

Material Safety Data Sheet

Revision 2: 7/21/2009

ID: 4594612

Material Name: Draeger Tubes™ (which are classified as dangerous goods, PG III)

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

Product Use: Detection of gases, measuring of gas concentrations

Manufacturer Information

Draeger Safety AG & Co. KGaA
Revalstr. 1
23560 Lübeck
Germany

Distributor/Contact Information

Draeger Safety, Inc
101 Technology Drive
Pittsburgh, PA 15275-1057

Phone: (412) 787-8383
Fax: (412) 787-2207
Emergency # 1-800-424-9300 (CHEMTREC)

General Comments

NOTE: Emergency telephone numbers are to be used only in the event of chemical emergencies involving a spill, leak, fire, exposure, or accident involving chemicals. All non-emergency questions should be directed to customer service.

Relevant Products

Part No.	Trade Name	Part No.	Trade Name
64 00 681	Alco-Check 0.4	64 00 731	Alco-Check 0.5 Single Pack
64 00 721	Alco-Check 0.5 20 Test/Display	64 00 901	1000 DT Alco-Check 0.5 Bulk
64 00 441	1000 DT Alco-Check 0.8 Bulk	64 00 700	Alco-Check 0.8 Single Pack
64 00 701	Alco-Check 0.8	59 40 543	Alcotest Box of TEN/USA
CH 00 199	Alcotest Box of English	CH 00 201	Alcotest Box of 10 French
CH 00 222	Alcotest Pack of 10	CH 00 225	Alcotest, Box of 3
CH 00 237	Alcotest-Tubes (10 Pieces)	CH 00 270	Respiratory CO-Test Unit
CH 24 801	Benzene 0.05	81 01 841	Benzene 0.5/c
81 01 231	Benzene 2/a	67 28 071	Benzene 5/b
81 01 741	Benzene 15/a	64 00 501	Gasoline Detector
67 28 861	Chloroform 2/a	67 33 051	Carbon Monoxide 2/a
CH 19 701	Carbon Monoxide 8/a	CH 20 601	Carbon Monoxide 10/b
CH 25 401	Hydrocarbons 2	CH 25 601	Carbon Monoxide 5/c
CH 26 101	Hydrocarbons 0.1%/b	CH 29 901	Carbon Monoxide 0.3%/b
67 18 301	CO 200/a + CO ₂ 2%/a	67 28 121	Carbon Monoxide 50/a-L
67 28 511	Carbon Monoxide 5/a-P	67 28 751	Carbon Monoxide 0.001%/a
67 28 741	Carbon Monoxide 10/a-L	64 00 491	Motor Fuels Detector
67 28 161	Methyl Acrylate 5/a	67 24 601	Methylene Chloride 100/a
67 28 881	Methylene Chloride 50/a-L	67 28 371	Oil 10/a-P
67 33 031	Oil Mist 1/a	81 03 111	Oil PN
67 28 081	Oxygen 5%/B	81 03 261	Oxygen 5%/C
67 28 351	Carbon Disulphide 5/a	67 28 621	Carbon Disulphide 10/a-L
67 33 141	Styrene 10/b	67 33 161	Xylene 10/a
81 03 571	Hydrocarbons 0.1 %/c	81 03 581	Hydrocarbons 2/a
81 03 511	PID Pre-filter Tube Benzene	67 28 621	Carbon Monoxide 10/a-L
81 04 321	Chlorpikrine 0.1/a	81 03 541	Ethyl Formate 20/a
CH 28 401	Polytest	81 03 501	Styrene 10/b

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*** Section 2 - Composition / Information on Ingredients ***

CAS #	Component	Percent*
Not Available	Inert carrier material and glass of the tube	<90
8014-95-7	Sulfuric acid / Fuming Sulfuric Acid (Oleum)	0-10
7647-01-0	Hydrochloric acid	0-10
92202-42-1	Titanium salts	0-5
Not Available	Chromium (VI) salts	0-2
7803-57-8	Hydrazine hydrate	0-1
Not Available	Selenium salts	0-1
Not Available	Palladium, inorganic compounds	0-0.5
50-00-0	Formaldehyde	0-0.5
12029-98-0	Iodine pentoxide	0-0.5
95-53-4	o-Toluidine	0-0.0005

Component Related Regulatory Information

This product may be regulated, have exposure limits or other information identified as the following: Sulfuric acid (7664-93-9).

