1 Identification

- **Product Identifier**
  - **Trade Name:** Precision Calibration Gas Mixture
  - **Product Number:** G-3515A(LQ)
  - **Relevant identified uses of the substance or mixture and uses advised against:**
    Used for calibration of gas measuring devices. Not suitable for human consumption.
  - **Product Description:** Calibration gas mixture consisting of Hydrogen Sulfide and Nitrogen.
  - **Application of the substance / the mixture:** Pressurized gas, requires appropriate regulator to dispense.

- **Details of the Supplier of the Safety Data Sheet:**
  - **Manufacturer/Supplier:**
    - Manufacturer: Industrial Scientific
    - 1 Life Way
    - Pittsburgh, PA 15205-7500
    - 1-412-788-4353
    - 1-800-DETECTS (338-3287)
    - www.indsci.com
  - Supplier: Industrial Scientific Canada
    - 167 Provincial Ave.
    - Unit 170
    - Sherwood Park, Alberta T8H0M3
  - **Emergency telephone number:**
    - Inside the US: 1-800-424-9300 (CHEMTREC, 24 hours)
    - Outside the US: 1-703-527-3887 (CHEMTREC, 24 hours)

2 Hazard(s) Identification

- **Classification of the substance or mixture:**
  - GHS04 Gas cylinder
  - Press. Gas H280 Contains gas under pressure; may explode if heated.
  - GHS07
  - Acute Tox. 4 H332 Harmful if inhaled.
  - Simple Asphyxiant May displace oxygen and cause rapid suffocation.

- **Label elements:**
  - **GHS label elements**
    The substance is classified and labeled according to the Globally Harmonized System (GHS).
  - **Hazard pictograms:**
    - GHS04
    - GHS07

- **Signal word:** Warning

(Contd. on page 2)
Trade Name: Precision Calibration Gas Mixture

- **Hazard statements:**
  - H280 Contains gas under pressure; may explode if heated.
  - H332 Harmful if inhaled.
  - May displace oxygen and cause rapid suffocation.

- **Precautionary statements:**
  - P261 Avoid breathing dust/fume/gas/mist/vapors/spray.
  - P271 Use only outdoors or in a well-ventilated area.
  - P304+P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing.
  - P312 Call a poison center/doctor if you feel unwell.
  - P410+P403 Protect from sunlight. Store in a well-ventilated place.

- **Unknown acute toxicity:**
  - 100 % of the mixture consists of component(s) of unknown toxicity.

- **Classification system:**
  - **NFPA ratings (scale 0 - 4):**
    - Health = 1
    - Fire = 0
    - Reactivity = 0
  - **HMIS-ratings (scale 0 - 4):**
    - HEALTH = 1
    - FIRE = 0
    - REACTIVITY = 0

- **Hazard(s) not otherwise classified (HNOC):** None known

### 3 Composition/Information on Ingredients

- **Chemical characterization: Mixtures**
  - **Description:** Mixture of substances listed below with non-hazardous additions.

- **Dangerous Components:**
<table>
<thead>
<tr>
<th>CAS: 7727-37-9</th>
<th>Nitrogen</th>
</tr>
</thead>
<tbody>
<tr>
<td>RTECS: QW 9700000</td>
<td>Press. Gas, H280; Simple Asphyxiant</td>
</tr>
<tr>
<td>CAS: 7783-06-4</td>
<td>Hydrogen Sulfide</td>
</tr>
<tr>
<td></td>
<td>⚠ Flam. Gas 1, H220; ⚠ Press. Gas, H280; ⚠ Acute Tox. 2, H330; ⚠ Aquatic Acute 1, H400</td>
</tr>
<tr>
<td></td>
<td>99.99 - 99.9999%</td>
</tr>
<tr>
<td></td>
<td>0.0001 - 0.01%</td>
</tr>
</tbody>
</table>

### 4 First-Aid Measures

- **Description of first aid measures**
  - **After inhalation:** In case of unconsciousness place patient stably in side position for transportation.
  - **After skin contact:** Generally the product does not irritate the skin.

