

# Safety Data Sheet according to Regulation (EC) No 1907/2006 (amended by Regulation (EC) No 453/2010)

Tradename: DK-DOX® AKTIV  
Reviewed on : 28.05.2015  
Version: 9

Valid from: 01.06.2015  
Replaced version: 8

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

### 1.1 Product

Name of substance: DK-DOX® AKTIV (<0,3%)

**Different description:** E 926, chlorine(IV)-oxide

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

Relevant identified uses:

Disinfectant

Uses advised against:

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### 1.3 Details of manufacturer having prepared the safety data sheet

#### Manufacturer/ supplier

Dr. Kücke GmbH

#### Street

Schaumburger Str. 11

#### Nat.-ID./Postal code/Location

DE-30900 Wedemark

#### Contact point for technical information

See manufacturer

#### Phone / Fax / E-Mail

+49 (0) 51303766163 / +49 (0) 51303766165 / E-Mail: kueke@kueke.de

### 1.4 Emergency information

+49 (0) 61 31 – 19 24 0 (Counseling center for poisoning Mainz)

## 2. Possible hazard

### 2.1 Classification of the substance or mixture

**Classification according to Regulation (EC) No 1272/2008, appendix VII (substance):**

No labeling requirement.

### 2.2 Labeling element according to regulation (EC) No. 1272/2008 (substances) / Guideline 1999/45/EC (mixtures)

**Pictogram/ Hazard symbol:** -

**Signal word:** -

**Hazardous compound for the labeling includes:** -

**Hazard statement:** -

**Safety statement:** -

**Other labeling elements:** -

### 2.3 Other hazards:

A gaseous phase of chlorine dioxide does exist above the surface, which is dependent on the concentration. The chlorine dioxide is very toxic by inhalation and dangerous for the environment. Works by inhalation strong lung damaging. When spraying the solution or spills are very toxic fumes are formed. When handling note essential information under Item 7.

The maximum allowable concentration amounts to 0,1 ppm/0,28 mg per cbm air.

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## 3. Composition / information on ingredients

### 3.1 substance

Name of substance: chlorine dioxide  
EC-No.:233-162-8 CAS-No.: 10049-04-4 Index-No.:017-026-00-3  
REACH-registration No.: 01-2119492305-37  
Quantity : 0,25 – 0,29 %  
Classification according to regulation (EC) No. 1272/2008:



GHS06, Hazard!

Acute Tox. 3  
H301



GHS05

Skin irritat. 1B  
H314



GHS09

Acute Aqu. 1  
H400

(The choice of words for the given hazard statements can be gathered from section 16)

## 4. First-aid measures

### 4.1 Description of first-aid measures

#### General information

Take affected persons out of the danger zone and lay them down. Personal protection for the first responder. On accident or malaise immediately contact a doctor (if possible, show the operating instructions or SDS). Remove dirty, soaked cloth immediately.

#### After inhalation

Remove to fresh air, keep warm, and let the person rest. Consult a physician immediately.

#### After contact with skin

Immediately wash with water. Consult a doctor.

#### After contact with eyes

Rinse eye with eyelid open for several minutes under running water and seek medical advice.

#### After swallowing

Rinse mouth and drink plenty of water. Do not induce vomiting, seek medical attention immediately.

### 4.2 Most important acute and delayed symptoms and effects.

-

### 4.3 Note to the doctor

**After eye contact:** Treatment as for chemical burn with acid.

#### After ingestion:

Gastric lavage, as Treatment for burns caused by acid or Methaemogloinbuilder. After inhalation of chlorine dioxide, aerosols or spray: Prophylaxis of delayed edema

## 5. Fire fighting measures

### 5.1 Extinguishing agents

Suitable: Water

### 5.2 Special hazards starting from the substance or mixture

Heating in a closed container leads to increasing pressure – danger of bursting. At temperatures above 150 °C oxidizing Oxygen is released.

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## 5.3 Advice for fire fighting

### Protective equipment:

Wear self-contained breathing apparatus.

### More information:

Heating of the container leads to increase of pressure, danger of bursting and explosion.

Cool containers at risk with water spray.

