

### Section 1: Product and Company Identification

**Absolute Accuracy**  
4591 S Wayside Dr  
Houston, TX 77087  
(832) 571-2387

Product Code: 221  
Part Number: 105ds-221  
**Synonyms:**  
**Recommended Use:**  
**Usage Restrictions:**

### Section 2: Hazards Identification



**Warning**

**Hazard Classification:**

Gases Under Pressure

**Hazard Statements:**

Contains gas under pressure; may explode if heated

**Precautionary Statements**

**Storage:**

Protect from sunlight.  
Store in well-ventilated place.

### Section 3: Composition/Information on Ingredients

|                    | <b>CAS #</b> | <b>Concentration</b> |
|--------------------|--------------|----------------------|
| <b>Isobutylene</b> | 115-11-7     | 100 ppm              |
| <b>Oxygen</b>      | 7782-44-7    | 20.9%                |
| <b>Nitrogen</b>    | 7727-37-9    | balance              |

|                    | Chemical Substance       | Chemical Family                      | Trade Names  |
|--------------------|--------------------------|--------------------------------------|--|
| <b>Isobutylene</b> | ISOBUTYLENE              | Hydrocarbons, Aliphatic, Unsaturated | 2-METHYLPROPENE; ISOBUTENE; LIQUIFIED PETROLEUM GAS; 2-METHYL-1-PROPENE; L.P.G.; GAMMA-BUTYLENE; ASYM-DIMETHYL ETHYLENE; UN 1055 |
| <b>Oxygen</b>      | OXYGEN, COMPRESSED GAS   | Inorganic gases                      | OXYGEN; DIOXYGEN; MOLECULAR OXYGEN; OXYGEN MOLECULE; PURE OXYGEN; UN 1072; O2  |
| <b>Nitrogen</b>    | NITROGEN, COMPRESSED GAS | Inorganic gases                      | DIATOMIC NITROGEN; DINITROGEN; NITROGEN; NITROGEN-14; NITROGEN GAS; UN 1066; N2  |

## Section 4: First Aid Measures

|                    | Skin Contact   | Eye Contact   | Ingestion  | Inhalation   | Note to Physicians               |
|--------------------|--|---|--|--|----------------------------------|
| <b>Isobutylene</b> | If frostbite or freezing occur, immediately flush with plenty of lukewarm water (105-115 F; 41-46 C). DO NOT USE HOT WATER. If warm water is not available, gently wrap affected parts in blankets. Get immediate medical attention. | Contact with liquid: Immediately flush eyes with plenty of water for at least 15 minutes. Then get immediate medical attention. | If a large amount is swallowed, get medical attention. | If adverse effects occur, remove to uncontaminated area. Give artificial respiration if not breathing. If breathing is difficult, oxygen should be administered by qualified personnel. Get immediate medical attention. | For inhalation, consider oxygen. |
| <b>Oxygen</b>      | None expected  | None expected   | Not likely route of exposure                           | If adverse effects occur, remove to uncontaminated area. Give artificial respiration if not breathing. Get immediate medical attention.  | None                             |
| <b>Nitrogen</b>    | Wash exposed skin with soap and water.   | Flush eyes with plenty of water.  | If a large amount is swallowed, get medical attention. | If adverse effects occur, remove to uncontaminated area. Give artificial respiration if not breathing. If breathing is difficult, oxygen should be administered by qualified personnel. Get immediate medical attention. | For inhalation, consider oxygen. |

## Section 5: Fire Fighting Measures

|                    | Suitable Extinguishing Media  | Products of Combustion  | Protection of Firefighters   |
|--------------------|---|---|--|
| <b>Isobutylene</b> | Carbon dioxide, regular dry chemical Large fires: Flood with fine water spray.  | Carbon monoxide, carbon dioxide, water and toxic and irritating fumes | <ul style="list-style-type: none"> <li>▪ Any self-contained breathing apparatus with a full facepiece.</li> <li>▪ Any self-contained breathing apparatus with a full facepiece.</li> </ul> |
| <b>Oxygen</b>      | Non-flammable. Use extinguishing agent appropriate for the material which is burning. Use water in large quantities for fires involving oxygen. | Oxides of burning material  | <ul style="list-style-type: none"> <li>▪ Respiratory protection may be needed for frequent or heavy exposure.</li> <li>▪ None</li> </ul>   |

|                 | <b>Suitable Extinguishing Media</b>  | <b>Products of Combustion</b> | <b>Protection of Firefighters</b>  |
|-----------------|--|-------------------------------|--|
| <b>Nitrogen</b> | Non-flammable. Use suitable extinguishing media for surrounding fire. Cylinders may rupture or explode if exposed to heat. | Non-flammable                 | <ul style="list-style-type: none"> <li>Respiratory protection may be needed for frequent or heavy exposure.</li> </ul> |