- **Information for doctor**
  - **Most important symptoms and effects, both acute and delayed:** No further relevant information available.
  - **Indication of any immediate medical attention and special treatment needed:** No further relevant information available.

### 5 Fire-Fighting Measures

- **Extinguishing media**
  - **Suitable extinguishing agents:** Use fire fighting measures that suit the environment.
  - **For safety reasons unsuitable extinguishing agents:** No further relevant information is available.

(Contd. on page 3)
Trade Name: Precision Calibration Gas Mixture

- Special hazards arising from the substance or mixture:
  Closed containers may explode when exposed to extreme heat.
  If incinerated, product will release the following toxic fumes: Oxides of Nitrogen (NOx) and Sulfur.

- Advice for firefighters
  This gas mixture is not flammable; however, containers, when involved in fire, may rupture or burst in the heat of the fire. Firefighters should be aware of the presence of Hydrogen Sulfide in this gas mixture, which can cause significant health effects.

- Special protective equipment for firefighters:
  As in any fire, wear self-contained breathing apparatus pressure-demand (NIOSH approved or equivalent) and full protective gear to prevent contact with skin and eyes.

6 Accidental Release Measures

- Personal precautions, protective equipment and emergency procedures:
  Wear protective equipment. Keep unprotected persons away.
  Keep away from ignition sources
  Keep people at a distance and stay upwind.

- Environmental precautions:
  Inform authorities in case of gas release.

- Methods and material for containment and cleaning up:
  Dispose contaminated material as waste according to section 13.
  Ensure adequate ventilation.
  Dispose of the collected material according to regulations.

- Reference to other sections:
  See Section 7 for information on safe handling.
  See Section 8 for information on personal protection equipment.
  See Section 13 for disposal information.

7 Handling and Storage

- Handling
  - Precautions for safe handling:
    Ensure good ventilation/exhaustion at the workplace.
    Open and handle receptacle with care.
    Be aware of any signs of dizziness or fatigue; exposures to fatal concentrations of this gas mixture could occur without any significant warning symptoms due to the potential for oxygen deficiency (simple asphyxiation). Do not attempt to adjust, repair or in any other way modify the cylinders containing this gas mixture. If there is a malfunction or another type of operational problem, contact nearest distributor immediately.
  - Information about protection against explosions and fires:
    Pressurized container: protect from sunlight and do not expose to temperatures exceeding 50°C, i.e. electric lights. Do not pierce or burn, even after use.
    Keep protective respiratory device available.
    Do not spray on a naked flame or any incandescent material.

- Conditions for safe storage, including any incompatibilities
  Store away from strong oxidizing agents and strong bases.

- Storage
  - Requirements to be met by storerooms and receptacles:
    Store in a cool location.
    Cylinders should be firmly secured to prevent falling or being knocked over. Cylinders must be protected from the environment, and preferably kept at room temperature. Cylinders should be stored in dry, well-ventilated areas, away from sources of heat, ignition, and direct sunlight. Protect cylinders against physical damage. Full and empty cylinders should be segregated. Use a "first-on, first-out" inventory system to prevent full containers from being stored for long periods of time.

(Contd. on page 4)
Trade Name: Precision Calibration Gas Mixture

- **Information about storage in one common storage facility**: Not required.
- **Further information about storage conditions**: Store in cool, dry conditions in well sealed receptacles.
- **Specific end use(s)**: No further relevant information available.

### 8 Exposure Controls/Personal Protection

- **Additional information about design of technical systems**: No further data; see section 7.
- **Control parameters**:
  - **Components with occupational exposure limits**: The following constituent is the only constituent of the product which has a PEL, TLV or other recommended exposure limit. At this time, the remaining constituent has no known exposure limits.

<table>
<thead>
<tr>
<th><strong>7727-37-9 Nitrogen</strong></th>
<th><strong>7783-06-4 Hydrogen Sulfide</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>TLV withdrawn TLV; see App. F; simple asphyxiant</td>
<td></td>
</tr>
</tbody>
</table>

**PEL Ceiling limit value**: 20; 50* ppm
*10-min peak; once per 8-hr shift

**REL Ceiling limit value**: 15* mg/m³, 10* ppm
*10-min

**TLV Short-term value**: 7 mg/m³, 5 ppm
**Long-term value**: 1.4 mg/m³, 1 ppm

- **Additional information**: The lists that were valid during the creation of this SDS were used as basis.