Collect contaminated firefighting water separately, do not empty into drains.

Fire residues and contaminated firefighting water must be disposed of in accordance with official regulations.

## 6. Accidental release measures

### 6.1 Personal precautions, protective equipment and applicable process in case of emergency

Wear protective equipment. Keep spectators away.

### 6.2 Environmental protection measures

Prevent entry into drains, pits and cellars.

Do not discharge into drains / surface water / groundwater.

Do not get in the ground / soil.

### 6.3 Methods and materials for containment and cleaning up

Take up with absorbent material (sand, diatomite, acid binders, universal binders). Apply neutralizer to contaminated material and handle waste according to article 13.

### 6.4 Reference to other sections

Note protective measures at section 7, 8 and 13.

## 7. Handling and Storage

### 7.1 Precautions for safe handling

Protect from heat and direct sunlight. Keep container tightly closed. Meet minimum standards in accordance with German TRGS 500 and consider first the protection guideline under "General Storage" 101 when configuring the working and handling methods.

### Information about fire and explosion protection

Heating in closed container leads to a rise in pressure – danger of bursting. . At Temperatures above 150 °C oxidizing Oxygen is released. Never allow product to dry in larger quantities. Keep away from acids, reducing agents, sulfur-containing substances and flammable materials such as wood, paper, straw,

Textiles, oil, grease, gum, dirt...

### Measures for the prevention of spray and aerosols

Avoid formation of aerosols or spray.

### Measures to protect the environment

The usual precautionary measures for handling chemicals should be followed.

### General hygiene measures

The usual precautionary measures for handling chemicals should be observed.

Keep away from foodstuffs, beverages and feed.

Remove contaminated clothing immediately.

Wash hands before breaks and after work.

Avoid contact with eyes and skin.

Protect skin by using skin creams.

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## 7.2 Conditions for safe storage including any incompatibilities

### Requirements for storage container

Do not store together with acids.  
Do not store together with metals.  
Keep container tightly closed.  
Protect from frost.  
Protect from heat and direct sunlight.  
Store container in a well-ventilated place.

### Requirements for storage rooms and vessels

Store in original container only.  
Dry place.  
Consider Ventilation of the container.

### Storage class:

6.1

### Specific end use

## 7.3 Branche- und field specific guidelines: -

## 8. Limited and controlled exposition / Personal Protection

### 8.1 To control parameters

#### 8.1.1 Limit for the exposing at workplace and/or biological limit

##### Workplace exposure limit (WEL) Germany

Name of substance: chlorine dioxide; CAS-No.: 10049-04-4

Specification: AGW

Value : 0,28 mg/m<sup>3</sup>, 0,1 ml/m<sup>3</sup>

#### 8.1.2 DNEL- und PNEC- Value

Name of substance: chlorine dioxide; CAS-No.: 10049-04-4

Specification : DNEL- und PNEC

Value: DNEL-Value

Longterm inhalative/lokal 0,28 mg/m<sup>3</sup> professionally  
Longterm inhalative/systematic 0,28 mg/m<sup>3</sup> professionally  
Shortterm inhalative/lokal 0,56 mg/m<sup>3</sup> professionally  
Shortterm inhalative/systematic 0,56 mg/m<sup>3</sup> professionally  
Longterm oral/systematic 0,20 mg/kg bw/day general  
• PNEC-Value

Fresh water: 0,00021 mg/L

Salt water: 0,000042 mg/L

#### 8.1.3 Control-Banding (e.g. ILO, EMKG)

Relevante Parameter / classification: -

Relevante protection guide: -

### 8.2 Limitation and monitoring of exposure

#### 8.2.1 Appropriate engineering controls: -

#### 8.2.2 Individual protection measures - Personal Protective Equipment

##### eye / face protection

Tightly sealed goggles

##### Skin protection

###### Gloves

At full or splash contact:

Chemical resistant gloves (DIN EN 374)

Glove material: PVC or PE

Penetration time (min.): The exact break through time has to be found out and kept from the manufacturer.

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## Different skin protection

Body protection: Protective clothing

## Respirator

Respiratory protection is required when: gases and mist are formed.

