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

1.1 Product identifier:

Trade name: Precision Calibration Gas Mixture G-3515A(EU)(LQ)

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

Used for the calibration of gas measuring devices. Not suitable for human consumption.

Product category: Calibration gas mixture consisting of Hydrogen Sulfide and Nitrogen.

Application of the substance / the mixture: Pressurized gas, requires appropriate regulator to dispense.

1.3 Details of the supplier of the safety data sheet

Manufacturer/Supplier:
Industrial Scientific
1 Life Way
Pittsburgh, PA 15205-7500
1-412-788-4353
1-800-DETECTS (338-3287)
www.indsci.com

1.4 Emergency telephone number:
Inside the US: 1-800-424-9300 (CHEMTREC, 24 hours)
Outside the US: 1-800-527-3887 (CHEMTREC, 24 hours)

SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

Classification according to Regulation (EC) No 1272/2008

GHS04 gas cylinder

Press. Gas C H280 Contains gas under pressure; may explode if heated.

GHS07

Acute Tox. 4 H332 Harmful if inhaled.

2.2 Label elements

Labelling according to Regulation (EC) No 1272/2008

The substance is classified and labelled according to the CLP regulation.

Hazard pictograms

GHS04 GHS07

Signal word: Warning

Hazard statements:

H280 Contains gas under pressure; may explode if heated.
H332 Harmful if inhaled.

Precautionary Statements:

P261 Avoid breathing dust/fume/gas/mist/vapours/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 2)
Trade name: Precision Calibration Gas Mixture G-3515A(EU)(LQ)

- Additional information:
  - EUH044 Risk of explosion if heated under confinement.
  - 100 % of the mixture consists of component(s) of unknown toxicity.
  - Contains 100 % of components with unknown hazards to the aquatic environment.
- 2.3 Other hazards:
  - None known
- Results of PBT and vPvB assessment
  - PBT: Not applicable.
  - vPvB: Not applicable.

SECTION 3: Composition/information on ingredients

- 3.1 Chemical characterisation: Mixtures
  - Description: Mixture of substances listed below with nonhazardous additions.

<table>
<thead>
<tr>
<th>CAS: 7727-37-9</th>
<th>Nitrogen</th>
</tr>
</thead>
<tbody>
<tr>
<td>EINECS: 231-783-9</td>
<td>Press. Gas D, H280</td>
</tr>
<tr>
<td>RTECS: QW 9700000</td>
<td>99.99-99.9999%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>CAS: 7783-06-4</th>
<th>Hydrogen Sulfide</th>
</tr>
</thead>
<tbody>
<tr>
<td>EINECS: 231-977-3</td>
<td>Flam. Gas 1, H220; Acute Tox. 2, H330; Aquatic Acute 1, H400; Press. Gas C, H280</td>
</tr>
<tr>
<td>Index number: 016-001-00-4</td>
<td>0.0001-0.01%</td>
</tr>
</tbody>
</table>

- Additional information: For the wording of the listed hazard phrases refer to section 16.

SECTION 4: First aid measures

- 4.1 Description of first aid measures
  - After inhalation:
    Get medical attention immediately. Move person to fresh air. If it is expected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus.
    In case of unconsciousness place patient stably in side position for transportation.
  - After skin contact:
    Generally the product does not irritate the skin.
    In cases of contact with liquified material, frostbite may occur. Immers frostbite in cool-warm water and seek medical attention.
  - After eye contact:
    Not anticipated under normal use.
    If irritation occurs thoroughly wash the exposed area and discontinue use. Seek medical attention if any adverse effect occurs.
  - After swallowing:
    Not a normal route of entry.

- 4.2 Most important symptoms and effects, both acute and delayed
  No further relevant information available.

- 4.3 Indication of any immediate medical attention and special treatment needed
  No further relevant information available.

SECTION 5: Firefighting measures

- 5.1 Extinguishing media
  - Suitable extinguishing agents:
    Use fire extinguishing methods suitable to surrounding conditions.
    Use water spray to cool fire-exposed containers.
  - For safety reasons unsuitable extinguishing agents: No further relevant information available.

- 5.2 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.
5.3 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.

Protective equipment:
As in any fire, wear self-contained breathing apparatus pressure-demand and full protective gear to prevent contact with skin and eyes.

SECTION 6: Accidental release measures

6.1 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 on the windward side.
Treat any fumes as toxic.
In a confined area, NIOSH approved respiratory protection may be required.

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

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

6.4 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.

SECTION 7: Handling and storage

7.1 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.

Information about fire and explosion protection:
Pressurised 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 respiratory protective device available.
Do not spray onto a naked flame or any incandescent material.
Do not cut, grind or weld on container that contains or contained product.

7.2 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:
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 against physical damage. Full and empty cylinders should be segregated. Use a "first-in, first-out" inventory system to prevent full containers from being stored for long periods of time.
Store in a cool location.

Information about storage in one common storage facility: Not required.
Further information about storage conditions: Store in cool, dry conditions in well sealed receptacles.
Trade name: Precision Calibration Gas Mixture G-3515A(EU)(LQ)

7.3 Specific end use(s) No further relevant information available.

SECTION 8: Exposure controls/personal protection

· Additional information about design of technical facilities: No further data; see item 7.

· 8.1 Control parameters
  · Ingredients with limit values that require monitoring at the workplace:
    The product does not contain any relevant quantities of materials with critical values that have to be monitored at the workplace.
  · Additional information: The lists valid during the making were used as basis.

· 8.2 Exposure controls
  · Personal protective equipment:
    · General protective and hygienic measures:
      Keep away from foodstuffs, beverages and feed.
      Immediately remove all soiled and contaminated clothing.
      Wash hands before breaks and at the end of work.
      Store protective clothing separately.
  · Respiratory protection:
    Suitable respiratory protective device recommended.

