

# Material Safety Data Sheet

*Prepared on September 15, 2009*

*Amended on March 2, 2015*

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## 1. Product and Company Information

Product name: CLEVERIN™ Gel

Company name and address:

Taiko Pharmaceutical Co., Ltd.

3-34-14 Uchihonmachi Suita, Osaka Pref., JAPAN

Phone number: +81-(0)6-4391-1215

## 2. Information on composition and ingredients

Distinction of single substance or mixture: Mixture

Chemical name: Highly absorbable resin containing chlorine dioxide

Ingredient and contents: Chlorine dioxide solution, mixture of acrylic acid polymer partly cross-linked with sodium salt and inorganic powder.

Specification at manufacture:  $\text{ClO}_2^-$  (chlorite ion) 80,000 – 100,000 ppm  
Chemical formula or structural formula:  $\text{ClO}_2$

Official gazette internal file No.: (1) – 243

CAS No.: 10049-04-4

EINECS No.: 233-162-8

Notified object substance by Industrial Safety and Health Law: Applicable

PRTR law: Not applicable

## 3. Summary of Risk

Name of classification (according to Japanese classification): Oxidizing substance  
(not classified as dangerous substance according to the Fire Service Law)

## 4. Emergency measure

If inhaled: Move to wellventilated areas if uncomfortable symptoms appear.  
Consult a doctor if the condition is not improved.

If the solution gets into eyes: Flush immediately eyes with plenty of water and consult a doctor without fail.

If swallowed: Do not make it throw up, feed water or milk, then get a medical attention.

If the solution gets on your skin: Wash out immediately with plenty of water and soap. Get medical attention if something goes wrong.

5. **Measure at the time of fire (including surrounding fire)**

Fire extinguishing method: Spray massive dose of water.

This solution itself is not flammable, but is an oxidizing agent and therefore, it may promote burning of inflammable substance. Also, massive volume of chlorine dioxide gas will be generated immediately at high temperature, be careful not to inhale directly. In case of surrounding fire, keep cool and move to a safe place.

6. **Measure at the time of leakage**

Wash out thoroughly the liquid with massive water with caution that the liquid is not touched. If it is impossible to wash out the liquid, use sodium thiosulfate as a reducing agent to decompose it.

7. **Precautions on handling and storage**

**Handling:**

Do not use for other purposes.

Keep out of reach of children.

Do not inhale directly since it may cause a sense of irritation.

Do not use or leave near metals, since it may corrode them.

Do not use on dyed fabrics, etc., since it has a slight discoloring activity.

Wipe off immediately if the content is spilled.

Do not use in a car or a refrigerator.

**Storage:**

Do not leave the product in a location exposed to direct sunlight or high temperature.

Store at room temperature.

8. **Prevention of exposure and protective measures**

**Allowable concentration** (reference value for gaseous chlorine dioxide):

ACGIH (1994); TLV-TWA 0.1 ppm, 0.28 mg/m<sup>3</sup>

TLV-STEL 0.3 ppm, 0.83 mg/m<sup>3</sup>

OSHA; PEL-TWA 0.1 ppm, 0.3 mg/m<sup>3</sup>

NIOSH (1992); REL-TWA 0.1 ppm, 0.3 mg/m<sup>3</sup>

REL-STEL 0.3 ppm, 0.9 mg/m<sup>3</sup>

**Protective apparatus :**

Protective apparatus for respiratory organ: None

Protective apparatus for hands: Protective gloves

Protective apparatus for eyes: Protective glasses (goggle type)

Protective apparatus for skin and body: None

#### 9. **Physical and chemical characteristics**

Appearance, etc.: Yellow or yellowish-brown gel at room temperature.

Stimulating odor similar to chlorine and bromic acid.

Boiling point: 11°C.

Melting point: -59°C.

Vaporous pressure: 101 kPa (20°C).

Flash point: 130°C (13.2 – 39.5 vol.%).

Relative weight (water as 1): 1.6 (0°C)(solution)

Explosive limit: 10 vol% (in air).

Solubility in water: 0.8 g/100 mL (20°C).

Relative vapor gravity (air as 1): 2.3.

As gel form, freezing point: 0 - -1°C.

#### 10. **Stability and reactivity** (reference value for gaseous chlorine dioxide)

Stability: Slowly decompose while reacting by air, heat and light etc.

Reactivity: Generate chlorine dioxide when interacted with acids.

Inflammability: None.

Combustibility: Not spontaneously combustible, not reactive with water.

Oxidative activity: Oxidizing material. Corrosive at high concentration.

#### 11. **Toxicity information**

Acute toxicity: Inhalation toxicity, mouse; no death observed at 333 g (gel weight).

Oral toxicity, mouse, LD<sub>50</sub> > 2,000 mg (gel weight)/kg.

Mutagenicity: Micronucleous test negative (rat)

Irritability: No or very slight irritation when applied on the eye of the rabbit.

High concentration of chlorine dioxide gas is strongly irritable (particularly, to the eye, the lung, and the bronchus). If inhaled, it may cause breathlessness or sore throat. If touched on the eye, it may cause red coloration, pain or blurred vision.

If touched on the skin, it may cause hyperactive red coloration.

#### 12. **Caution for disposal**

Dispose the container after completely removing the content.

**13. Caution for transportation**

Make sure that no leakage from the container, load so that no fall or injury occurs, and fix the package securely to prevent from collapsing load.

UN/No.: Not applicable (only ClO<sub>2</sub> gas is registered).

**14. Applicable law** (as high concentration gaseous chlorine dioxide)

Industrial Safety and Health Law: Subject to be notified Cabinet Order No. 414.

Industrial Safety and Health Law: Enforcement Ordinance No. 18-2, Subject to be notified (No. 415).

No law is applicable for ClO<sub>2</sub> solution.

**15. Other information**

ClO<sub>2</sub> solution is not classified as a dangerous object.

References:

Compendium of chemicals laws, revised 3rd edition, The Chemical Daily Co., Ltd. (2001).

Chemical Compounds Safety Data Book, revised edition, Chemical Compounds Safety Information Research Association (1997).

Industrial Safety and Health Law, revised edition, whole data on MSDS compounds. The Chemical Daily Co., Ltd. (2003).

Explanation on Pharmaceutical Affairs Law, Pharmacist Law, and Poisonous and Deleterious Substances Control Law, the 14th edition, Yakuji Nippo Ltd. (2004).

This MSDS has been prepared on references, information and data available at present, however, it does not assure the preciseness and completeness of the information. Duly diligent handling is required. If any special handling is aimed, the handler is requested to establish new and safe handling conditions.