## Section 6: Accidental Release Measures

|                    | <b>Personal Precautions</b>   | <b>Environmental Precautions</b>                          | <b>Methods for Containment</b>   |
|--------------------|---|---|--|
| <b>Isobutylene</b> | Keep unnecessary people away, isolate hazard area and deny entry. Do not touch spilled material. Ventilate closed spaces before entering. | Avoid heat, flames, sparks and other sources of ignition. | Stop leak if possible without personal risk. Reduce vapors with water spray. Remove sources of ignition. |
| <b>Oxygen</b>      | Keep unnecessary people away, isolate hazard area and deny entry. Ventilate closed spaces before entering.                                | Avoid contact with combustible materials.                 | Stop leak if possible without personal risk.   |
| <b>Nitrogen</b>    | Keep unnecessary people away, isolate hazard area and deny entry. Stay upwind and keep out of low areas.                                  | No significant effects from contamination expected.       | Stop leak if possible without personal risk.   |

|                    | <b>Methods for Cleanup</b>   | <b>Other Information</b> |
|--------------------|------------------------------|--------------------------|
| <b>Isobutylene</b> | Evacuate and ventilate area. | None                     |
| <b>Oxygen</b>      | Stop leak and ventilate      | None                     |
| <b>Nitrogen</b>    | N/A                          | N/A                      |

## Section 7: Handling and Storage

|                    | <b>Handling</b>  | <b>Storage</b>                               |
|--------------------|--|--|
| <b>Isobutylene</b> | Store and handle in accordance with all current regulations and standards. Grounding and bonding required. Subject to storage regulations: U.S. OSHA 29 CFR 1910.110. Subject to storage regulations: U.S. OSHA 29 CFR 1910.101. | Keep separated from incompatible substances. |
| <b>Oxygen</b>      | Store and handle in accordance with all current regulations and standards. Subject to storage regulations: U.S. OSHA 29 CFR 1910.101.  | Keep separated from incompatible substances. |
| <b>Nitrogen</b>    | Store and handle in accordance with all current regulations and standards. Subject to storage regulations: U.S. OSHA 29 CFR 1910.101.  | Keep separated from incompatible substances. |

## Section 8: Exposure Controls/Personal Protection

|                    | <b>Exposure Guidelines</b>   |
|--------------------|--|
| <b>Isobutylene</b> | TLV-TWA: 250 ppm Carcinogenicity (ACGIH)                             |
| <b>Oxygen</b>      | OXYGEN, COMPRESSED GAS: No occupational exposure limits established. |
| <b>Nitrogen</b>    | NITROGEN, COMPRESSED GAS:<br>NITROGEN: ACGIH (simple asphyxiant)     |

### Engineering Controls

Handle only in fully enclosed systems.

|                    | Eye Protection   | Skin Protection  | Respiratory Protection   |
|--------------------|--|--|--|
| <b>Isobutylene</b> | For the gas: Eye protection not required, but recommended. For the liquid: Wear splash resistant safety goggles. Contact lenses should not be worn. Provide an emergency eye wash fountain and quick drench shower in the immediate work area. | For the gas: Protective clothing is not required. For the liquid: Wear appropriate protective, cold insulating clothing. | Any self-contained breathing apparatus with a full facepiece.        |
| <b>Oxygen</b>      | Eye protection not required, but recommended.  | Protective clothing is not required.   | Respiratory protection may be needed for frequent or heavy exposure. |
| <b>Nitrogen</b>    | Eye protection not required, but recommended.  | Protective clothing is not required.   | Respiratory protection may be needed for frequent or heavy exposure. |

### General Hygiene considerations

- Avoid breathing vapor or mist
- Avoid contact with eyes and skin
- Wash thoroughly after handling and before eating or drinking

