Material Safety Data Sheet

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according to the EC Directive 91/155/EEC

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

1.1 Identification of the substance or preparation:
Trade name: **Drägersorb® 800 Plus**
Part nos. : MX00001 (5 L), MX00004 (1,3 L), MX00015 (125 kg) etc.

1.2 Use of the substance/preparation:
Absorber for carbon dioxide in anesthesia equipment/devices. Soda lime.

1.3 Company/undertaking name:
Dräger Medical AG & Co. KG
Moislinger Allee 53-55
D-23560 Lübeck
Telephone number +49 451/882-0
Fax number +49 451/882-2080
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1.4 Emergency telephone: +49 451/882-2395

1.5 Relevant products:
./.

2. Composition / Information on ingredients

2.1 Chemical characterisation (constituent):
not applicable

2.2 Chemical characterisation (preparation):
Dräger soda lime containing calcium dihydroxide, sodium hydroxide, 14-18 % water and the indicator ethyl violet.

EINECS / ELINCS-No.	CAS-No.	Designation acc. to the EC Directive	Content	Unit	Symbol	R-Phrases
215-137-3	1305-62-0	Calcium dihydroxide ($Ca(OH)_2$)	78-84	w/w per cent	Xi	41
215-185-5	1310-73-2	Sodium hydroxide	2-4	w/w per cent	C	35
219-231-5	2390-59-2	Ethyl violet	< 0.1	w/w per cent	Xn	22-41

2.3 Other information:
Dräger soda lime contents no ozone-depleting chemicals and no volatile organic chemicals (VOCs). During the manufacturing process for Dräger soda lime no ozone-depleting chemicals and no volatile organic chemicals (VOCs) were used.

3. Hazards identification

3.1 Classification:
Nature of hazard: Xi, irritant

R 41 Risk of serious damage to eyes.

3.2 Particular hazards for man and environment:

The soda lime may cause irritation to the skin, eyes and mucous membrane. In case of contact with eyes risk of serious damage to eyes.

4. First-aid measures

4.1 After inhalation:
Fresh air. Consult physician.

4.2 After contact with skin:
Wash with plenty of water, then treat with polyethylene glycol 400. Discard any shoes or clothing items that cannot be decontaminated.

4.3 After contact with the eyes:
Immediately flush eyes with plenty of water (for at least 15 minutes), while holding eyelids open. Seek medical advice at once. Danger of corneal clouding.

4.4 After ingestion:
Administer lemon juice and afterwards plenty of water. Do not induce vomiting (Danger of perforation).

4.5 Information for the doctor:
After ingestion there is a danger of the oesophagus and the stomach becoming perforated.

5. Fire-fighting measures

5.1 Suitable extinguishing media:
Dräger soda lime is non-flammable. Adapt extinguishing media to the environment.

5.2 Extinguishing media which must not be used for safety reasons:
Carbon Dioxide (CO_2) (exothermic reaction with Dräger soda lime).

5.3 Special exposure hazards arising from substances or preparation itself, combustion products, resulting gases:
When using water as an extinguishing media, take care of the resulting alkaline fire-fighter water. In case of high temperatures CaO (Calciumoxid) may be released.

5.4 Special protective equipment for fire-fighters:
n/a

6. Accidental release measures

6.1 Personal precautions:
Do not inhale released dust. Use dust mask with P2/FFP2 filter. Take care to avoid contact with eyes or skin, use safety goggles.

6.2 Environmental precautions:
Block any potential routes to water systems. Do not discharge into the sewer system. Do not allow to enter drains/ surface water/ groundwater.

6.3 Methods for cleaning up:
Sweep up dry while avoiding formation of dust. 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:	Use dust extractor device if necessary.
Information for protection against fire and explosion:	Dräger soda lime is non-flammable.

