



**KHIMPROM Public Joint – Stock Company,  
Novocheboksarsk**

**SAFETY DATA SHEET  
CALCIUM HYPOCHLORITE**

**1. IDENTIFICATION OF THE SUBSTANCE AND OF THE COMPANY**

**1.1 Identification of the chemical substance**

Technical name	Calcium hypochlorite
Chemical name	Calcium hypochlorite
Trade name	Calcium hypochlorite (grade A, grade B, grade C)
Synonyms	Hypochlorous calcium, calcium oxychloride, hypochlorous acid calcium salt
Application:	Used as an oxidizer in different chemical processes including for decontamination of cyanide containing waste water in gold-mining industry and off gases.
HS code:	2828100000
Normative document	Specs 20.13.32-557-05763441-2017

**1.2 Information about manufacturer and/or supplier**

Name	PJSC KHIMPROM
Address	101 Promyshlennaya str., Novocheboksarsk Chuvash Republic, 429952 Russian Federation
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**2 HAZARD IDENTIFICATION**

<b>2.1 Substance hazard</b>	Highly hazardous, 2-d class of hazard based on degree of effect on a human (GOST 12.1.007). (Classification of hazard according to RF regulation GOST 12.1.007-76 and GHS)
	Classification of hazard according to GHS: Oxidizing chemical product, 2-d class Ingestion acute toxicity, 4-th class Target toxicity on definite organs at single exposure, 3-d class Skin damage (necrosis), 1-st class (subclass 1A) Aqueous environment acute toxicity, 1-st class

## 2.2 Precaution labeling according to GOST 31340-2013

2.2.1 Signal word: Danger



2.2.2 Hazard symbols:

2.2.3 Brief characteristic of hazard H272: May intensify fire; oxidizer  
 H302: Harmful if swallowed  
 H314 Causes severe skin burns and eye damage  
 H400: Very toxic to aquatic life  
 H335: May cause respiratory irritation

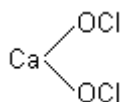
## 3. COMPOSITION / INFORMATION ON INGREDIENTS

### 3.1 Information about product

3.1.1 Chemical name (IUPAC) Calcium hypochlorite

3.1.2 Chemical formula: Molecular  $\text{CaCl}_2\text{O}_2$

Structural



3.1.3 General characteristic of composition: Three grades of calcium hypochlorite are produced: A, B, and C, which are different on content of active chlorine and impurities.

Production of neutral calcium hypochlorite is based on interaction of lime milk and chlorine.

### 3.2 Ingredients:

Table 1

Ingredients (name)	Assay, %			Normal values, occupational air		CAS No	EC No
	Grade A	Grade B	Grade C	MAC <sub>occ.air</sub> , mg/m <sup>3</sup>	Hazard class		
Calcium hypochlorite (Active chlorine)+	68,0	67,33	58,80	Not determined	No	7778-54-3	231-908-7
				1 (v)*	2 O	7782-50-5	231-959-5
Sodium chloride	14,30	16,51	15,34	5 (a)*	3	7647-14-5	231-598-3
Calcium dihydroxide+	3,60	3,88	3,80	2 (a)*	3	1305-62-0	215-137-3
Calcium carbonate	8,60	2,18	8,99	Not determined	No	471-34-1	207-439-9
Sodium hypochlorite	1,00	1,06	1,06	Not determined	No	7681-52-9	231-668-3

Calcium dichloride+	1,50	1,64	3,01	2 (a)*	3	10043-52-4	233-140-8
Water	3,00	7,40	9,00	Not determined	No	7732-18-5	231-791-2

\* Notes:

- (a) aerosol
- (v) vapour
- (+) special skin and eyes protection is needed while handling compounds
- (O) hazardous substance for development of acute poisoning, automatic control of substance content in the air is needed

## 4. FIRST AID MEASURES

### 4.1 Observed symptoms

- 4.1.1 Inhalation Tickle in throat, cough, change of respiratory rhythm, shortness of breath.
- 4.1.2 Skin contact Skin reddening, cutaneous edema, chemical burns, dryness, peeling, blisters.
- 4.1.3 Eyes contact Reddening, pain, severe deep burns.
- 4.1.4 Ingestion Pain in stomach and in gullet, nausea, vomiting. In difficult cases edema of lungs, coma, death..