Suitable respiratory protective equipment: gas filter device (DIN EN 141)

## Heat / cold protection

Protect against frost.

Protect from heat and direct sunlight.

## 8.2.3 Limitation and monitoring of environmental exposure

See section 6 and 7.

## 9. Physical and chemical properties

### 9.1 Information on basic physical and chemical properties

Look

- Form: liquid  
- Color : yellowish  
Smell : Slightly piercing  
Odor threshold : ~0,1 ppm  
pH at 20°C: 7  
Melting point: 0 °C  
Boiling point: 100 °C  
Flash point : not applicable

Evaporation time : -

Ignition -

(fest, gasförmig) :

upper/lower ignition- or explosion threshold : The product is not explosive.

Steam pressure at 20°C: ca. 14 mbar

relative density at 20°C: 1 g/cm<sup>3</sup>

Solubility in / Miscibility with Water: Fully miscible

Self-igniting : Product is not self-igniting.

Decomposition temperature : at 45 °C in gaseous form.

Viscosity, dynamic at 20°C: ca. 2,4 mPa\*s

Explosive attribute : Product is not explosive.

Oxidizing attribute : Oxidiser.

### 9.2 Other Information: -

## 10. Stability and reactivity

### 10.1 Reactivity

No further specification.

### 10.2 Chemical Stability

No further specification.

### 10.3 Possibility of hazardous reactions

Corrosive against metals.

Fire hazard with flammable substances at dry out of the water.

Mixing with air releases toxic gases.

Contact with acids releases toxic gases.

### 10.4 Avoid condition

Protect against heating.

Protect against light.

### 10.5 Incompatible Materials

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Contamination, metal ions, metal salts, acids, reducing agents, combustible materials.  
Release of: chlorine dioxide

## 10.6 Hazardous decomposition products

Thermal decomposition can lead to release of chlorine and oxygen. Risk of overpressure and burst due to decomposition in closed containers and pipes.

## 11. Toxicological information

### 11.1 Information on toxicological effects of mixtures

#### acute toxicity:

#### Relevant classification LD/LC50-value:

#### 10049-04-4 chlorine dioxide

Oral LD<sub>50</sub>: 93,86 mg/kg (rat) (OECD)

Dermal LD<sub>50</sub>: > 1550 mg/kg (rat)

Inhalative LC<sub>50</sub> / 4h: 32 ppm (rat) (Regulation (EC) No. 440/2008, Annex, B.2)

#### Toxicological testing

No data available for the product.

#### Practical experience

The product is not subject to classification according to the calculation method of the General EU Classification Guidelines for Preparations as issued in the latest version.

When the two components are mixed, a gas phase forms over the final chlorine dioxide solution <2.5% by volume of chlorine dioxide. This is according to the concentration limits for the classification of gaseous chlorine dioxide mixtures "very toxic" and dangerous for the environment.

## 12. Ecological information

### 12.1 Ecotoxicity

#### Aquatic toxicity

#### 10049-04-4 chlorine dioxide

Acute toxicity to fish LC50 0.021 mg / l Brachydanio rerio (zebra fish) 96 h Regulation (EC) No. 440/2008, Annex C.1

Acute toxicity to algae ErC50 1,096 mg / l Selenastrum capricornutum 72-hour Regulation (EC) No. 440/2008, Annex C.3

Acute crustacea EC50 0.063 mg / l Daphnia magna (

Water flea) 48 h Regulation (EC) No. 440/2008, Annex C.2

Fish toxicity NOECs >= 500 mg / l 36 d Brachydanio rerio (zebra fish) OECD 210

Algae toxicity NOEC 0.02 mg / l 3 d Selenastrum capricornutum Regulation (EC) No. 440/2008, Annex C.3

Crustacea NOEC 0.015 mg / l 22 d Daphnia magna (water flea) OECD 211

Acute bacterial toxicity (10.7 mg / l) for 3 h activated sludge OECD 209

### 12.2 Persistence and degradability

The product is almost completely broken down in biological purification stages.

### 12.3 Bioaccumulation potential

No information available.

### 12.4 Mobility in the soil

No information available.

