

## Material Safety Data Sheet

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### 1. Identification of the substance/preparation and of the company/undertaking

**1.1 Identification of the substance or preparation:**

Trade name: **DrägerSensors® (not classified as hazardous material)**  
 Part nos. : various

**1.2 Use of the substance/preparation:**

Detection of gases, measuring of gas concentrations.

**1.3 Company/undertaking name:**

Dräger Safety AG & Co. KGaA  
 Revalstr. 1  
 D-23560 Lübeck  
 Telephone number +49 451/882-0  
 Fax number +49 451/882-2080  
 Contact for information: Dräger Environmental Management  
 Telephone number +49 451/882-3125  
 Fax number +49 451/882-4606

**1.4 Emergency telephone: +49 451/882-2395**

**1.5 Relevant products:**

Sach-Nr.	Handelsname	Sach-Nr.	Handelsname
68 07 120	DrägerSensor® Alcotest EC	68 07 220	DrägerSensor® Alcotest 7410
68 07 629	Sampling set Alcotest 7410	68 07 810	EX-Sensor C
68 08 333	NH <sub>3</sub> -Sensor	68 08 355	DrägerSensor® Cl <sub>2</sub>
68 08 455	DrägerSensor® Alcotest B	68 08 582	DrägerSensor® XS COCl <sub>2</sub>
68 08 680	DrägerSensor® Alcotest P	68 08 700	DrägerSensor® Cl <sub>2</sub>
68 08 799	DrägerSensor® Alcotest BS	68 08 940	CO <sub>2</sub> -Sensor
68 09 045	NH <sub>3</sub> -Sensor	68 09 065	Cl <sub>2</sub> -Sensor
68 09 075	CO <sub>2</sub> -Sensor	68 09 140	DrägerSensor® XS HF/HCl
68 09 145	DrägerSensor® XS EC NH <sub>3</sub>	68 09 165	DrägerSensor® XS EC Cl <sub>2</sub>
68 09 175	DrägerSensor® XS EC CO <sub>2</sub>	68 09 190	DrägerSensor® XS EC Hydrazine
68 09 305	DrägerSensor® NH <sub>3</sub> CE	68 09 360	DrägerSensor® HF/HCl L
68 09 370	DrägerSensor® Cl <sub>2</sub> L	68 09 375	DrägerSensor® AC-L
68 09 545	DrägerSensor® XS EC Amine	68 09 645	DrägerSensor® NH <sub>3</sub> HC
68 09 665	DrägerSensor® Cl <sub>2</sub>	68 09 680	DrägerSensor® NH <sub>3</sub> LC
68 09 930	DrägerSensor® COCl <sub>2</sub>	68 09 980	DrägerSensor® Hydride SC
68 10 170	DrägerSensor® AC-L-SC	68 10 180	DrägerSensor® N <sub>2</sub> H <sub>4</sub>
68 10 216	DrägerSensor® XS NH <sub>3</sub> V	68 10 290	DrägerSensor® O <sub>3</sub>
68 10 295	DrägerSensor® XS Hydrazine	68 10 500	DrägerSensor® DS PFC
68 10 595	DrägerSensor® AC	68 10 755	DrägerSensor® COCl <sub>2</sub>
68 10 881	DrägerSensor® XXS O <sub>2</sub>	68 10 882	DrägerSensor® XXS CO
68 10 883	DrägerSensor® XXS H <sub>2</sub> S	68 10 884	DrägerSensor® XXS NO <sub>2</sub>
68 10 885	DrägerSensor® XXS SO <sub>2</sub>	68 10 886	DrägerSensor® XXS PH <sub>3</sub>
68 10 887	DrägerSensor® XXS HCN	68 10 888	DrägerSensor® XXS NH <sub>3</sub>
68 10 889	DrägerSensor® XXS CO <sub>2</sub>	68 10 890	DrägerSensor® XXS Cl <sub>2</sub>
68 11 044	100 x DrägerSensor® Alcotest B	68 11 120	DrägerSensor® XS PFC
68 11 340	DrägerSensor® NH <sub>3</sub> S	68 11 410	DrägerSensor® XXS H <sub>2</sub> S/CO
68 11 525	DrägerSensor® XXS H <sub>2</sub> S LC	68 11 530	DrägerSensor® XXS OV

