Material Safety Data Sheet

Revision 12: 12/2013
Material Name: DrägerSensors™ (classified as hazardous according to UN2796)
P/N: 4594899

**Section 1 - Chemical Product and Company Identification**

**Product Use:** Detection of gases, measuring of gas concentrations

**Manufacturer Information**
Dräger Safety AG & Co. KGaA
Revalistr. 1
23560 Lübeck
Germany

**Distributor Information**
Dräger Safety, Inc.
101 Technology Drive
Pittsburgh, PA 15275-1057
Phone: 412-787-8833
Fax: 412-787-2207
Emergency # 1-800-424-9300 (CHEMTREC)

**Relevant Products:**

<table>
<thead>
<tr>
<th>Part-No.</th>
<th>Trade Name</th>
<th>Part-No.</th>
<th>Trade Name</th>
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<td>45 10 092</td>
<td>Sensor PAC II SO2</td>
<td>88 01 032</td>
<td>MicroPac H2S</td>
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<tr>
<td>68 03 691</td>
<td>CO-Sensor</td>
<td>88 06 481</td>
<td>CO-Sensor head for suction of gases</td>
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<tr>
<td>68 05 900</td>
<td>PAC H2S</td>
<td>68 06 330</td>
<td>PAC CO</td>
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<tr>
<td>68 07 100</td>
<td>Sensor Conytron</td>
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<td>Sensor PAC H2S 500ppm</td>
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<td>68 08 770</td>
<td>NO2 - Sensor</td>
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<td>SO2 Sensor PAC</td>
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<td>OV Sensor</td>
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<td>Dräger X2 EIO</td>
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<td>DrägerSensor™ X2 NF3</td>
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</table>
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<table>
<thead>
<tr>
<th>Part-No.</th>
<th>Trade Name</th>
<th>Part-No.</th>
<th>Trade Name</th>
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<td>68 51 144</td>
<td>Dräger OxyTrace INCU (MX01050)</td>
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<td>Dräger OxyTrace-Sensor (VE) (MX01049)</td>
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*** Section 2 - Composition / Information on Ingredients ***

<table>
<thead>
<tr>
<th>CAS #</th>
<th>Component</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>7664-93-9</td>
<td>Sulfuric acid</td>
<td>*</td>
</tr>
</tbody>
</table>

Component Information/Information on Non-Hazardous Components
This material is considered an "article" under 29 CFR 1910.1200 (Hazard Communication). The information in this MSDS is provided for the contents of the article, which may be potentially hazardous from accidental exposure.

*DrägerSensors™ usually contain small amounts (2-8 mL) of sulfuric acid as an electrolyte. The sensor housings are made from polyethylene, polypropylene and polyamide.

*** Section 3 - Hazards Identification ***

Emergency Overview
This is a solid plastic housing material containing a sensor. Under normal conditions of use, this product does not pose any physical hazard or health risk. Improper handling, leaks and/or damage to the sensor may release caustic sulfuric acid. Contents are severely irritating and corrosive. Contents cause burns. The following information on this MSDS is based only on the contents of the sensor if it would become exposed.

Potential Health Effects: Eyes
Eye contact with contents causes corrosive damage with burns, severe irritation and possible eye injury.

Potential Health Effects: Skin
Skin contact with contents causes corrosive damage with burns, severe irritation and pain.

Potential Health Effects: Ingestion
Ingestion of contents may cause severe irritation to the gastrointestinal system and risk of perforation in the esophagus and stomach.

Potential Health Effects: Inhalation
Inhalation of contents may cause nose and throat irritation, headache, cough and an increase in respiratory rate.

*** Section 4 - First Aid Measures ***

First Aid: Eyes
Immediately flush eyes with water for at least 15 minutes, while holding eyelids open. Seek medical attention at once.

First Aid: Skin
In case of contact, immediately remove contaminated clothing and flush skin with copious amounts of water. Wash contaminated clothing before reuse. Call a physician immediately.

First Aid: Ingestion
If the material is swallowed, get immediate medical attention or advice -- Do not induce vomiting.

First Aid: Inhalation
If symptoms are experienced, remove source of contamination or move victim to fresh air. If breathing is difficult, give oxygen if qualified personnel are available. Do NOT perform mouth-to-mouth resuscitation. Call a physician immediately.
*** Section 5 - Fire Fighting Measures ***

Flash Point: Not Available
Upper Flammable Limit (UFL): Not Available
Auto Ignition: Not Available
Rate of Burning: Not Available
General Fire Hazards
   This material is non-flammable.
Hazardous Combustion Products
   Thermal decomposition or combustion of the plastic housing and sensor contents may release carbon monoxide, carbon dioxide and sulfur oxides.
Extinguishing Media
   Foam, carbon dioxide or water fog.
Fire Fighting Equipment/Instructions
   Fire fighters should wear full-face, self contained breathing apparatus and impervious protective clothing. Fire fighters should avoid inhaling any combustion products.

