

# StarGold (Mixtures of Argon and up to 5 percent Oxygen)

## Safety Data Sheet P-4718

according to U.S. Code of Federal Regulations 29 CFR 1910.1200, Hazard Communication.

Date of issue: 01/01/1980

Revision date: 10/03/2014

Supersedes: 12/01/2007

### SECTION: 1. Product and company identification

#### 1.1. Product identifier

Product form : Mixture  
Formula : Mixtures of argon and up to 5 percent oxygen

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

Use of the substance/mixture : Electric Arc Welding  
Industrial use. Use as directed.

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

Praxair, Inc.  
39 Old Ridgebury Road  
Danbury, CT 06810-5113 - USA  
T 1-800-772-9247 (1-800-PRAXAIR) - F 1-716-879-2146  
[www.praxair.com](http://www.praxair.com)

#### 1.4. Emergency telephone number

Emergency number : Onsite Emergencies: 1-800-645-4633  
CHEMTREC: USA 1-800-424-9300, International 001-703-527-3887 (Collect calls accepted, contract 17729)

### 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+P403 - Use and store only outdoors or in a well-ventilated place.  
CGA-PG05 - Use a back flow preventive device in the piping.  
CGA-PG10 - Use only with equipment rated for cylinder pressure.  
CGA-PG06 - Close valve after each use and when empty.  
CGA-PG02 - Protect from sunlight when ambient temperature exceeds 52°C (125°F).

#### 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

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## Safety Data Sheet

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| Name                  | Product identifier | %       |
|-----------------------|--------------------|---------|
| Argon                 | (CAS No) 7440-37-1 | 95 - 99 |
| Oxygen<br>(Component) | (CAS No) 7782-44-7 | 1 - 5   |

### SECTION 4: First aid measures

#### 4.1. Description of first aid measures

- First-aid measures after 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.
- First-aid measures after skin contact : Adverse effects not expected from this product.
- First-aid measures after eye contact : Immediately flush eyes thoroughly with water for at least 15 minutes. Hold the eyelids open and away from the eyeballs to ensure that all surfaces are flushed thoroughly. Get immediate medical attention.
- 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

No additional information available

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

None.

### SECTION 5: Firefighting measures

#### 5.1. Extinguishing media

- Suitable extinguishing media : Use extinguishing media appropriate for surrounding fire.

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

- Reactivity : No reactivity hazard other than the effects described in sub-sections below.

#### 5.3. Advice for firefighters

- Firefighting instructions : Evacuate all personnel from the danger area. Use self-contained breathing apparatus (SCBA) and protective clothing. Immediately cool containers with water from maximum distance. Stop flow of gas if safe to do so, while continuing cooling water spray. Remove ignition sources if safe to do so. Remove containers from area of fire if safe to do so. On-site fire brigades must comply with OSHA 29 CFR 1910.156 and applicable standards under 29 CFR 1910 Subpart L—Fire Protection.
- Protection during firefighting : Compressed gas: asphyxiant. Suffocation hazard by lack of oxygen.
- Special protective equipment for fire fighters : Standard protective clothing and equipment (Self Contained Breathing Apparatus) for fire fighters.
- Specific methods : Stop flow of product if safe to do so. 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. Use water spray or fog to knock down fire fumes if possible.

### SECTION 6: Accidental release measures

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

- General measures : Evacuate area. Ensure adequate air ventilation. Wear self-contained breathing apparatus when entering area unless atmosphere is proved to be safe. Stop leak if safe to do so.

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

No additional information available

##### 6.1.2. For emergency responders

No additional information available

#### 6.2. Environmental precautions

No additional information available

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

No additional information available

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## Safety Data Sheet

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### 6.4. Reference to other sections

See also sections 8 and 13.

## SECTION 7: Handling and storage

### 7.1. Precautions for safe handling

Precautions for safe handling : Wear leather safety gloves and safety shoes when handling cylinders. Protect cylinders from physical damage; do not drag, roll, slide or drop. While moving cylinder, always keep in place removable valve cover. Never attempt to lift a cylinder by its cap; the cap is intended solely to protect the valve. When moving cylinders, even for short distances, use a cart (trolley, hand truck, etc.) designed to transport cylinders. Never insert an object (e.g., wrench, screwdriver, pry bar) into cap openings; doing so may damage the valve and cause a leak. Use an adjustable strap wrench to remove over-tight or rusted caps. Slowly open the valve. If the valve is hard to open, discontinue use and contact your supplier. Close the container valve after each use; keep closed even when empty. Never apply flame or localized heat directly to any part of the container. High temperatures may damage the container and could cause the pressure relief device to fail prematurely, venting the container contents. For other precautions in using this product, see section 16.