Component Information/Information on Non-Hazardous Components

This product is considered hazardous under 29 CFR 1910.1200 (Hazard Communication).

*based on the gross weight of the Draeger-Tube™.

The information contained in this MSDS is applicable to the hazardous contents of the Draeger-Tube™.

*** Section 3 - Hazards Identification ***

Emergency Overview

This product is a non-flammable, granulate filled glass tube. Contents of the tube are corrosive to the eyes, skin, gastrointestinal tract and may cause irritation to the respiratory tract. Improper handling, leaks and/or damage to the tube may release caustic sulfuric acid in mist or solid form. Tube contents may react vigorously with water.

Potential Health Effects: Eyes

Eye contact with contents of tube and vapor or mist from the tube may cause corrosive damage with severe irritation, burns, and possible eye injury.

Potential Health Effects: Skin

Skin contact with contents of tube and vapor or mist from the tube may cause corrosive damage with severe irritation and burns. Burns may be enhanced in the presence of water.

Potential Health Effects: Ingestion

Product contents may be harmful or fatal if swallowed. This product may produce corrosive damage to the gastrointestinal tract if it is swallowed.

Potential Health Effects: Inhalation

Inhalation of vapor or mist from tube contents may cause severe irritation or injury to the respiratory system. Inhalation of vapor or mist from tube contents may cause pulmonary edema, emphysema, and permanent changes in pulmonary function.

HMIS Ratings: Health: 3 Fire: 0 Physical Hazard: 2 Pers. Prot.: gloves, safety glasses with side shields

Hazard Scale: 0 = Minimal 1 = Slight 2 = Moderate 3 = Serious 4 = Severe * = Chronic hazard

*** 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. Danger of corneal clouding.

First Aid: Skin

Rinse with plenty of water. Discard any shoes or clothing items that cannot be decontaminated. If irritation persists, get medical attention.

First Aid: Ingestion

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

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First Aid: Inhalation

If mist or vapor of this product is inhaled, remove person immediately to fresh air. Seek medical attention if symptoms develop or persist.

First Aid: Notes to Physician

Tube contents can be neutralized with lime and water, or rinsed with plenty of water, then treated with polyethylene glycol 400. After ingestion, there is danger of the esophagus and the stomach becoming perforated.

*** Section 5 - Fire Fighting Measures ***

Flash Point: Not applicable

Upper Flammable Limit (UFL): Not applicable

Auto Ignition: Not applicable

Rate of Burning: Not applicable

General Fire Hazards

This material is non-flammable. Glass tube contains oleum which reacts with water to form heat and toxic vapor and mist. Contents of tube and vapors released from broken tube may be corrosive to eyes, skin, respiratory and gastrointestinal tract. Burns may be enhanced in the presence of water.

Hazardous Combustion Products

Thermal decomposition of tube contents may produce toxic sulfur oxides, carbon monoxide, etc.

Extinguishing Media

Dry chemical, carbon dioxide. Adapt extinguishing media to the environment. Materials in the glass tubes are non-flammable. Avoid direct contact of this product with water since this can cause a violent exothermic reaction.

Fire Fighting Equipment/Instructions

Wear full protective clothing, including helmet, self-contained positive pressure or pressure demand breathing apparatus, protective clothing and face mask.

NFPA Ratings: Health: 3 Fire: 0 Reactivity: 2

Hazard Scale: 0 = Minimal 1 = Slight 2 = Moderate 3 = Serious 4 = Severe

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

Containment Procedures

Not applicable.

Clean-Up Procedures

Sweep up or scrape broken tubes into container for disposal. Avoid the generation of dusts during clean-up. Do not pick up glass with bare hands. Dilute tube contents with water and baking soda. 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

Follow all Local, State, Federal and Provincial regulations for disposal.

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

Handling Procedures

Contents are corrosive. Do not get this material in contact with skin or eyes. Do not inhale vapors or mists of this product. Avoid contact with water. Tubes are not recommended for qualitative mask fit-testing. Open tubes should be capped and stored in a well ventilated area until they are disposed of or completely used.

