tetrafluoromethane (R14) (75-73-0)

Log Pow	1.18
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Bioaccumulative potential	Not expected to bioaccumulate due to the low log Kow (log Kow < 4). Refer to section 9.
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### 12.4. Mobility in soil

#### Oxygen (0.0001% - 19.49%) in Tetrafluoromethane

Mobility in soil	No data available.
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#### Oxygen (7782-44-7)

Ecology - soil	No ecological damage caused by this product.
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# Oxygen (0.0001% - 19.49%) in Tetrafluoromethane

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### Tetrafluoromethane (R14) (75-73-0)

Ecology - soil

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

### 12.5. Other adverse effects

Effect on ozone layer

: None.

Effect on the global warming

: 5322.81

## SECTION 13: Disposal considerations

### 13.1. Waste treatment methods

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.

Waste disposal recommendations

: Refer to the CGA Pamphlet P-63 "Disposal of Gases" available at [www.cganet.com](http://www.cganet.com) for more guidance on suitable disposal methods.

Ecology - waste materials

: None known.

## SECTION 14: Transport information

In accordance with DOT

Transport document description

: UN1956 Compressed gas, n.o.s.

UN-No.(DOT)

: 1956

DOT NA no.

: UN1956

Proper Shipping Name (DOT)

: Compressed gas, n.o.s.

Hazard labels (DOT)

: 2.2 - Non-flammable gas



DOT Symbols

: G - Identifies PSN requiring a technical name

DOT Packaging Exceptions (49 CFR 173.xxx)

: 306;307

DOT Packaging Non Bulk (49 CFR 173.xxx)

: 302;305

DOT Packaging Bulk (49 CFR 173.xxx)

: 314;315

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

: 75 kg

DOT Quantity Limitations Cargo aircraft only (49  
CFR 175.75)

: 150 kg

DOT Vessel Stowage Location

: A - The material may be stowed "on deck" or "under deck" on a cargo vessel and on a passenger vessel.

### Additional information

Other information

: No supplementary information available.

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.

# Oxygen (0.0001% - 19.49%) in Tetrafluoromethane

## Safety Data Sheet

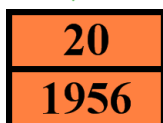
according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

### ADR

Transport document description : UN 1956, 2.2, (E)  
Class (ADR) : 2 - Gases  
Hazard identification number (Kemler No.) : 20  
Classification code (ADR) : 1A  
Hazard labels (ADR) : 2.2 - Non-flammable compressed gas



Orange plates :



Tunnel restriction code (ADR) : E  
LQ : 120ml  
Excepted quantities (ADR) : E1

### Transport by sea

UN-No. (IMDG) : 1956  
Proper Shipping Name (IMDG) : COMPRESSED GAS, N.O.S.  
Class (IMDG) : 2.2 - Non-flammable, non-toxic gases

### Air transport

UN-No.(IATA) : 1956  
Proper Shipping Name (IATA) : COMPRESSED GAS, N.O.S.  
Class (IATA) : 2

## SECTION 15: Regulatory information

### 15.1. US Federal regulations

No additional information available

### 15.2. International regulations

#### CANADA

##### Oxygen (7782-44-7)

Listed on the Canadian DSL (Domestic Substances List)

WHMIS Classification	Class A - Compressed Gas Class C - Oxidizing Material
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##### Tetrafluoromethane (R14) (75-73-0)

Listed on the Canadian DSL (Domestic Substances List)

WHMIS Classification	Class A - Compressed Gas
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### EU-Regulations

No additional information available

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

Not classified

### Classification according to Directive 67/548/EEC [DSD] or 1999/45/EC [DPD]

#### 15.2.2. National regulations

No additional information available

### 15.3. US State regulations

#### Oxygen (7782-44-7)

U.S. - Massachusetts - Right To Know List

# Oxygen (0.0001% - 19.49%) in Tetrafluoromethane

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### Oxygen (7782-44-7)

U.S. - New Jersey - Right to Know Hazardous Substance List  
U.S. - Pennsylvania - RTK (Right to Know) List

### Tetrafluoromethane (R14) (75-73-0)

U.S. - New Jersey - Right to Know Hazardous Substance List

## SECTION 16: Other information

Indication of changes : Revised safety data sheet in accordance with OSHA final rule on GHS implementation promulgated March 26, 2012.

Other information : This Safety Data Sheet is offered pursuant to OSHA's Hazard Communication Standard, 29 CFR, 1910.1200. Other government regulations must be reviewed for applicability to this product.

Full text of H-phrases: see section 16:

Compressed gas	Gases under pressure Compressed gas
Liquefied gas	Gases under pressure Liquefied gas
Ox. Gas 1	Oxidizing gases Category 1
H270	May cause or intensify fire; oxidizer
H280	Contains gas under pressure; may explode if heated

SDS US (GHS HazCom 2012)

*This Safety Data Sheet is offered pursuant to OSHA's Hazard Communication Standard, 29 CFR, 1910.1200. Other government regulations must be reviewed for applicability to this product. To the best of Air Liquide America Corporation's knowledge, the information contained herein is reliable and accurate as of this date; however, accuracy, suitability or completeness are not guaranteed and no warranties of any type, either express or implied, are provided. The information contained herein relates only to this specific product. If this product is combined with other materials, all component properties must be considered. Data may be changed from time to time. Be sure to consult the latest edition.*