## Section 9: Physical and Chemical Properties

|                    | Physical State | Appearance | Color     | Change in Appearance | Physical Form | Odor           | Taste     |
|--------------------|----------------|------------|-----------|----------------------|---------------|----------------|-----------|
| <b>Isobutylene</b> | Gas            | Clear      | Colorless | N/A                  | Liquefied gas | Petroleum odor | N/A       |
| <b>Oxygen</b>      | Gas            | Clear      | Colorless | N/A                  | Gas           | Odorless       | Tasteless |
| <b>Nitrogen</b>    | Gas            | Clear      | Colorless | N/A                  | Gas           | Odorless       | Tasteless |

|                    | Flash Point    | Flammability  | Partition Coefficient | Autoignition Temperature | Upper Explosive Limits | Lower Explosive Limits |
|--------------------|----------------|---------------|-----------------------|--------------------------|------------------------|------------------------|
| <b>Isobutylene</b> | -105 F (-76 C) | Not available | Not available         | 869 F (465 C)            | 0.096                  | 0.018                  |
| <b>Oxygen</b>      | Not flammable  | Not available | Not available         | Nonflammable             | Nonflammable           | Nonflammable           |
| <b>Nitrogen</b>    | Not flammable  | Not available | Not available         | Nonflammable             | Nonflammable           | Nonflammable           |

|                    | Boiling Point   | Freezing Point  | Vapor Pressure     | Vapor Density | Specific Gravity | Water Solubility | pH             | Odor Threshold                  | Evaporation Rate | Viscosity         |
|--------------------|-----------------|-----------------|--------------------|---------------|------------------|------------------|----------------|---------------------------------|------------------|-------------------|
| <b>Isobutylene</b> | 19 F (-7 C)     | -220 F (-140 C) | 3278 mmHg @ 37.7 C | 1.9 (Air=1)   | 0.5879 @ 25 C    | Almost insoluble | Not applicable | 20 ppm (46 mg/m3) (unspecified) | Not applicable   | Not available     |
| <b>Oxygen</b>      | -297 F (-183 C) | -360 F (-218 C) | 760 mmHg @ -183 C  | 1.1 (Air=1)   | Not applicable   | 3.2% @ 25 C      | Not applicable | Not available                   | Not applicable   | 0.02075 cP @ 25 C |
| <b>Nitrogen</b>    | -321 F (-196 C) | -346 F (-210 C) | 760 mmHg @ -196 C  | 0.967 (Air=1) | Not applicable   | 1.6% @ 20 C      | Not applicable | Not available                   | Not applicable   | 0.01787 cP @ 27 C |

|                    | Molecular Weight | Molecular Formula | Density          | Weight per Gallon | Volatility by Volume | Volatility     | Solvent Solubility                                       |
|--------------------|------------------|-------------------|------------------|-------------------|----------------------|----------------|--|
| <b>Isobutylene</b> | 56.12            | C4-H8             | Not available    | Not available     | 100%                 | Not applicable | Soluble: Organic solvents, alcohol, ether, sulfuric acid |
| <b>Oxygen</b>      | 31.9988          | O2                | 1.309 g/L @ 25 C | Not available     | Not applicable       | Not applicable | Soluble: Alcohol   |
| <b>Nitrogen</b>    | 28.0134          | N2                | 1.2506 g/L       | Not available     | 100%                 | 1              | Soluble: Liquid ammonia                                  |

## Section 10: Stability and Reactivity

|                    | Stability                                   | Conditions to Avoid                         | Incompatible Materials  |
|--------------------|---|---|---|
| <b>Isobutylene</b> | Stable at normal temperatures and pressure. | Stable at normal temperatures and pressure. | Oxidizing materials   |
| <b>Oxygen</b>      | Stable at normal temperatures and pressure. | Stable at normal temperatures and pressure. | Combustible materials, halo carbons, metals, bases, reducing agents, amines, metal salts, oxidizing materials, alkaline earth and alkali metals |
| <b>Nitrogen</b>    | Stable at normal temperatures and pressure. | Stable at normal temperatures and pressure. | Metals, oxidizing materials   |

|                    | Hazardous Decomposition Products     | Possibility of Hazardous Reactions           |
|--------------------|--------------------------------------|--|
| <b>Isobutylene</b> | Oxides of carbon                     | Can polymerize in the presence of catalysts. |
| <b>Oxygen</b>      | Miscellaneous decomposition products | Will not polymerize.                         |
| <b>Nitrogen</b>    | Oxides of nitrogen                   | Will not polymerize.                         |