7.2 Storage:

Requirements for storage and containers:	Keep containers tightly closed. Dräger soda lime must be only stored in its original containers at ranging from -30 - +50°C. Dräger soda lime must not be allowed to desiccate!
Information on storage together with other materials:	Observe VCI concept for storing chemicals.
Further information on storage conditions:	n/a
Storage class:	LGK 10- 13 (VCI- concept)

7.3 Certain application:
n/a

8. Exposure controls/Personal protection

8.1 Exposure limit values:
Handling according to the Instructions for Use.

EC, Land	CAS-No.	Description of material	Type	Content	Unit
D	1305-62-0	Calcium dihydroxide	MAC*	5 **	mg/m^3
D	1310-73-2	Sodium hydroxide	MAC*	2 **	mg/m^3
	---	Total dust			
D		inhalable fraction	MAC*	10	mg/m^3
D		respirable fraction	MAC*	3	mg/m^3
			*German TLV		**measured as total dust

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:
Prophylactic skin care to protect faintly acid skin against Dräger soda lime which reacts mildly alkaline.

Personal protection:

8.2.1.1 Respiratory protection:
Not necessary as Dräger soda lime is delivered in pelletform. When dust occur, use a dust mask with FFP2 filter.

8.2.1.2 Hand protection:
Prophylactic skin protection is recommended. Wash thoroughly after handling. Skin care. In case of accidents use suitable protective gloves made from Latex or Polychloropren (nitrile, butyl, Viton). Please observe the glove manufacturers instructions on permeability and rupture times as well as the specific workplace conditions.

8.2.1.3 Eye protection:
Safety goggles necessary.

8.2.1.4 Skin protection:
n/a

8.2.2 Environmental exposure controls:
n/a

9. Physical and chemical properties

9.1 General information:

Form:	hemispherical pills
Colour:	white
Odour:	odourless

9.2 Important information about the protection of health, safety and the environment: **Method (67/548/EEC):**

Solubility		1 g/l
pH-value		ca. 12
Boiling point		n/a
Melting point		
Flame point		n/a
Inflameability		n/a
Explosion limits		
	lower	n/a
	upper	n/a
Ignition temperature		n/a
Vapour pressure		n/a
Mass density		(830 ± 100) g/l (bulk density)
Further information		n/a

9.3 Other information
Decomposition in CaO and water at ~500°C (930°F).

10. Stability and reactivity

General information:
Stable under normal conditions and handling according the Instruction for Use.

10.1 Conditions to avoid:
Avoid contact with concentrated acids. With acids vigorous reactions are possible.

10.2 Materials to avoid:
In case of contact with light metals (aluminium) the formation of hydrogen is possible. Danger of explosion.

10.3 Hazardous decomposition products:
In case of high temperatures CaO may be formed.
Possibility of a dangerous exothermic reaction: see Section 10.1
Dangerous products of decomposition at contact with water: ./.

10.4 Further information:
Aqueous solutions and suspensions react alkaline

11. Toxicological information

11.1 Toxicity tests:
Classification-relevant LD/LC_{50}-values: Data for components $Ca(OH)_2$, NaOH:

Component	Type	Values/ Range of Values	Species	Method
$Ca(OH)_2$	oral	7340 mg/kg	rat	---
NaOH	oral	500 mg/kg	rat	---

11.1.1 Specific symptoms in animal studies: ./.

11.1.2 Irritant/corrosive effects: Data for Dräger soda lime:

Location	Effect	Species	Method
on the skin	non irritant	rabbit	OECD 404, 91/325 EWG
at the eye	>3 after 72 h cornea optacity.	rabbit	OECD 405, 91/325 EWG

11.1.3 Sensitization:
No data are available

11.1.4 Subacut and chronical toxicity:

Experiments: No data are available. See Section 11.3
Species: n/a

11.1.5 Carcinogenic, mutagenic and reproductive toxic effects:
No data are available

11.1.6 Further information:
No data are available

11.2 Effects on human body/Experiments made in praxis:
$Ca(OH)_2$ may provoke caustic reaction on skin/mucosae, $Ca(OH)_2$ dust provokes irritation of the respiratory organs.
after inhalation:
n/a
after ingestion:
n/a
after eye contact:
n/a
after skin contact:
n/a

11.3 Additional toxicological information:
$Ca(OH)_2$ is main content material in the Dräger soda lime, therefore the characteristics of the $Ca(OH)_2$ can be transferred in conditioned form also to the Dräger soda lime. Disturbances by pH-value rise (e.g. fish toxicity) possible.