#### Exposure controls:

- **Personal protective equipment**
- **General protective and hygienic measures**:
  - Keep away from foodstuffs, beverages and feed.
  - Immediately remove all soiled and contaminated clothing and wash before reuse.
  - Wash hands before breaks and at the end of work.
  - Store protective clothing separately.
- **Breathing equipment**:
  - Suitable respiratory protective device recommended.
- **Protection of hands**: Not required.
- **Material of gloves**: Not required.
- **Penetration time of glove material**: Not applicable.

### 9 Physical and Chemical Properties

- **Information on basic physical and chemical properties**
- **General Information**
- **Appearance**:
  - **Form**: Gaseous
  - **Color**: Colorless
  - **Odour**: Rotten
  - **Odor threshold**: Not determined.
  - **pH-value**: Not determined.
Trade Name: Precision Calibration Gas Mixture

- **Change in condition**
  - Melting point/Melting range: Not determined.
  - Boiling point/Boiling range: Not determined.
- **Flash point**: None
- **Flammability (solid, gaseous)**: Not determined.
- **Decomposition temperature**: Not determined.
- **Auto igniting**: Product is not self-igniting.
- **Danger of explosion**: Not determined.
- **Explosion limits**:
  - Lower: Not determined.
  - Upper: Not determined.
- **Vapor pressure**: Not determined.
- **Density**:
  - Relative density: Not determined.
  - Vapor density: Not determined.
  - Evaporation rate: Not applicable.
- **Solubility in / Miscibility with**:
  - Water: Not miscible or difficult to mix.
- **Partition coefficient (n-octanol/water)**: Not determined.
- **Viscosity**:
  - Dynamic: Not determined.
  - Kinematic: Not determined.
- **Solvent content**:
  - Organic solvents: 0.0%
- **Other information**: No further relevant information available.

### 10 Stability and Reactivity

- **Reactivity**: No further relevant information available.
- **Chemical stability**: Stable under normal conditions.
- **Thermal decomposition / conditions to be avoided**: No decomposition if used according to specifications.
- **Possibility of hazardous reactions**: No dangerous reactions known.
- **Conditions to avoid**: No further relevant information available.
- **Incompatible materials**: Strong oxidizing agents and strong bases.
- **Hazardous decomposition products**: Oxides of Nitrogen (NOx) and Sulfur.

### 11 Toxicological Information

- **Information on toxicological effects**:
- **Acute toxicity**:

<table>
<thead>
<tr>
<th>LD/LC50 values that are relevant for classification:</th>
<th>7783-06-4 Hydrogen Sulfide</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inhalative</td>
<td>LC50/4 h 634 mg/l (Mouse) 444 mg/l (Rat) LC50/96 hours 0.016 mg/l (Pimephales)</td>
</tr>
</tbody>
</table>
Trade Name: Precision Calibration Gas Mixture

- **Primary irritant effect:**
  - **On the skin:** No irritating effect.
  - **On the eye:** No irritating effect.
- **Additional toxicological information:**
  The product shows the following dangers according to internally approved calculation methods for preparations:

- **Carcinogenic categories:**
- **IARC (International Agency for Research on Cancer):**
  Group 1 - Carcinogenic to humans
  Group 2A - Probably carcinogenic to humans
  Group 2B - Possibly carcinogenic to humans
  Group 3 - Not classifiable as to its carcinogenicity to humans
  Group 4 - Probably not carcinogenic to humans

  None of the ingredients are listed.

- **NTP (National Toxicology Program):**
  None of the ingredients are listed.

- **OSHA-Ca (Occupational Safety & Health Administration):**
  None of the ingredients are listed.