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

Storage conditions : Store in a cool, well-ventilated place. Store and use with adequate ventilation. Store only where temperature will not exceed 125°F (52°C). Firmly secure containers upright to keep them from falling or being knocked over. Install valve protection cap, if provided, firmly in place by hand. Store full and empty containers separately. Use a first-in, first-out inventory system to prevent storing full containers for long periods.

OTHER PRECAUTIONS FOR HANDLING, STORAGE, AND USE: When handling product under pressure, use piping and equipment adequately designed to withstand the pressures to be encountered. Never work on a pressurized system. Use a back flow preventive device in the piping. Gases can cause rapid suffocation because of oxygen deficiency; store and use with adequate ventilation. If a leak occurs, close the container valve and blow down the system in a safe and environmentally correct manner in compliance with all international, federal/national, state/provincial, and local laws; then repair the leak. Never place a container where it may become part of an electrical circuit.

### 7.3. Specific end use(s)

None.

## SECTION 8: Exposure controls/personal protection

### 8.1. Control parameters

| Oxygen (7782-44-7) |                 |
|--------------------|-----------------|
| ACGIH              | Not established |
| USA OSHA           | Not established |
| Argon (7440-37-1)  |                 |
| ACGIH              | Not established |
| USA OSHA           | Not established |

### 8.2. Exposure controls

Appropriate engineering controls : Oxygen detectors should be used when asphyxiating gases may be released. Systems under pressure should be regularly checked for leakages. Provide adequate general and local exhaust ventilation. Consider work permit system e.g. for maintenance activities.

Hand protection : Wear working gloves when handling gas containers.

Eye protection : Wear safety glasses with side shields.

Respiratory protection : Self contained breathing apparatus (SCBA) or positive pressure airline with mask are to be used in oxygen-deficient atmospheres.

Thermal hazard protection : None necessary.

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.

# StarGold (Mixtures of Argon and up to 5 percent Oxygen)

## Safety Data Sheet

according to U.S. Code of Federal Regulations 29 CFR 1910.1200, Hazard Communication.

### SECTION 9: Physical and chemical properties

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

|                                             |                            |
|---------------------------------------------|----------------------------|
| Physical state                              | : Gas                      |
| Appearance                                  | : Colorless gas.           |
| Color                                       | : Colorless                |
| Odor                                        | : Odorless.                |
| Odor threshold                              | : No data available        |
| pH                                          | : Not applicable.          |
| Relative evaporation rate (butyl acetate=1) | : No data available        |
| Relative evaporation rate (ether=1)         | : Not applicable.          |
| 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)                   | : No data available        |
| Vapor pressure                              | : Not applicable.          |
| Relative vapor density at 20 °C             | : No data available        |
| Relative density                            | : No data available        |
| Specific gravity / density                  | : 1.65 kg/m <sup>3</sup>   |
| Solubility                                  | : Water: No data available |
| Log Pow                                     | : Not applicable.          |
| Log Kow                                     | : Not applicable.          |
| Viscosity, kinematic                        | : Not applicable.          |
| Viscosity, dynamic                          | : Not applicable.          |
| Explosive properties                        | : Not applicable.          |
| Oxidizing properties                        | : None.                    |
| Explosive limits                            | : No data available        |

#### 9.2. Other information

No additional information available

### 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

No additional information available

#### 10.4. Conditions to avoid

No additional information available

#### 10.5. Incompatible materials

No additional information available

#### 10.6. Hazardous decomposition products

Under normal conditions of storage and use, hazardous decomposition products should not be produced. Using this product in welding and cutting may create additional hazards. The arc from electric arc welding may form gaseous reaction products such as carbon monoxide and carbon dioxide. Ozone and nitrogen oxides may be formed by the radiation from the arc. Other decomposition products of arc welding and cutting originate from the volatilization, reaction, and oxidization of the material being worked.

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## Safety Data Sheet

according to U.S. Code of Federal Regulations 29 CFR 1910.1200, Hazard Communication.