Storage Procedures

Keep the container tightly closed and dry. Do not store above 77° F (25° C). Store the product in original packaging. The expiry date on the packaging must be considered.

*** 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.

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B: Component Exposure Limits

Sulfuric acid / Fuming Sulfuric Acid (Oleum) (8014-95-7)

ACGIH: 0.2 mg/m3 TWA (thoracic fraction) (related to Sulfuric acid)
OSHA: 1 mg/m3 TWA (related to Sulfuric acid)
NIOSH: 1 mg/m3 TWA (related to Sulfuric acid)

Hydrochloric acid (7647-01-0)

ACGIH: 2 ppm Ceiling
OSHA: 5 ppm Ceiling; 7 mg/m3 Ceiling
NIOSH: 5 ppm Ceiling; 7 mg/m3 Ceiling

Chromium (VI) salts (Not Available)

OSHA: 0.1 mg/m3 Ceiling
NIOSH: 0.001 mg/m3 TWA (as Cr)

Formaldehyde (50-00-0)

ACGIH: 0.3 ppm Ceiling
OSHA: 0.75 ppm TWA; 2 ppm STEL; 0.5 ppm Action Level (Irritant and potential cancer hazard - see 29 CFR 1910.1048)
NIOSH: 0.016 ppm TWA
0.1 ppm Ceiling (15 min)

o-Toluidine (95-53-4)

ACGIH: 2 ppm TWA
skin - potential for cutaneous absorption
OSHA: 5 ppm TWA; 22 mg/m3 TWA
Prevent or reduce skin absorption
NIOSH: Potential for dermal absorption

Engineering Controls

Use general ventilation.

PERSONAL PROTECTIVE EQUIPMENT

Personal Protective Equipment: Eyes/Face

Wear safety glasses with side shields.

Personal Protective Equipment: Skin

Use impervious gloves. Observe the glove manufacturer's instructions on permeability and rupture times as well as the specific workplace conditions. Wash thoroughly after handling.

Personal Protective Equipment: Respiratory

If ventilation is not sufficient to effectively prevent buildup of aerosols or vapors, appropriate NIOSH/MSHA respiratory protection must be provided.

Personal Protective Equipment: General

Use good industrial hygiene practices in handling this material.

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

Appearance: Glass tubes containing colorless and/or colored solids.	Odor: Slightly pungent to odorless
Physical State: Solid	pH: Not available (strong acidic reaction)
Vapor Pressure: Not applicable	Vapor Density: Not applicable
Boiling Point: Not applicable	Melting Point: Not applicable
Solubility (H2O): Not applicable	Specific Gravity: Not applicable

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

Chemical Stability

Stable under normal conditions.

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Chemical Stability: Conditions to Avoid

Avoid contact with water. Tube's contents react with bases. Possibility of strong exothermic reaction to water and bases. Do not store above 77° F (25° C).

Incompatibility

Avoid contact with water. Do not mix other substances with the contents of tube.

Hazardous Decomposition

Decomposition of this product produces toxic sulfur oxides, acids, solutions of iodine and manganese compounds, and decomposition products of the components cited in Section 2.

Hazardous Polymerization

Hazardous polymerization can occur.

* * * Section 11 - Toxicological Information * * *

Acute and Chronic Toxicity

A: General Product Information

The corrosive properties of this product are presented by the Oleum contained in the glass tube. Oleum emits toxic and choking vapors of sulfur trioxide which may cause severe irritation or injury to the eyes, throat and lungs. If the glass tube is broken, the sharp edges may cause cuts or scrapes. 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 / Fuming Sulfuric Acid (Oleum) (8014-95-7)

Inhalation LC50 Rat: 347 ppm/1H

Hydrochloric acid (7647-01-0)

Inhalation LC50 Rat: 3124 ppm/1H; Inhalation LC50 Mouse: 1108 ppm/1H

Hydrazine hydrate (7803-57-8)

Oral LD50 Rat: 129 mg/kg; Oral LD50 Mouse: 83 mg/kg

Formaldehyde (50-00-0)

Inhalation LC50 Mouse: 454 mg/m³/4H; Oral LD50 Rat: 100 mg/kg; Oral LD50 Mouse: 42 mg/kg; Dermal LD50 Rabbit: 270 µL/kg

o-Toluidine (95-53-4)

Inhalation LC50 Rat: 862 ppm/4H; Oral LD50 Rat: 670 mg/kg; Oral LD50 Mouse: 520 mg/kg; Dermal LD50 Rabbit: 3250 µL/kg

Carcinogenicity

A: General Product Information

No information available.