Further information:
n/a

12. Ecological information

12.1 Ecotoxicity:
Dräger soda lime can be toxic for aquatic organisms.

12.2 Mobility:
No data are available.

12.3 Persistence and degradability:
Biological decompositionability: No data are available.
Behaviour in purification plants: No data are available.

12.4 Bioaccumulative potential:
No data are available.

12.5 Other adverse effects:
No data are available.

12.6 Additional information:
As an inorganic, non-reducing substance, Dräger soda lime has neither a COD nor a BOD. Dräger soda lime must not be discharged into lakes and rivers or the sewer system in large quantities. Dräger soda lime suspensions react alkaline. Dräger soda lime should not released into water, trouble through increasing pH-value. When handled and used properly, Dräger soda lime is not likely to prove detrimental to the environment.

13. Disposal considerations

13.1 Product recommendations:
Unused and utilised Dräger soda lime must be disposed of as commercial solid waste in accordance with local, state and federal waste disposal regulations.
Waste category: EWL (European waste list): 16 03 03* / 18 01 06*
Waste designation: "Inorganic wastes containing dangerous substances." / "Chemicals consisting of or containing dangerous substances."

Obligation to prove correct disposal: Soda lime is waste requiring special supervision.

13.2 Not cleaned packaging material / Recommendations:

Rinse PE-HD cans with water and recycle as one-type plastic. Rinse PE bags with water and recycle as one-type plastic.
Alternatively you can supply:
- remainder-emptied plastic containers in consideration of the EWL 150102
- pasteboard containers in consideration of the EWL 150101
- metal conatiners in consideration of the EWL 150104

to a normal disposal/recycling.
The packings are preferentially to be supplied to re-use and/or a recycling in consideration of the valid local/country-specific regulations.
Recommended cleaning agent: n/a

14. Transport information

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

UN-No.:	./.	Class:	./.	Packing group:	./.
Name:	./.			Classification code:	./.

Remarks: Dräger soda lime is not a dangerous good. Dräger soda lime is not hygroscopic and contains less than 4% NaOH. Therefore it is not classified under UN-No. 1907.

14.2 Marine transport IMDG-Code/GGVSee:

UN-No.	./.	Correct technical name:		./.	
Class:	./.	Sub risk:	./.	Packing group:	./.
EmS-No.:	./.			MFAG:	./.
Marine pollutant:	./.				

Remarks: Dräger soda lime is not a dangerous good. Dräger soda lime is not hygroscopic and contains less than 4% NaOH. Therefore it is not classified under UN-No. 1907.

14.3 Air transport ICAO-TI und IATA-DGR:

UN-No.	./.	Proper shipping Name:	./.		
Class	./.	Sub risk:	./.	PG:	./.

Remarks: Dräger soda lime is not a dangerous good. Dräger soda lime is not hygroscopic and contains less than 4% NaOH. Therefore it is not classified under UN-No. 1907.

14.4 Transport/ further Information:

May be send by post.

15. Regulatory information

15.1 Labelling according to EC Directive:

Hazardous symbols and indicators of danger for dangerous substances and preparations: Xi, irritant

Hazardous components to be indicated on label: contains: n/a

R Phrases:
R 41 Risk of serious damage to eyes.

S-Phrases:
S 2 Keep out of the reach of children.
S 26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
S 37/39 Wear suitable gloves and eye/face protection.

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):
Other state regulations may apply. Check individual state requirements.

16. Other information

Relevant R-Phrases:

R 22	Harmful if swallowed.
R 35	Causes severe burns.
R 41	Risk of serious damage to eyes.

Comments:

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: ag-cas Contact: Dr. H-Chr. Bechthold

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