### SECTION 11: Toxicological information

#### 11.1. Information on toxicological effects

|                                                    |                                                         |
|----------------------------------------------------|---------------------------------------------------------|
| Acute toxicity                                     | : Not classified                                        |
| Skin corrosion/irritation                          | : Not classified<br>pH: Not applicable.                 |
| Serious eye damage/irritation                      | : Not classified<br>pH: Not applicable.                 |
| 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<br>No known effects from this product. |
| Aspiration hazard                                  | : Not classified<br>Not applicable.                     |

### SECTION 12: Ecological information

#### 12.1. Toxicity

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

#### 12.2. Persistence and degradability

##### StarGold O1, O2, O5; M1, M2, M5; Sigma-1, 2, 5

|                               |                                              |
|-------------------------------|----------------------------------------------|
| Persistence and degradability | No ecological damage caused by this product. |
|-------------------------------|----------------------------------------------|

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

|                               |                                              |
|-------------------------------|----------------------------------------------|
| Persistence and degradability | No ecological damage caused by this product. |
|-------------------------------|----------------------------------------------|

##### Argon (7440-37-1)

|                               |                                              |
|-------------------------------|----------------------------------------------|
| Persistence and degradability | No ecological damage caused by this product. |
|-------------------------------|----------------------------------------------|

#### 12.3. Bioaccumulative potential

##### StarGold O1, O2, O5; M1, M2, M5; Sigma-1, 2, 5

|                           |                                              |
|---------------------------|----------------------------------------------|
| BCF fish 1                | >=                                           |
| Log Pow                   | Not applicable.                              |
| Log Kow                   | Not applicable.                              |
| Bioaccumulative potential | No ecological damage caused by this product. |

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

|                           |                                              |
|---------------------------|----------------------------------------------|
| Log Pow                   | Not applicable.                              |
| Log Kow                   | Not applicable.                              |
| Bioaccumulative potential | No ecological damage caused by this product. |

##### Argon (7440-37-1)

|                           |                                              |
|---------------------------|----------------------------------------------|
| Log Pow                   | Not applicable.                              |
| Log Kow                   | Not applicable.                              |
| Bioaccumulative potential | No ecological damage caused by this product. |

#### 12.4. Mobility in soil

##### StarGold O1, O2, O5; M1, M2, M5; Sigma-1, 2, 5

|                  |                    |
|------------------|--------------------|
| Mobility in soil | No data available. |
|------------------|--------------------|

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## Safety Data Sheet

according to U.S. Code of Federal Regulations 29 CFR 1910.1200, Hazard Communication.

### Oxygen (7782-44-7)

|                  |                                              |
|------------------|----------------------------------------------|
| Mobility in soil | No data available.                           |
| Ecology - soil   | No ecological damage caused by this product. |

### Argon (7440-37-1)

|                  |                                              |
|------------------|----------------------------------------------|
| Mobility in soil | No data available.                           |
| Ecology - soil   | No ecological damage caused by this product. |

### 12.5. Other adverse effects

|                              |                                                      |
|------------------------------|------------------------------------------------------|
| Effect on ozone layer        | : None.                                              |
| Effect on the global warming | : No known ecological damage caused by this product. |

## SECTION 13: Disposal considerations

### 13.1. Waste treatment methods

|                                |                                                                                                                                                                                                                               |
|--------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Waste treatment methods        | : May be vented to atmosphere in a well ventilated place. Consult supplier for specific recommendations. Do not discharge into any place where its accumulation could be dangerous. Contact supplier if guidance is required. |
| Waste disposal recommendations | : Dispose of contents/container in accordance with local/regional/national/international regulations. Contact supplier for any special requirements.                                                                          |

## SECTION 14: Transport information

|                                                   |                                                                 |
|---------------------------------------------------|-----------------------------------------------------------------|
| In accordance with DOT                            |                                                                 |
| Transport document description                    | : UN1956 Compressed gas, n.o.s. (Argon ; Oxygen), 2.2           |
| UN-No.(DOT)                                       | : UN1956                                                        |
| Proper Shipping Name (DOT)                        | : Compressed gas, n.o.s.<br>(Argon ; Oxygen)                    |
| Department of Transportation (DOT) Hazard Classes | : 2.2 - Class 2.2 - Non-flammable compressed gas 49 CFR 173.115 |
| Hazard labels (DOT)                               | : 2.2 - Non-flammable gas                                       |



|             |                                                                                                                           |
|-------------|---------------------------------------------------------------------------------------------------------------------------|
| DOT Symbols | : G - Identifies proper shipping name (PSN) requiring the addition of technical name(s) in parentheses following the PSN. |
|-------------|---------------------------------------------------------------------------------------------------------------------------|

### 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. |

### Transport by sea

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

### Air transport

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

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## Safety Data Sheet

according to U.S. Code of Federal Regulations 29 CFR 1910.1200, Hazard Communication.

### SECTION 15: Regulatory information

#### 15.1. US Federal regulations

##### StarGold O1, O2, O5; M1, M2, M5; Sigma-1, 2, 5

|                                     |                                   |
|-------------------------------------|-----------------------------------|
| SARA Section 311/312 Hazard Classes | Sudden release of pressure hazard |
|-------------------------------------|-----------------------------------|

All components of this product are listed on the Toxic Substances Control Act (TSCA) inventory

This product or mixture does not contain a toxic chemical or chemicals in excess of the applicable de minimis concentration as specified in 40 CFR §372.38(a) subject to the reporting requirements of section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372.