### 4.2 First aid measures

- 4.2.1 Inhalation Move patient to fresh air, keep calm, loose tight clothes, warmth. In case of breathing disorder provide oxygen. Inhalation of water vapors (preliminary add several crystals of citric acid into water), mustard plasters on chest. In case of respiratory standstill.- artificial breathing. Immediately get medical attention.
- 4.2.2 Skin contact Remove contaminated clothes. Rinse contaminated skin with plenty of water for 20 minutes, lotion with 5% of citric, tartaric, acetic or hydrochloric acid. In case of burns use aseptic bandage. Immediately get medical attention.
- 4.2.3 Eyes contact Rinse thoroughly with plenty of running water holding eyelids wide open for 10-30 minutes. In case of burns use aseptic bandage. Immediately hospitalize in ophthalmologic department
- 4.2.4 Ingestion Rinse mouth with plenty of water. Give to drink a large amount of water or 1-2% solution of acetic, tartaric, lactic or citric (the best) acid, diluted lemon juice or vinegar (2 table spoons per a

glass of water), sour (red) wine or “egg milk” (2-4 raw eggs whisked in ¼ of milk). Get medical attention. .

## 5. FIRE-FIGHTING MEASURES

- 5.1 General characteristic of fire- Non combustible liquid.  
Strong oxidizer. 70% water solution reacts violently (with explosion) with ethylene glycol, hexylen glycol, glycerin, ethylic ether of ethylene glycol, triethanolamine, aniline.
- 5.2 Values of fire-explosion hazard Not achieved
- 5.3 Products of combustion and/or thermodestruction and their danger Chlorine and oxygen. Poisoning with high concentrations of chlorine causes death; middle or low concentrations - sharp retrosternal pain, burning and pain in the eyes, lacrimation, dry cough. In 2-3 hours - edema of lungs. Rapid pulse, shortness of breath increases, sputum with mucus and foamy reddish liquid.
- 5.4 Extinguishing media Fine sprayed water with wetting agent, foams, powders.  
Extinguish from maximum distance.
- 5.5 Unsuitable extinguishing media Not indicated.
- 5.6 Protection of firefighters Non combustible liquid. Use personal protective equipment based on major source of ignition. Wear heat-resistant suit, industrial gas mask.
- 5.7 Peculiarities while extinguishing Cool containers from maximum distance. Precipitate vapours and gases formed while decontamination with sprayed water. Prevent water from getting into containers. Polymeric tare can burn in case of fire.

## 6. ACCIDENTAL RELEASE MEASURES

### 6.1 Measures preventing harmful exposure on humans, environment, buildings at accidental release

- 6.1.1 General measures Isolate hazardous area within a radius of 800 m. Correct distance on results of chemical survey. Remove strangers. Enter hazardous area in protective equipment. Keep fire safety measures. No smoking. Remove sources of flame and sparkles. Provide first aid to injured.
- 6.1.2 Personal protective equipment For accident fighters – isolating protective suit and self-contained breathing apparatus

### 6.2 Order of actions for cleaning up

- 6.2.1 Actions in case of leakage, Inform sanitary-epidemiological inspection. Don't touch

- spillage spilled product. Enclose spillages with ground, sand. Prevent contact with oil products and other combustible materials. Wash place of spillage with plenty of water, treat with 30% solution of hydrogen peroxide. Prevent discharge into water courses, basement, sewage system.
- 6.2.1 Actions in case of fire Cool containers from max distance. Do not come close to burning containers. Extinguish combustible mixtures with sprayed water with wetting agent from max distance. Evacuate people from close buildings taking into account the direction of movement of toxic products of combustion

## **7. HANDLING AND STORAGE**

### **7.1 Safety measures for handling**

- 7.1.1 Technical measures Handle product in closed systems, use continuous suction and exhaust ventilation and local exhaust ventilation at places of vapors and gases emission. Don't inhale vapors, use personal protective equipment. Provide working places with hydrants, fountains, sewage. Inform personnel about product hazardous properties before permission to work.
- 7.1.2 Environment protection measures To avoid product release into atmosphere, occupational air is purified and dispersed. Prevent product discharge into water courses, sewage and soil.
- 7.1.3 Recommendations for safe transference and shipment Product is shipped by rail and road according to current regulations of hazardous cargo shipment. Observe the requirements of existing regulations regarding safety of loading, unloading operations. Avoid tare damage. Before permission to work persons engaged in loading = unloading operations shall be trained and tested for their knowledge of labour safety, fire safety and rendering first aid.