B: Component Carcinogenicity

Sulfuric acid / Fuming Sulfuric Acid (Oleum) (8014-95-7)

ACGIH: A2 - Suspected Human Carcinogen (contained in strong inorganic acid mists) (related to Sulfuric acid)

IARC: Monograph 54, 1992 (related to Sulfuric acid) (Group 1 (carcinogenic to humans))

Hydrochloric acid (7647-01-0)

ACGIH: A4 - Not Classifiable as a Human Carcinogen

IARC: Monograph 54, 1992 (Group 3 (not classifiable))

Chromium (VI) salts (Not Available)

NIOSH: potential occupational carcinogen

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Material Name: Draeger Tubes™ (which are classified as dangerous goods, PG III)

Formaldehyde (50-00-0)

ACGIH: A2 - Suspected Human Carcinogen
OSHA: 0.75 ppm TWA; 2 ppm STEL; 0.5 ppm Action Level (Irritant and potential cancer hazard - see 29 CFR 1910.1048)
NIOSH: potential occupational carcinogen
NTP: Reasonably Anticipated To Be A Carcinogen (Possible Select Carcinogen)
IARC: Monograph 88, 2004 (Group 1 (carcinogenic to humans))

o-Toluidine (95-53-4)

ACGIH: A3 - Confirmed animal carcinogen with unknown relevance to humans
NIOSH: potential occupational carcinogen
NTP: Reasonably Anticipated To Be A Carcinogen (Possible Select Carcinogen)
IARC: Monograph 77, 2000 (Group 2A (probably carcinogenic to humans))

Mutagenicity

Chromium VI compounds have been mutagenic in bacteria, caused chromosome aberrations in mammalian cells and have been associated with increased frequencies of chromosome aberrations in lymphocytes in chromate workers.

Teratogenicity

Chromium VI compounds have caused birth defects and affected fertility in laboratory animals.

*** Section 12 - Ecological Information ***

Ecotoxicity

A: General Product Information

Because of the low pH of this product, it would be expected to produce significant ecotoxicity upon exposure to aquatic organisms and aquatic systems.

B: Component Analysis - Ecotoxicity - Aquatic Toxicity

Hydrochloric acid (7647-01-0)

Test & Species	Concentration	Conditions
48 Hr LC50 bluegill	3.6 mg/L	

Formaldehyde (50-00-0)

Test & Species	Concentration	Conditions
96 Hr LC50 fathead minnow	24.1 mg/L	flow-through
96 Hr LC50 bluegill	0.10 mg/L	flow-through
5 min EC50 Photobacterium phosphoreum	9.0 mg/L	
15 min EC50 Photobacterium phosphoreum	7.26 mg/L	
25 min EC50 Photobacterium phosphoreum	6.81 mg/L	
96 Hr EC50 water flea	20 mg/L	

o-Toluidine (95-53-4)

Test & Species	Concentration	Conditions
30 min EC50 Photobacterium phosphoreum	13.2 mg/L	

Environmental Fate

No information available for the product.

*** Section 13 - Disposal Considerations ***

US EPA Waste Number & Descriptions

A: General Product Information

If discarded, wastes may be classified as: D002, D003 (Corrosive, Reactive Waste)
Wastes must be tested using methods described in 40 CFR Part 261 to determine if it meets applicable definitions of hazardous wastes.

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B: Component Waste Numbers

Formaldehyde (50-00-0)

RCRA: waste number U122

o-Toluidine (95-53-4)

RCRA: waste number U328

Disposal Instructions

Prior to disposal, carefully dilute tube contents with water. Add baking soda to neutralize acidity. Do not allow this material to drain into sewers/water supplies. Waste must be handled in accordance with all federal, state, provincial, and local regulations.