## Section 11: Toxicology Information

### Acute Effects

|                    | Oral LD50  | Dermal LD50     | Inhalation   |
|--------------------|--|-----------------|--|
| <b>Isobutylene</b> | LC50 (rat, inhalation) = 620 g/m <sup>3</sup> / 4 hours<br>LC50 (mouse, inhalation) = 415 g/m <sup>3</sup> / 2 hours | Not available   | Irritation, nausea, vomiting, headache, symptoms of drunkenness, disorientation, tingling sensation, suffocation, convulsions, coma  |
| <b>Oxygen</b>      | Not established  | Not established | Irritation, changes in body temperature, nausea, difficulty breathing, irregular heartbeat, dizziness, disorientation, hallucinations, mood swings, pain in extremities, tremors, lung congestion, convulsions |
| <b>Nitrogen</b>    | Not available  | Not available   | Nausea, vomiting, difficulty breathing, headache, drowsiness, dizziness, tingling sensation, loss of coordination, convulsions, coma   |

|                    | Eye Irritation  | Skin Irritation                               | Sensitization   |
|--------------------|---|---|---|
| <b>Isobutylene</b> | Irritation, frostbite, blurred vision                           | Liquid: burns, frostbite                      | Central nervous system depression, difficulty breathing |
| <b>Oxygen</b>      | No information on significant adverse effects                   | No information on significant adverse effects | No significant target effects reported.                 |
| <b>Nitrogen</b>    | Contact with rapidly expanding gas may cause burns or frostbite | No information on significant adverse effects | Difficulty breathing                                    |

### Chronic Effects

|                    | Carcinogenicity | Mutagenicity    | Reproductive Effects | Developmental Effects |
|--------------------|-----------------|-----------------|----------------------|-----------------------|
| <b>Isobutylene</b> | Not listed.     | Not established | Not established      | No data               |
| <b>Oxygen</b>      | Not known.      | Available.      | Available.           | No data               |
| <b>Nitrogen</b>    | Not hazardous   | Not available   | Not available        | No data               |

## Section 12: Ecological Information

### Fate and Transport

|                    | Eco toxicity  | Persistence / Degradability | Bioaccumulation / Accumulation | Mobility in Environment |
|--------------------|---|-----------------------------|--------------------------------|-------------------------|
| <b>Isobutylene</b> | Fish toxicity: Not available<br>Invertebrate toxicity: Not available<br>Algal toxicity: Not expected<br>Phyto toxicity: Not | Not available               | Not available                  | Dissipates rapidly.     |

|                 |   |               |                     |               |
|-----------------|---|---------------|---------------------|---------------|
|                 | expected<br>Other toxicity: Not available   |               |                     |               |
| <b>Oxygen</b>   | Fish toxicity: Not available<br>Invertebrate toxicity: Not available<br>Algal toxicity: Not available<br>Phyto toxicity: Not available<br>Other toxicity: Not available | Not available | Low bioaccumulation | Not available |
| <b>Nitrogen</b> | Fish toxicity: Not available<br>Invertebrate toxicity: Not available<br>Algal toxicity: Not available<br>Phyto toxicity: Not available<br>Other toxicity: Not available | Not available | Not available       | Not available |

## Section 13: Disposal Considerations

|                    |   |
|--------------------|---|
| <b>Isobutylene</b> | Dispose in accordance with all applicable regulations.<br>Subject to disposal regulations: U.S. EPA 40 CFR 262.<br>Hazardous Waste Number(s): D001. |
| <b>Oxygen</b>      | Dispose in accordance with all applicable regulations.<br>Subject to disposal regulations: U.S. EPA 40 CFR 262.<br>Hazardous Waste Number(s): D001. |
| <b>Nitrogen</b>    | Dispose in accordance with all applicable regulations.  |

## Section 14: Transportation Information

### U.S. DOT 49 CFR 172.101

#### DOT Information For This Mixture

|                           |   |
|---------------------------|---|
| <b>Shipping Name</b>      | Compressed gas, n.o.s. (Nitrogen, Oxygen) |
| <b>UN Number</b>          | UN1956                                    |
| <b>Hazard Class</b>       | 2.2                                       |
| <b>Hazard Information</b> | Non-Flammable Gas                         |

#### Individual Component Information

|                    | <b>Proper Shipping Name</b>                                 | <b>ID Number</b> | <b>Hazard Class or Division</b> | <b>Packing Group</b> | <b>Labeling Requirements</b> | <b>Passenger Aircraft or Railcar Quantity Limitations</b> | <b>Cargo Aircraft Only Quantity Limitations</b> | <b>Additional Shipping Description</b> |
|--------------------|---|------------------|---------------------------------|----------------------|------------------------------|---|---|--|
| <b>Isobutylene</b> | ISOBUTYLENE<br>see also<br>PETROLEUM<br>GASES,<br>LIQUEFIED | UN1055           | 2.1                             | Not applicable       | 2.1                          | Forbidden   | 150 kg  | N/A                                    |