### **7.2 Storage**

- 7.2.1 Storage conditions and warranty: Keep in original tare, in non heated, well ventilated storerooms protected from atmospheric precipitates and direct sun rays. Storage warranty: 8 years.
- 7.2.2 Tare and packing: Steel zinc-coated drums and steel sealed barrels with polyethylene liners. On agreement with consumer in case of calcium hypochlorite consumption within one year, application

of carbon steel drums with p/e liner or steel zinc-coated drums is possible.

## 8. EXPOSURE CONTROL/PERSONAL PROTECTION

### 8.1 Exposure limits:

Monitoring of occupational air is carried out on chlorine.

MAC<sub>occ. ai</sub> : 1 mg/m<sup>3</sup> .(2-d class of hazard).

### Recommended monitoring procedure

Chlorine is a hazardous substance for development of acute poisoning, automatic monitoring of substance content in occupational air is required.

Min monthly monitoring of occupational air according to GOST 12.1.005-88. Determination is carried out according to Method No 1644-77 (photometric)

### 8.2 Technical measures:

General suction and exhaust ventilation and local exhaust ventilation, airtight equipment, tare, tubes.

Regular cleaning of working rooms.

### 8.3 Personal protection

#### 8.3.1 General

While handling product special protection of respiratory apparatus, skin and mucous membrane of eyes is required.

Observe personal hygiene measures Avoid contact with product. Wear impermeable clothing. While unloading avoid product spraying and use PPE.

#### 8.3.2 Respiratory tract:

Filtering gas mask, respirator.

#### 8.3.3 Hand:

Protective gloves from any impermeable material.

#### Eyes:

Safety goggles.

#### Skin and body:

Wear acids solution resistant suit, rubber apron, rubber gloves, rubber boots.

## 9. PHYSICAL AND CHEMICAL PROPERTIES

### Appearance:

White or slightly colored powdery product.

### Odour:

Sharp odour of chlorine

### Decomposition point

150 °C, oxygen is released

### Relative density:

2,35 g/cm<sup>3</sup>

### Solubility:

Soluble in water.

## 10. STABILITY AND REACTIVITY

### 10.1 Stability:

Product is stable under normal conditions.

Hazardous products of decomposition: chlorine, chlorine

	monoxide
10.2 Reactivity	Strong oxidizer
10.3 Conditions to avoid	Moisture and high temperatures (decomposition with explosion is possible while heating). Reacts with water and acids. Availability of acids contributes to product decomposition with emission of gaseous chlorine.
Materials to avoid	Contact with ammonia and amines results in explosion.

## 11. TOXICOLOGICAL INFORMATION

11.1 General characteristic of exposure	Highly hazardous substance based on acute toxicity (2-d class of hazard according to GOST 12.1.007-76). Product dust and emitted gaseous chlorine irritate mucous membranes of respiratory tract and eyes, also skin.
11.2 Routes of entry	Inhalation, oral, contact with skin and eyes.
11.3 Target organs and systems	Respiratory tract, gastrointestinal tract, cardio-vascular system, skin, eyes, bone tissue.
11.4 Hazardous effects for health as a result of product contact, consequences	Skin contact can cause burns, in case of long-term contact - skin diseases. Eyes contact can cause burns, up to blindness. Inhalation: irritates mucous membranes, may cause poisoning due to emitted chlorine. Skin resorptive effect was not studied. Sensitizing effect was not determined.
11.5 Long-term effects on humans	Long-term exposure causes bronchial asthma. Damages teeth. Cumulation - weak. Embryotropic, gonadotropic, teratogenic, mutagenic and carcinogenic effects were not studied.
11.6 Acute toxicity	Oral LD <sub>50</sub> : 850 mg/kg (rats)