*** Section 6 - Accidental Release Measures ***

Containment Procedures
   Stop the flow of material, if this is without risk. Do not allow spilled material to contact eyes or skin. Do not breath vapors or mists of spilled product. Block any potential routes to water systems.
Clean-Up Procedures
   Wear appropriate protective equipment and clothing during clean-up. Absorb spill with inert material. Shovel material into appropriate container for disposal. Thoroughly wash the area with water after a spill or leak clean-up.
Evacuation Procedures
   Isolate area. Keep unnecessary personnel away.
Special Procedures
   Wear appropriate personal protective equipment.

*** Section 7 - Handling and Storage ***

Handling Procedures
   Handle according to all relevant sensor data sheets/instructions for use. This applies when handling electrochemical DrägerSensors™ including all calibration activities and when handling calibration gases. Calibration activities should always be carried out in areas which are well ventilated or provided with an appropriate exhausting device. Observe hazard information.
Storage Procedures
   Store electrochemical DrägerSensors™ according to the conditions stated in the sensor data sheets. PAC sensors should be stored at -40°C +/- 40°C (-40°F +/- 104°F); Oxygen sensors at 20°C +/- 40°C (68°F +/- 104°F); XS and Polytron sensors at 0°C +/- 30°C (32°F +/- 86°F). All sensors should be stored in their original packaging. Observe the use-by date indicated on the packaging.

*** Section 8 - Exposure Controls / Personal Protection ***

Exposure Guidelines
A: General Product Information
   With normal handling of product there should be no exposure to contents. However, if exposure does occur, follow the recommended exposure limits.

B: Component Exposure Limits
   Sulfuric acid (7664-93-9)
      ACGIH: 0.2 mg/m3 TWA (thoracic fraction)
      OSHA: 1 mg/m3 TWA
      NIOSH: 1 mg/m3 TWA

Engineering Controls
   Use local exhaust ventilation.
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PERSONAL PROTECTIVE EQUIPMENT
Personal Protective Equipment: Eyes/Face
If contents are released from sensor, wear chemical goggles; face shield (if splashing is possible).

Personal Protective Equipment: Skin
Wear leather or other appropriate work gloves, if necessary for type of operation. If contents are released from sensor, use impervious gloves.

Personal Protective Equipment: Respiratory
If airborne concentrations are above the applicable exposure limits, use NIOSH approved respiratory protection.

Personal Protective Equipment: General
Eye wash fountain and emergency showers are recommended. Use good industrial hygiene practices in handling this material.

*** Section 9 - Physical & Chemical Properties ***

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appearance</td>
<td>Plastic housing</td>
</tr>
<tr>
<td>Physical State</td>
<td>Solid</td>
</tr>
<tr>
<td>Vapor Pressure</td>
<td>Not applicable</td>
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<tr>
<td>Boiling Point</td>
<td>Not applicable</td>
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<tr>
<td>Solubility (H2O)</td>
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<tr>
<td>Odor</td>
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<td>pH</td>
<td>&lt;1 (Sulfuric Acid)</td>
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<td>Vapor Density</td>
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<tr>
<td>Melting Point</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Specific Gravity</td>
<td>Not applicable</td>
</tr>
</tbody>
</table>

*** Section 10 - Chemical Stability & Reactivity Information ***

Chemical Stability
Stable under normal conditions.

Chemical Stability: Conditions to Avoid
Not applicable.

Incompatibility
Not applicable in product physical form. Contents can react with water, basic substances, and organic material.

Hazardous Decomposition
Thermal decomposition or combustion of the plastic housing and sensor contents may release carbon monoxide, carbon dioxide and sulfur oxides.

Hazardous Polymerization
Will not occur.

*** Section 11 - Toxicological Information ***

Acute and Chronic Toxicity
A: General Product Information
Under normal conditions of use this product is not expected to pose any health risks. The information in Section 3 is based on the sulfuric acid contents of the this product if they would be released due to improper handling, leaks, destruction and/or damage to the electrochemical DrägerSensor™.
Sulfuric acid is corrosive to the eyes, skin, respiratory system and gastrointestinal tract. Exposure to sulfuric acid may lead to dental erosion, bronchitis, fibrosis, emphysema and pulmonary edema. Exposure to mists containing sulfuric acid have been implicated in causing cancer in humans.