|                 | Proper Shipping Name | ID Number | Hazard Class or Division | Packing Group  | Labeling Requirements | Passenger Aircraft or Railcar Quantity Limitations | Cargo Aircraft Only Quantity Limitations | Additional Shipping Description |
|-----------------|----------------------|-----------|--------------------------|----------------|-----------------------|--|--|---------------------------------|
| <b>Oxygen</b>   | Oxygen, compressed   | UN1072    | 2.2                      | Not available  | 2.2; 5.1              | 75 kg or L   | 150 kg                                   | N/A                             |
| <b>Nitrogen</b> | Nitrogen, compressed | UN1066    | 2.2                      | Not applicable | 2.2                   | 75 kg or L   | 150 kg                                   | N/A                             |

### Canadian Transportation of Dangerous Goods

|                    | Shipping Name        | UN Number | Class    | Packing Group / Risk Group |
|--------------------|----------------------|-----------|----------|----------------------------|
| <b>Isobutylene</b> | Isobutylene          | UN1055    | 2.1      | Not applicable             |
| <b>Oxygen</b>      | Oxygen, compressed   | UN1072    | 2.2; 5.1 | Not applicable             |
| <b>Nitrogen</b>    | Nitrogen, compressed | UN1066    | 2.2      | Not applicable             |

## Section 15: Regulatory Information

### U.S. Regulations

|                    | CERCLA Sections | SARA 355.30    | SARA 355.40    |
|--------------------|-----------------|----------------|----------------|
| <b>Isobutylene</b> | Not regulated.  | Not regulated. | Not regulated. |
| <b>Oxygen</b>      | Not regulated.  | Not regulated. | Not regulated. |
| <b>Nitrogen</b>    | Not regulated.  | Not regulated. | Not regulated. |

### SARA 370.21

|                    | Acute | Chronic | Fire | Reactive | Sudden Release |
|--------------------|-------|---------|------|----------|----------------|
| <b>Isobutylene</b> | Yes   | No      | Yes  | No       | Yes            |
| <b>Oxygen</b>      | No    | No      | Yes  | No       | Yes            |
| <b>Nitrogen</b>    | Yes   | No      | No   | No       | Yes            |

### SARA 372.65

|                    |                |
|--------------------|----------------|
| <b>Isobutylene</b> | Not regulated. |
| <b>Oxygen</b>      | Not regulated. |
| <b>Nitrogen</b>    | Not regulated. |

### OSHA Process Safety

|                    |                |
|--------------------|----------------|
| <b>Isobutylene</b> | Not regulated. |
| <b>Oxygen</b>      | Not regulated. |
| <b>Nitrogen</b>    | Not regulated. |

### State Regulations

|  |                          |
|--|--------------------------|
|  | <b>CA Proposition 65</b> |
|--|--------------------------|

|                    |                |
|--------------------|----------------|
| <b>Isobutylene</b> | Not regulated. |
| <b>Oxygen</b>      | Not regulated. |
| <b>Nitrogen</b>    | Not regulated. |

### Canadian Regulations

|                    | <b>WHMIS Classification</b> |
|--------------------|-----------------------------|
| <b>Isobutylene</b> | A,B1                        |
| <b>Oxygen</b>      | A,C                         |
| <b>Nitrogen</b>    | A                           |

### National Inventory Status

|                    | <b>US Inventory (TSCA)</b> | <b>TSCA 12b Export Notification</b> | <b>Canada Inventory (DSL/NDSL)</b> |
|--------------------|----------------------------|-------------------------------------|------------------------------------|
| <b>Isobutylene</b> | Listed on inventory.       | Not listed.                         | Listed on inventory.               |
| <b>Oxygen</b>      | Listed on inventory.       | Not listed.                         | Not determined.                    |
| <b>Nitrogen</b>    | Listed on inventory.       | Not listed.                         | Listed on inventory.               |

## Section 16: Other Information

|                    | <b>NFPA Rating</b>                      |
|--------------------|---|
| <b>Isobutylene</b> | HEALTH=1 FIRE=4 REACTIVITY=0            |
| <b>Oxygen</b>      | HEALTH=0 FIRE=0 REACTIVITY=0 SPECIAL=OX |
| <b>Nitrogen</b>    | HEALTH=0 FIRE=0 REACTIVITY=0 SPECIAL=SA |

0 = minimal hazard, 1 = slight hazard, 2 = moderate hazard, 3 = severe hazard, 4 = extreme hazard