68 11 535	DrägerSensor® XXS OV-A	68 11 540	DrägerSensor® XXS Ozone
68 11 545	DrägerSensor® XXS NO	68 11 950	DrägerSensor® XXS CO H <sub>2</sub> -CP
68 12 005	DrägerSensor® XXS Phosgene	68 12 010	DrägerSensor® XXS CO HC
68 12 015	DrägerSensor® XXS H <sub>2</sub> S HC	68 12 020	DrägerSensor® XXS PH <sub>3</sub> HC
68 12 025	DrägerSensor® XXS H <sub>2</sub> HC	68 12 211	DrägerSensor® XXS E O <sub>2</sub>
68 12 212	DrägerSensor® XXS E CO	68 12 213	DrägerSensor® XXS E H <sub>2</sub> S
68 12 370	DrägerSensor® XXS H <sub>2</sub>	68 12 535	DrägerSensor® XXS Odorant
68 12 545	DrägerSensor® XXS Amine	68 12 600	DrägerSensor® XXS NO <sub>2</sub> LC
68 12 745	DrägerSensor® MEC Cl <sub>2</sub>	68 12 750	DrägerSensor® MEC NH <sub>3</sub>
68 12 765	DrägerSensor® MEC HF/HCl	68 50 900	BIO <sub>2</sub> -Sensor (DW)
68 50 930	O <sub>2</sub> Sensor (button)		

## 2. Hazards identification

**2.0 Electrochemical DrägerSensors™ are products which are not subject to identification. The requirements of EC regulations 1907/2006 and 1272/2008 do not apply to such products. Hence the following information is purely voluntary.**

**2.1 Classification:**

Nature of hazard: n/a

**2.2 Particular hazards for man and environment:**

Improper handling, destruction of and/or damage to the electrochemical DrägerSensors™ may release very small amounts of organic solvents or inorganic salts/solutions. These substances may be harmful if swallowed, may cause burns and may be irritating to skin and eyes.

## 3. Composition/Information on ingredients

**3.1 Chemical characterisation (constituent):**

n/a

**3.1 Chemical characterisation (preparation):**

**Electrochemical DrägerSensors™ are products which are not subject to identification. The requirements of EC regulations 1907/2006 and 1272/2008 do not apply to such products. Hence the following information is purely voluntary.**

DrägerSensors™ which are not classified as hazardous material may contain small/very small amounts of the organic and inorganic substances listed in the table below. Due to their characteristics and the small/very small amounts, these substances do not present relevant hazards. Housings are made from polyethylene and polypropylene.

EINECS / ELINCS-No.	CAS-No.	Designation acc. to the EC Directive	Content	Unit	Symbol	R-Phrases
n. a.	n. a.	inorganic hydroxides	n.a.	n.a.	C	22-35
n. a.	n. a.	inorganic acids	n.a.	n.a.	C	34 / 35
n. a.	n. a.	inorganic halogenides	n.a.	n.a.	Xn	22-36/38
n. a.	n. a.	organic solvents	n.a.	n.a.	/.	/.
n. a.	n. a.	organic acids	n.a.	n.a.	C	35
n. a.	n. a.	organic salts	n.a.	n.a.	/.	/.

**3.3 Other information:**

n/a

## 4. First-aid measures

**4.1 After inhalation:**

Fresh air.

**4.2 After contact with skin:**

Wash with plenty of water.

**4.3 After contact with the eyes:**

Flush open eye with plenty of water (for at least 15 minutes). Consult ophthalmologist.

**4.4 After ingestion:**

Make victim drink plenty of water, induce vomiting, summon doctor.

**4.5 Information for the doctor:**

The organic solvents or inorganic salts/solutions in the DrägerSensors™ may cause irritations to skin and eyes. Risk of damage to eyes.

## 5. Fire-fighting measures

**5.1 Suitable extinguishing media:**

The organic solvents in DrägerSensors™ are combustible. Use extinguishing media appropriate to the environment, preferably water, foam or CO<sub>2</sub>.

**5.2 Extinguishing media which must not be used for safety reasons:**

n/a

**5.3 Special exposure hazards arising from substances or preparation itself, combustion products, resulting gases:**

Thermal decomposition or combustion of the plastic components and ingredients of the electrochemical DrägerSensors™ may release small amounts of harmful or toxic gases (CO<sub>2</sub>, CO etc.).

**5.4 Special protective equipment for fire-fighters:**

For fire fighting respiratory protection with a compressed air breathing apparatus is recommended.

## 6. Accidental release measures

**6.1 Personal precautions:**

Take care to avoid eye and skin contact with released/leaked electrolyte; use safety goggles. Do not inhale vapour/aerosoles.

**6.2 Environmental precautions:**

Do not discharge electrolyte into the sewer system.