*** Section 14 - Transportation Information ***

US DOT Information

Shipping Name: Corrosive solid, acidic, inorganic, n.o.s. (Contains: Adsorbed Sulfuric acid / Fuming Sulfuric Acid (Oleum) , mixture)

UN/NA #: UN3260 **Hazard Class:** 8 **Packing Group:** III

Required Label(s): CORROSIVE

*** Section 15 - Regulatory Information ***

US Federal Regulations

A: General Product Information

Oleum (Fuming Sulfuric Acid) does not appear on TSCA, DSL or EINECS Inventories but contains Sulfuric Acid and Sulfur Trioxide which are present on TSCA, DSL and EINECS Inventories.

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 / Fuming Sulfuric Acid (Oleum) (8014-95-7)

SARA 302: 1000 lb TPQ (related to Sulfuric acid)

SARA 313: 1.0 % de minimis concentration (acid aerosols including mists, vapors, gas, fog, and other airborne forms of any particle size) (related to Sulfuric acid)

CERCLA: 1000 lb final RQ; 454 kg final RQ

Hydrochloric acid (7647-01-0)

SARA 302: 500 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: 5000 lb final RQ; 2270 kg final RQ

Formaldehyde (50-00-0)

SARA 302: 500 lb TPQ

SARA 313: 0.1 % de minimis concentration

CERCLA: 100 lb final RQ; 45.4 kg final RQ

o-Toluidine (95-53-4)

CERCLA: 100 lb final RQ; 45.4 kg final RQ

State Regulations

A: General Product Information

Other state regulations may apply. Check individual state requirements.

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B: Component Analysis - State

The following components appear on one or more of the following state hazardous substances lists:

Component	CAS	CA	MA	MN	NJ	PA	RI
Sulfuric acid / Fuming Sulfuric Acid (Oleum) (*related to Sulfuric acid)	8014-95-7	Yes ¹	Yes	Yes ¹	Yes	Yes	Yes ¹
Hydrochloric acid	7647-01-0	Yes	Yes	Yes	Yes	Yes	Yes
Hydrazine hydrate	7803-57-8	No	No	No	Yes	No	No
Formaldehyde	50-00-0	Yes	Yes	Yes	Yes	Yes	Yes
o-Toluidine	95-53-4	Yes	Yes	Yes	Yes	Yes	Yes

The following statement(s) are provided under the California Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65):

WARNING! This product contains a chemical known to the state of California to cause cancer.

Component Analysis - WHMIS IDL

The following components are identified under the Canadian Hazardous Products Act Ingredient Disclosure List:

Component	CAS #	Minimum Concentration
Sulfuric acid / Fuming Sulfuric Acid (Oleum)	8014-95-7	1 % (English Item 1485, French Item 138) (related to Sulfuric acid)
Hydrochloric acid	7647-01-0	1 % (English Item 845, French Item 502)
Formaldehyde	50-00-0	0.1 % (English Item 781, French Item 918)

Additional Regulatory Information

A: General Product Information

No additional information available.

B: Component Analysis - Inventory

Component	CAS #	TSCA	CAN	EEC
Sulfuric acid / Fuming Sulfuric Acid (Oleum)	8014-95-7	No	No	No
Hydrochloric acid	7647-01-0	Yes	DSL	EINECS
Titanium salts	92202-42-1	No	No	EINECS
Hydrazine hydrate	7803-57-8	No	No	No
Formaldehyde	50-00-0	Yes	DSL	EINECS
Iodine pentoxide	12029-98-0	Yes	DSL	EINECS
o-Toluidine	95-53-4	Yes	DSL	EINECS

*** 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

ACGIH = American Conference of Governmental Industrial Hygienists. CERCLA = Comprehensive Environmental Response, Compensation and Liability Act. CFR = Code of Federal Regulations. EINECS = European Inventory of Existing Commercial Chemical Substances. EPA = Environmental Protection Agency. HEPA = High Efficiency Particulate Air. HMIS = Hazardous Material Information System. IARC = International Agency for Research on Cancer. NFPA = National Fire Protection Association. NIOSH = National Institute of Occupational Safety and Health. NJTSR = New Jersey Trade Secret Registry. NTP = National Toxicology Program. OSHA = Occupational Safety and Health Administration. NA = Not available or Not Applicable. SARA = Superfund Amendments and Reauthorization Act. TLV = Threshold Limit Value. TSCA = Toxic Substance Control Act.

Contact: Product Manager

Contact Phone: 412-787-8383

This is the end of MSDS # 4594612