· Protection of hands: Not required.
· Material of gloves: Not required.
· Penetration time of glove material: Not applicable.
· Eye protection: Not necessary under normal conditions.

SECTION 9: Physical and chemical properties

· 9.1 Information on basic physical and chemical properties
  · General Information
    · Appearance:
      Form: Gaseous
      Colour: Colorless
      Odour: Rotten
    · pH-value: Not determined.
  · Change in condition
    Melting point/freezing point: Not determined.
    Initial boiling point and boiling range: Not determined.
  · Flash point: Not applicable.
  · Flammability (solid, gas): Not determined.
  · Decomposition temperature: Not determined.
  · Auto-ignition temperature: Product is not self-igniting.
  · Explosive properties: Not determined.
  · Explosion limits:
    Lower: Not determined.
    Upper: Not determined.
Trade name: Precision Calibration Gas Mixture G-3515A(EU)(LQ)

- Vapour pressure: Not determined.
- Density:
  - Relative density: Not determined.
  - Vapour 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 %
- 9.2 Other information
  - No further relevant information available.

SECTION 10: Stability and reactivity

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

SECTION 11: Toxicological information

- 11.1 Information on toxicological effects
  - Acute toxicity
    Harmful if inhaled.
  - LD/LC50 values relevant for classification:
    7783-06-4 Hydrogen Sulfide
    | Inhalative | LC50/4 h | 634 mg/l (Mouse) |
    |           |         | 444 mg/l (Rat)   |
    | LC50/96 hours |     | 0.016 mg/l (Pimephales) |
  - Primary irritant effect:
  - Skin corrosion/irritation Based on available data, the classification criteria are not met.
  - Serious eye damage/irritation Based on available data, the classification criteria are not met.
  - Sensitisation: Based on available data, the classification criteria are not met.
  - CMR effects (carcinogenicity, mutagenicity and toxicity for reproduction):
    - Germ cell mutagenicity Based on available data, the classification criteria are not met.
    - Carcinogenicity Based on available data, the classification criteria are not met.
    - Reproductive toxicity Based on available data, the classification criteria are not met.
  - STOT (Specific target organ toxicity)-single exposure
    Based on available data, the classification criteria are not met.
  - STOT (Specific target organ toxicity)-repeated exposure
    Based on available data, the classification criteria are not met.
  - Aspiration hazard Based on available data, the classification criteria are not met.
SECTION 12: Ecological information

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

SECTION 13: Disposal considerations

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

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

SECTION 14: Transport information

- **14.1 UN-Number**
  - **ADR/ADN, IMDG, IATA** UN1956
  - **UN proper shipping name** UN1956 COMPRESSED GAS, N.O.S. (NITROGEN, HYDROGEN SULFIDE)
  - **IMDG** COMPRESSED GAS, N.O.S. (NITROGEN, HYDROGEN SULFIDE)
  - **IATA** Compressed gas, n.o.s. (Nitrogen, Hydrogen Sulfide)
- **14.3 Transport hazard class(es)**
  - **ADR/ADN** Limited Quantity: 120 mls per Packing Instruction P200
  - **Class** 2.2 1A

(Contd. of page 5)
Trade name: Precision Calibration Gas Mixture G-3515A(EU)(LQ)

- **Label**: 2.2

**IMDG**

Limited Quantity

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

**IATA**

Limited Quantity: Forbidden
- **Class**: 2.2
- **Label**: 2.2

- **14.4 Packing group**
- **ADR/ADN, IMDG, IATA**: Non-Regulated Material
- **14.5 Environmental hazards**: Not applicable.
- **14.6 Special precautions for user**: Not applicable.
- **Danger code (Kemler)**: 20
- **EMS Number**: F-C,S-V
- **Stowage Category**: A

- **14.7 Transport in bulk according to Annex II of Marpol and the IBC Code**: Not applicable.

- **Transport/Additional information**:
  
- **ADR/ADN**: Limited Quantity: 120 mls per Packing Instruction P200
  
- **Limited quantities (LQ)**
  - 120 ml
  - Code: E1
  
- **Excepted quantities (EQ)**
  - Maximum net quantity per inner packaging: 30 ml
  - Maximum net quantity per outer packaging: 1000 ml
  - 3

- **IMDG**

- **Limited quantities (LQ)**
  - 120 ml
  - Code: E1

- **Excepted quantities (EQ)**
  - Maximum net quantity per inner packaging: 30 ml
  - Maximum net quantity per outer packaging: 1000 ml

- **Remarks**:

- **IATA**

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

(Contd. on page 8)
SECTION 15: Regulatory information

- **15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture**
  - Directive 2012/18/EU
  - Named dangerous substances - ANNEX I None of the ingredients are listed.

- **National regulations:**
  - The product is not subject to be labelled according with the prevailing version of the regulations on hazardous substances.

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

SECTION 16: Other information

- **Relevant phrases**
  - H220 Extremely flammable gas.
  - H280 Contains gas under pressure; may explode if heated.
  - H330 Fatal if inhaled.
  - H400 Very toxic to aquatic life.

- **Abbreviations and acronyms:**
  - ADR: Accord européen sur le transport des marchandises dangereuses par Route (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
  - IATA: International Air Transport Association
  - GHS: Globally Harmonised System of Classification and Labelling of Chemicals
  - 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)
  - LC50: Lethal concentration, 50 percent
  - LD50: Lethal dose, 50 percent
  - PBT: Persistent, Bioaccumulative and Toxic
  - vPvB: very Persistent and very Bioaccumulative
  - Flam. Gas 1: Flammable gases – Category 1
  - Press. Gas C: Gases under pressure – Compressed gas
  - Press. Gas D: 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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