**6.3 Methods for cleaning up:**

Bind released/leaked electrolyte with suitable absorbent (silica gel) and dispose of correctly. Wash away residues with large amounts of water.

**6.4 Additional information:**

n/a

## 7. Handling and storage

**7.1 Handling:**

Precautions for safety handling:

Closely follow the instructions in the relevant sensor data sheets/instructions for use when handling electrochemical DrägerSensors™. This also applies for 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 exhausting device. Observe hazard informations.

Information for protection against fire and explosion:

Electrochemical DrägerSensors™ with organic electrolyte contain combustible solvents.

**7.2 Storage:**

Requirements for storage and containers:

Electrochemical DrägerSensors™ must be stored under the conditions stated in the sensor data sheets (**0°C - +30°C** [-20°C - +40°C]) and in their original packaging. Observe the use-by date indicated on the packaging.

Information on storage together with other materials: Observe VCI concept for storing chemicals  
 Further information on storage conditions: n/a  
 Storage class: 10-13 (recommendation) (VCI concept)

**7.3 Certain application:**  
 n/a

**8. Exposure controls/Personal protection**

**8.1 Exposure limit values:**

With normal handling of the DrägerSensors™ there should be no exposure to contents. However, if exposure does occur, keep exposure as low as possible.

n/a

**8.2 Exposure controls:**

Additional information on plant design: Handling according to the Instructions for Use.

**8.2.1 Occupational exposure controls:**

General protection and hygiene measures:

With normal handling of the DrägerSensors™ there should be no exposure to contents. However, if exposure does occur, keep exposure as low as possible.

**Personal protection:**

**8.2.1.1 Respiratory protection:**

Recommended when vapours/aerosols are generated in large amounts.

**8.2.1.2 Hand protection:**

With normal handling of the DrägerSensors™ there should be no exposure to contents. In case of accidents use suitable protective gloves made from PE/ PP, Latex, butyl or nitrile rubber. Please observe the glove manufacturers instructions on permeability and rupture times as well as the specific workplace conditions. Prophylactic skin protection is recommended. Wash hands before breaks and after work.

**8.2.1.3 Eye protection:**

Not necessary when electrochemical DrägerSensors™ are handled correctly. Use safety goggles if electrolyte is released from the DrägerSensors™.

**8.2.1.4 Skin protection:**

Prophylactic skin protection is recommended. Wash thoroughly after handling. Skin care.

**8.2.2 Environmental exposure controls:**

n/a

**9. Physical and chemical properties**

**9.1 General information:**

Form: DrägerSensors™ containing colourless liquids.  
 Colour: colourless  
 Odour: odourless or specific

**9.2 Important information about the protection of health, safety and the environment:**

**Method (67/548/EEC):**

Solubility: n/a  
 pH-value: n/a  
 Boiling point: n/a  
 Melting point: n/a  
 Flame point: n/a  
 Inflammability: n/a  
 Explosion limits:  
     lower: n/a  
     upper: n/a  
 Ignition temperature: n/a  
 Vapour pressure: n/a  
 Mass density: n/a

Further information:

see relevant sensor data sheet and section 2/3

### 9.3 Other information

cf. relevant sensor data sheet and section 2/3

## 10. Stability and reactivity

### General information:

n/a

### 10.1 Conditions to be avoided:

n/a

### 10.2 Materials to be avoided:

n/a

### 10.3 Hazardous decomposition products:

n/a

Possibility of a dangerous exothermic reaction:

n/a

Dangerous products of decomposition at contact with water:

n/a

### 10.4 Further information:

n/a

## 11. Toxicological information

### 11.1 Toxicity tests:

Classification-relevant LD/LC<sub>50</sub>-values: n/a

11.1.1 Specific symptoms in animal studies: n/a

11.1.2 Irritant/corrosive effects: n/a

11.1.3 Sensitization: n/a

### 11.1.4 Subacute and chronic toxicity:

Experiments: n/a

Species: n/a

11.1.5 Carcinogenic, mutagenic and reproductive toxic effects: n/a

11.1.6 Further information: n/a

### 11.2 Effects on human body/Experiments made in practice:

#### after inhalation:

n/a

#### after ingestion:

n/a

#### after eye contact:

n/a

#### after skin contact:

n/a

### 11.3 Additional toxicological information:

Organic solvents and aqueous solutions in electrochemical DrägerSensors™ may be harmful if swallowed, may cause burns and may be irritating to skin and eyes..