B: Component Analysis - LD50/LC50
Sulfuric acid (7664-93-9)
Oral LD50 Rat: 2140 mg/kg

Carcinogenicity
A: General Product Information
No information available for the product.

B: Component Carcinogenicity
Sulfuric acid (7664-93-9)
ACGIH: A2 - Suspected Human Carcinogen (contained in strong inorganic acid mists)
IARC: Monograph 54, 1992 (Group 1 (carcinogenic to humans))
**Section 12 - Ecological Information**

**Ecotoxicity**
A: General Product Information
No information available for the product.

B: Component Analysis - Ecotoxicity - Aquatic Toxicity
No ecotoxicity data are available for this product's components.

**Environmental Fate**
No information available for the product.

**Section 13 - Disposal Considerations**

**US EPA Waste Number & Descriptions**
A: General Product Information
Wastes must be tested using methods described in 40 CFR Part 261 to determine if it meets applicable definitions of hazardous wastes.

B: Component Waste Numbers
No EPA Waste Numbers are applicable for this product's components.

**Disposal Instructions**
Utilized and exhausted sensors must not be disposed of as household waste. Dispose of waste material according to Local, State, Federal, and Provincial Environmental Regulations or return to the manufacturer or distributor for recycling/disposal. Do not allow this material to drain into sewers/water supplies.

**Section 14 - Transportation Information**

**US DOT Information**
Shipping Name: Sulfuric acid
UN/NA #: UN2796 Hazard Class: 8 Packing Group: II
Required Label(s): CORROSIVE

**TDG Information**
Shipping Name: Sulfuric acid
UN/NA #: UN2796 Hazard Class: 8 Packing Group: II
Required Label(s): CORROSIVE

**Section 15 - Regulatory Information**

**US Federal Regulations**
A: General Product Information
No additional information available.

B: Component Analysis
This material contains one or more of the following chemicals required to be identified under SARA Section 302 (40 CFR 355 Appendix A), SARA Section 313 (40 CFR 372.65) and/or CERCLA (40 CFR 302.4).

**Sulfuric acid (7664-93-9)**
SARA 302: 1000 lb TPQ
SARA 313: 1.0 % de minimis concentration (acid aerosols including mists, vapors, gas, fog, and other airborne forms of any particle size)
CERCLA: 1000 lb final RQ; 454 kg final RQ

**State Regulations**
A: General Product Information
Other state regulations may apply. Check individual state requirements.

B: Component Analysis - State
The following components appear on one or more of the following state hazardous substances lists:

<table>
<thead>
<tr>
<th>Component</th>
<th>CAS</th>
<th>CA</th>
<th>MA</th>
<th>MN</th>
<th>NJ</th>
<th>PA</th>
<th>RI</th>
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<tr>
<td>Sulfuric acid</td>
<td>7664-93-9</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>
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Canadian WHMIS Information
A: General Product Information
This product has been classified in accordance with the hazard criteria of the Canadian Controlled Products Regulations (CPR) and the MSDS contains all the information required by the CPR.

B: Component Analysis - WHMIS IDL
The following components are identified under the Canadian Hazardous Products Act Ingredient Disclosure List:

<table>
<thead>
<tr>
<th>Component</th>
<th>CAS #</th>
<th>Minimum Concentration</th>
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</thead>
<tbody>
<tr>
<td>Sulfuric acid</td>
<td>7664-93-9</td>
<td>1 % (English item 1485, French item 138)</td>
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</table>

WHMIS Classification: Class E - Corrosive

Additional Regulatory Information
A: General Product Information
This product is considered to be an article and is exempt from the U.S. EPA TSCA Inventory.

B: Component Analysis - Inventory

<table>
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<th>Component</th>
<th>CAS #</th>
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<td>DSL</td>
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</table>

*** Section 16 - Other Information ***

Other Information
Reasonable care has been taken in the preparation of this information, but the manufacturer makes no warranty of merchantability or any other warranty, expressed or implied, with respect to this information. The manufacturer makes no representations and assumes no liability for any direct, incidental or consequential damages resulting from its use.

Key/Legend
EPA = Environmental Protection Agency; TSCA = Toxic Substance Control Act; ACGIH = American Conference of Governmental Industrial Hygienists; IARC = International Agency for Research on Cancer; NIOSH = National Institute for Occupational Safety and Health; NTP = National Toxicology Program; OSHA = Occupational Safety and Health Administration., NJTSR = New Jersey Trade Secret Registry.

Contact: Product Manager
Contact Phone: 412-787-8383

This is the end of MSDS # 4594899