#### 15.2. International regulations

##### CANADA

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

Listed on the Canadian DSL (Domestic Substances List)

|                      |                                                          |
|----------------------|----------------------------------------------------------|
| WHMIS Classification | Class A - Compressed Gas<br>Class C - Oxidizing Material |
|----------------------|----------------------------------------------------------|

##### Argon (7440-37-1)

Listed on the Canadian DSL (Domestic Substances List)

|                      |                          |
|----------------------|--------------------------|
| WHMIS Classification | Class A - Compressed Gas |
|----------------------|--------------------------|

#### EU-Regulations

No additional information available

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

Ox. Gas 1 H270

Compressed gas H280

Full text of H-phrases: see section 16

#### 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

California Proposition 65 - This product does not contain any substances known to the state of California to cause cancer and/or reproductive harm

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

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

##### Argon (7440-37-1)

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

### SECTION 16: Other information

Revision date : 10/3/2014 12:00:00 AM

# StarGold (Mixtures of Argon and up to 5 percent Oxygen)

## Safety Data Sheet

according to U.S. Code of Federal Regulations 29 CFR 1910.1200, Hazard Communication.

### Other information

: When you mix two or more chemicals, you can create additional, unexpected hazards. Obtain and evaluate the safety information for each component before you produce the mixture. Consult an industrial hygienist or other trained person when you evaluate the end product. Before using any plastics, confirm their compatibility with this product.

Fumes and gases produced during welding and cutting processes can be dangerous to your health and may cause serious lung disease. **KEEP YOUR HEAD OUT OF FUMES. DO NOT BREATHE FUMES AND GASES.** Use enough ventilation, local exhaust, or both to keep fumes and gases from your breathing zone and the general area. Short-term overexposure to fumes may cause dizziness, nausea, and dryness or irritation of the nose, throat, and eyes; or may cause other similar discomfort. Contaminants in the air may add to the hazard of fumes and gases. One such contaminant, chlorinated hydrocarbon vapors from cleaning and degreasing activities, poses a special risk. **DO NOT USE ELECTRIC ARCS IN THE PRESENCE OF CHLORINATED HYDROCARBON VAPORS—HIGHLY TOXIC PHOSGENE MAY BE PRODUCED.** Metal coatings such as paint, plating, or galvanizing may generate harmful fumes when heated. Residues from cleaning materials may also be harmful. **AVOID ARC OPERATIONS ON PARTS WITH PHOSPHATE RESIDUES (ANTI-RUST, CLEANING PREPARATIONS)—HIGHLY TOXIC PHOSPHINE MAY BE PRODUCED.**

Praxair asks users of this product to study this SDS and become aware of the product hazards and safety information. To promote safe use of this product, a user should (1) notify employees, agents, and contractors of the information in this SDS and of any other known product hazards and safety information, (2) furnish this information to each purchaser of the product, and (3) ask each purchaser to notify its employees and customers of the product hazards and safety information.

The opinions expressed herein are those of qualified experts within Praxair, Inc. We believe that the information contained herein is current as of the date of this Safety Data Sheet. Since the use of this information and the conditions of use are not within the control of Praxair, Inc., it is the user's obligation to determine the conditions of safe use of the product.

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PRAXAIR and the Flowing Airstream design are trademarks or registered trademarks of Praxair Technology, Inc. in the United States and/or other countries.

Full text of H-phrases: see section 16:

|                |                                                    |
|----------------|----------------------------------------------------|
| Compressed gas | Gases under pressure Compressed gas                |
| Ox. Gas 1      | Oxidizing gases Category 1                         |
| H270           | MAY CAUSE OR INTENSIFY FIRE; OXIDIZER              |
| H280           | CONTAINS GAS UNDER PRESSURE; MAY EXPLODE IF HEATED |

### NFPA health hazard

: 0 - Exposure under fire conditions would offer no hazard beyond that of ordinary combustible materials.

### NFPA fire hazard

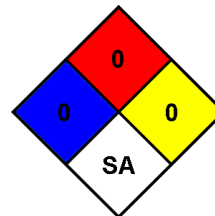
: 0 - Materials that will not burn.

### NFPA reactivity

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

### NFPA specific hazard

: SA - This denotes gases which are simple asphyxiants.



### HMIS III Rating

#### Health

: 0 Minimal Hazard - No significant risk to health

#### Flammability

: 0 Minimal Hazard

#### Physical

: 3 Serious Hazard

SDS US (GHS HazCom 2012) - Praxair

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## Safety Data Sheet

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*This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product.*