### Further information:

n/a

## 12. Ecological information

### 12.1 Ecotoxicity:

n/a

### 12.2 Mobility:

n/a

### 12.3 Persistence and degradability:

Biological decompositionability:

n/a

Behaviour in purification plants:

n/a

### 12.4 Bioaccumulative potential:

n/a

### 12.5 Other adverse effects:

n/a

### 12.6 Additional information:

Quantitative data on the ecological effects of the electrochemical DrägerSensors™ and their ingredients are not available. Electrochemical DrägerSensors™ contain electrolytes which are classified as slightly hazardous for water (German water hazard classification: "1"). No ecological problems are to be expected when the electrochemical DrägerSensors™ are handled and used with due care and attention.

## 13. Disposal considerations

### 13.1 Product (recommendations):

Utilized and exhausted electrochemical DrägerSensors™ must not be disposed of as household waste. They must be disposed of in accordance with local waste disposal regulations or by hiring an appropriate disposal company. Disposal is regulated by federal and state waste disposal laws and the corresponding regulations or other national regulations. Dräger Safety AG & Co. KGaA takes back expired and exhausted electrochemical DrägerSensors™ and ensures correct recycling or disposal after separating off usable materials (a charge is made to cover costs).

Waste category:

EWL (European waste list): 160216

Waste designation:

Components removed from discarded equipment other than those mentioned in 160215

Obligation to prove correct disposal:

no

### 13.2 Not cleaned packaging material (recommendations):

n/a

## 14. Transport information

### 14.1 Road transport ADR/RID and GGVSE (cross-border/domestic):

UN-No.: n/a

Class: n/a

Packing group: n/a

Name: n/a

Classification code: n/a

Remarks: The electrochemical DrägerSensors™ mentioned in this MSDS are not subject to the provisions of ADR/GGVSE.

### 14.2 Marine transport IMDG-Code/GGVSee:

UN-No. n/a

Correct technical name: n/a

Class: n/a

Sub risk: n/a

Packing group: n/a

EmS-No.: n/a

MFAG: n/a

Marine pollutant: n/a

Remarks: n/a

### 14.3 Air transport ICAO-TI and IATA-DGR:

UN-No. n/a

Proper shipping Name: n/a

Class n/a

Sub risk: n/a

PG: n/a

Remarks: The electrochemical DrägerSensors™ mentioned in this MSDS are not subject to the provisions of ICAO-TI and IATA-DGR.

#### 14.4 Transport/further information:

n/a

### 15. Regulatory information

#### 15.1 Labelling according to EC Directive:

Hazardous symbols and indicators of danger for dangerous substances and preparations: No labelling necessary  
Hazardous components to be indicated on label: contains: n/a

R-Phrases:

n/a

S-Phrases:

n/a

#### 15.2 National regulations:

Additional classification acc. to GefStoffV Annex II No. (only if differing from EC classification): n/a

Restrictions of occupation: n/a

Statutory order on hazardous incidents: n/a

Water pollution class: 1 (self-classification)

Information according 1999/13/EC about limitation of emissions of volatile organic compounds (VOC-guideline):

Further regulations, restrictions, and prohibition regulation:

(such as principles of industrial medicine and health and safety regulations)

Instruction Sheet BG-Chemie (Chemical Professional Association):

M 004 Corrosive and irritant substances

ZH 1/229. Other state regulations may apply. Check individual state requirements.

### 16. Other information

#### Use of the substance / preparation:

See section 1.2; additional information in the Instruction for Use.

#### Relevant R-Phrases:

R 22 Harmful if swallowed.

R 34 Causes burns.

R 35 Causes severe burns.

R 36/38 Irritating to eyes and skin.

#### Comments:

n. a.; n/a, /. : not applicable

MAC: Maximum allowable concentration

COD: Chemical oxygen demand

BOD: Biochemical oxygen demand

EWL: European waste list

VOC: Volatile organic compounds

VCI: Verband der Chemischen Industrie e.V. (Association of the German chemical industry)

WGK: German water hazard class

#### Further information:

The above information represents our current state of experience and describes the product only with respect to safety requirements. The manufacturer makes no representation and assumes no liability for any direct, incidental or consequential damages resulting from its use. It is the responsibility of the customer to test whether the product is suitable for the purpose intended by the customer.

Data sheet issued by: st-q-em

Contact: Dr. H.-Chr. Bechthold; hans-christoph.bechthold@draeger.com

Changes to preceding version: In section 2 and 3 according to Reach requirements; new products and part. nos have been added in Section 1.5.

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