### 12 Ecological Information

- **Toxicity:** The hazards for the aquatic environment are unknown.
- **Aquatic toxicity:** No further relevant information available.
- **Persistence and degradability:** No further relevant information available.
- **Behavior in environmental systems:**
- **Bioaccumulative potential:** No further relevant information available.
- **Mobility in soil:** No further relevant information available.
- **Additional ecological information:**
- **General notes:** Generally not hazardous for water.
- **Results of PBT and vPvB assessment:**
  - **PBT:** Not applicable.
  - **vPvB:** Not applicable.
- **Other adverse effects:** No further relevant information available.

### 13 Disposal Considerations

- **Waste treatment methods**
  - **Recommendation:**
    Release all residual gas pressure in a well ventilated area. Verify the cylinder is completely empty (0 PSIG). Remove or cover any hazard labels. Return empty supplier for recycling.
    NOTE: Check with the local waste authority before placing any gas cylinder into a waste container for pickup. Industrial Scientific encourages the consumer to return all cylinders.

- **Uncleaned packaging**
  - **Recommendation:** Return cylinder and unused product to supplier.

### 14 Transport Information

- **UN-Number:**
  - **DOT, ADR/ADN, IMDG, IATA**
    UN1956

(Contd. on page 7)
Trade Name: Precision Calibration Gas Mixture

- **UN proper shipping name:**
  - DOT, ADR/ADN
  - IMDG
  - IATA

- Transport hazard class(es):
  - DOT

### Limited Quantity

- **Limited Quantity:** 0.95 L (1 quart) per DOT 49 CFR 173.306, 307, 302, 305
  - **Class:** 2.2
  - **Label:** 2.2

### ADR/ADN

- **Limited Quantity:** 120 mls per Packing Instruction P200
  - **Class:** 2.2 1A
  - **Label:** 2.2

### IMDG

- **Limited Quantity:** 120 mls per Packing Instruction P200
  - **Class:** 2.2
  - **Label:** 2.2

(Contd. on page 8)
Trade Name: Precision Calibration Gas Mixture

IATA

Limited Quantity: Forbidden
- Class: 2.2
- Label: 2.2
- Packing group: Non-Regulated Material
- DOT, ADR/ADN, IMDG, IATA
- Environmental hazards: Not applicable.
- Special precautions for user: Not applicable.
- Danger code (Kemler): 20
- EMS Number: F-C,S-V
- Stowage Category A
- Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code: Not applicable.

Transport/Additional information:
- DOT
  - Quantity limitations: On passenger aircraft/rail: 75 kg
  - On cargo aircraft only: 150 kg
  - Remarks: Limited Quantity: 0.95 L (1 quart) per DOT 49 CFR 173.306, 307, 302, 305

- ADR/ADN
  - Excepted quantities (EQ): Code: E1
    - Maximum net quantity per inner packaging: 30 ml
    - Maximum net quantity per outer packaging: 1000 ml
  - Remarks: Limited Quantity: 120 mls per Packing Instruction P200

- IMDG
  - Limited quantities (LQ): 120 ml
  - Excepted quantities (EQ): Code: E1
    - Maximum net quantity per inner packaging: 30 ml
    - Maximum net quantity per outer packaging: 1000 ml
  - Remarks: Limited Quantity: 120 mls per Packing Instruction P200

- IATA
  - UN "Model Regulation": UN 1956 COMPRESSED GAS, N.O.S. (NITROGEN, HYDROGEN SULFIDE), 2.2

15 Regulatory Information

- Safety, health and environmental regulations/legislation specific for the substance or mixture:
  - SARA (Superfund Amendments and Reauthorization):
    - Section 355 (extremely hazardous substances):
      - 7783-06-4 Hydrogen Sulfide
    - Section 313 (Specific toxic chemical listings):
      - 7783-06-4 Hydrogen Sulfide
    - TSCA (Toxic Substances Control Act):
      - All ingredients are listed or exempt from listing.
Trade Name: Precision Calibration Gas Mixture

- **California Proposition 65:**
  - **Chemicals known to cause cancer:** None of the ingredients are listed.
  - **Chemicals known to cause reproductive toxicity for females:** None of the ingredients are listed.
  - **Chemicals known to cause reproductive toxicity for males:** None of the ingredients are listed.
  - **Chemicals known to cause developmental toxicity:** 630-08-0 Carbon Monoxide

- **New Jersey Right-to-Know List:** All ingredients are listed.