### 12.5 Result of the PBT- und vPvB-assessment

Not operatable.

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## 12.6 Other adverse effect

In water also toxic for fish and algae.  
Water hazard class 2 (Self-assessment): hazardous for water  
Do not allow undiluted product or large quantities of it to reach ground water, water course or sewage system.  
Prevent penetration into soil, drains and surface waters.  
Water course is not without pre-treatment.  
Danger to drinking water.

## 13. Disposal

### 13.1 Waste treatments methods

#### Treatment of contaminated packaging

Emptied, not desiccated container must be disposed of as containers with harmful residues.  
15 01 10 (packaging containing residues of hazardous substances or contaminated by dangerous substances)

#### Waste Code according to European Waste Catalogue (EWC)

Uncontaminated and cleaned packaging can be re-supplied. Recommended cleaning agent: water.

#### Special precautions

Must not be disposed together with household garbage. Do not empty into drains. Must be disposed of in accordance with local regulations

#### Relevant EU or other regulations

15 00 00 WASTE PACKAGING; ABSORBENTS, WIPING CLOTHS, FILTER MATERIALS AND PROTECTIVE CLOTHING (nec)  
15 01 00 packaging (including separately collected municipal packaging waste)  
15 01 10\* packaging containing residues of or contaminated by dangerous substances  
06 00 00 WASTES FROM INORGANIC CHEMICAL PROCESSES  
06 13 00 wastes from inorganic chemical processes not otherwise  
06 13 01\* inorganic plant protection products, wood preservatives and other biocides  
18 01 06\* Chemicals, consisting of or containing dangerous substances such

## 14. Transport information

### 14.1 UN-Number

3287

### 14.2 Transport hazard class

#### ADR/RID

6.1 toxic substances

### 14.3 Packing group

II

### 14.5 Environmental danger

#### Plate environmentally hazardous substances

ADR/RID / IMDG-Code / ICAO-TI / IATA-DGR:  yes /  no

Marine Pollutant:  yes /  no

### 14.6 Special precautions for user

Special regulation: 274

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## 15. Regulatory information

### 15.1 Safety, health and environmental regulations / legislation specific for the Substance or mixture

#### National regulations

##### Water hazard class

WHC 2 (self-assessment): hazardous for water

##### Restriction of occupation:

Observe employment restrictions for expectant and nursing mothers (MuSchArbV).

Observe employment restrictions for young people according to § 22 JArbSchG

##### Storage class according to TRGS 510:

8B Non-combustible, corrosive hazardous materials

##### Other relevant legislation:

Corresponds to the German Drinking Water Ordinance (TrinkwV) 2001

## 16. Other information

### Changes since the last version

This information is based on the present state of knowledge, however, offers no assurance of product properties and establishes no contract legal rights.

### Abbreviations:

ADR:	Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)
RID:	Règlement international concernant le transport des marchandises dangereuses par chemin de fer (Regulations Concerning the International Transport of Dangerous Goods by Rail)
IMDG:	International Maritime Code for Dangerous Goods
IATA:	International Air Transport Association
IATA-DGR:	Dangerous Goods Regulations by the "International Air Transport Association" (IATA)
ICAO:	International Civil Aviation Organization
ICAO-TI:	Technical Instructions by the "International Civil Aviation Organization" (ICAO)
GHS:	Globally Harmonized System of Classification and Labelling of Chemicals
LC50:	Lethal concentration, 50 percent
LD50:	Lethal dose, 50 percent

### Literature and data sources

**Department issuing MSDS:** Department laboratory development

**Contact:** Dr. Fritz Kücke

### Full text of H-phrases, hazard statements, safety phrases and / or precautionary statements is 2 to 15 referred to in sections

H301	Toxic if swallowed.
H314	Causes severe skin burns and eye damage.
H400	Very toxic to aquatic life.

In addition, see section 2.

### Further information

For bonding use PVC Dytex glue or a comparable product.

Never mix DK-DOX® chlorine dioxide with other products.

All parts coming into contact with DK-DOX® chlorine dioxide must be made of alkali and oxidation resistant material, for example, Viton B, FPM, PVC and PTFE.