- **New Jersey Special Hazardous Substance List:**
  
<table>
<thead>
<tr>
<th>Chemical</th>
<th>CAS Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hydrogen Sulfide</td>
<td>7783-06-4</td>
</tr>
<tr>
<td>Hydrogen Sulfide</td>
<td>F4</td>
</tr>
</tbody>
</table>

- **Pennsylvania Right-to-Know List:** All ingredients are listed.

- **Pennsylvania Special Hazardous Substance List:**
  
<table>
<thead>
<tr>
<th>Chemical</th>
<th>CAS Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hydrogen Sulfide</td>
<td>7783-06-4</td>
</tr>
<tr>
<td>Hydrogen Sulfide</td>
<td>E</td>
</tr>
</tbody>
</table>

- **Carcinogenic categories:**
  - **EPA (Environmental Protection Agency):** 7783-06-4 Hydrogen Sulfide
  - **TLV (Threshold Limit Value established by ACGIH):** None of the ingredients are listed.
  - **NIOSH-Ca (National Institute for Occupational Safety and Health):** None of the ingredients are listed.

- **GHS label elements**
  The substance is classified and labeled according to the Globally Harmonized System (GHS).

- **Hazard pictograms:**
  - GHS04
  - GHS07

- **Signal word:** Warning
- **Hazard statements:**
  - H280 Contains gas under pressure; may explode if heated.
  - H332 Harmful if inhaled.
  - May displace oxygen and cause rapid suffocation.

- **Precautionary statements:**
  - P261 Avoid breathing dust/fume/gas/mist/vapors/spray.
  - P271 Use only outdoors or in a well-ventilated area.
  - P304+P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing.
  - P312 Call a poison center/doctor if you feel unwell.
  - P410+P403 Protect from sunlight. Store in a well-ventilated place.

(Contd. on page 10)
Trade Name: Precision Calibration Gas Mixture

- **National regulations:**
  None of the ingredients are listed.

- **Chemical safety assessment:** A Chemical Safety Assessment has not been carried out.

16 Other Information

- **Relevant phrases:**
  Industrial Scientific, makes no express or implied warranties, guarantees or representations regarding the product or the information herein, including but not limited to any implied warranty or merchantability or fitness for use. Industrial Scientific shall not be liable for any personal injury, property or other damages of any nature, whether compensatory, consequential, exemplary, or otherwise, resulting from any publication, use or reliance upon the information herein.

- **Date of preparation / last revision:** 06/11/2018 / -

- **Abbreviations and acronyms:**
  ADR: The European Agreement concerning the International Carriage of Dangerous Goods by Road
  ADN: The European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways
  IMDG: International Maritime Code for Dangerous Goods
  DOT: US Department of Transportation
  IATA: International Air Transport Association
  ACGIH: American Conference of Governmental Industrial Hygienists
  EINECS: European Inventory of Existing Commercial Chemical Substances
  ELINCS: European List of Notified Chemical Substances
  CAS: Chemical Abstracts Service (division of the American Chemical Society)
  NFPA: National Fire Protection Association (USA)
  HMIS: Hazardous Materials Identification System (USA)
  LC50: Lethal concentration, 50 percent
  LD50: Lethal dose, 50 percent
  PB: Persistent, Bioaccumulative and Toxic
  vPvB: very Persistent and very Bioaccumulative
  NIOSH: National Institute for Occupational Safety and Health
  OSHA: Occupational Safety & Health Administration
  TLV: Threshold Limit Value
  PEL: Permissible Exposure Limit
  REL: Recommended Exposure Limit
  Flam. Gas 1: Flammable gases – Category 1
  Press. Gas: Gases under pressure – Compressed gas
  Press. Gas: Gases under pressure – Dissolved gas
  Acute Tox. 2: Acute toxicity – Category 2
  Acute Tox. 4: Acute toxicity – Category 4
  Aquatic Acute 1: Hazardous to the aquatic environment - acute aquatic hazard – Category 1

- **Data compared to the previous version altered.**

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