## 12. ECOLOGICAL INFORMATION

12.1 General characteristic of effect on environment	Hazardous for environment: may contaminate atmospheric air, water courses and soil. May produce toxic effect on aquatic life. Specific odour in atmospheric air, change of sanitary values of water courses and organoleptic properties of water (appearance of extraneous odour and flavour) can indicate exposure. Product of transformation (chlorine) produces toxic effect on aquatic life.
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## 12.2 Route of entry

May pollute atmospheric air, water courses and soil in case of violation of rules of handling, storage, shipment, use; as a result of accidents and emergency situations, unorganized placement and landfill. Discharge of product into surface water courses, sewage and soil is strictly forbidden.

**12.3 Most important characteristics of effect on environment**

## 12.3.1 Permitted exposure level:

Table 2

Ingredient	MAC atm air, or ASEL*, atm air, mg/m <sup>3</sup> , class of hazard	MAC water, mg/l class of hazard	MAC water of fishing farm, mg/l class of hazard	Soil, mg/kg
Calcium hypochlorite	0,1 (ASEL)	350 (on Cl <sup>-</sup> ) 4-th class	<u>On Cl<sup>-</sup></u> : 300,0 ; 4-th class for sea 11900 4e class. <u>On Ca:</u> 180,0; 4e class; for sea 610, 4e cl.	Not determined
Chlorine (released while decomposing of calcium hypochlorite)	0,1 max single, 0,03 average daily, 2-d class	absence 3-d class	absence (0,00001) free chlorine, dissolved 1-st class	Not determined
Calcium dichloride	0,03/0,01 (on Ca), 3-d class	350 (on Cl <sup>-</sup> ) 4-th class	<u>On Cl<sup>-</sup></u> : 300,0 ; 4-th class for sea 11900 4e class. <u>On Ca:</u> 180,0; 4e class; for sea 610, 4e class	Not determined
Sodium chloride	0,5 max single, 0,15 average daily 3-d class	350 (on Cl <sup>-</sup> ) pH 6,5-8,5, 4-th class	<u>On Cl<sup>-</sup></u> : 300,0 mg/l 4e class	Not determined
Sodium hypochlorite	0,1 (ASEL)	0,2, 3-d class (sodium chlorite)	0,02 as substance; 0,014 as hypochlorite (for sea), 4-th class	Not determined
Calcium carbonate	0,5 max single, 0,15 average daily 3-d class	Not determined	<u>On Ca:</u> 180,0; 4e class; for sea 610, 4e class	Not determined

\*ASEL –approximate safe exposure level

## 12.3.2 Ecotoxicity

Calcium hypochlorite No data

Chlorine:

For fish: 96h-LC<sub>50</sub>=0,05-0,16 mg/l, Phoxinus phoxinus

For daphnia Magna: 48h-LC<sub>50</sub>=0,017-0,085 mg/l,



EC:=0,0035 mg/l (damage of reproduction of offspring)

For algae:

0,5h - EC=7,5 mg/l *Scenedesmus acuminatus*

EC=0,05-1 mg/l, Diatomeae

For soil invertebrates: 72h-LC<sub>50</sub>=0,04 mg/l, *Helixasperia*

12.3.3 Mobility and biodegradation Decomposes in environment. Product of transformation: chlorine.

### 13. DISPOSAL CONSIDERATIONS

13.1 Safety measures while waste handling Adequate ventilation, use PPE (acid resistant suit, rubber gloves and rubber boots, protective goggles, gas mask).

Minimize waste formation and accumulation.

Exclude unorganized waste placement.

13.2 Utilization or disposal of product and tare There are no gaseous and solid wastes.

Waste water from washing of equipment and floors is discharged into sewage system of mineral acid-alkaline effluents in compliance with hygienic requirements.

Waste shipment, disposal and landfill is carried out on the basis of appropriate licenses.

### 14. TRANSPORT INFORMATION

14.1 UN number: 1748

14.2 Proper shipping name: Shipping name: Calcium hypochlorite (grade A, grade B, grade C).

Proper cargo name: Calcium Hypochlorite, dry

14.3 Types of transport Road, rail (ADR/RID)

14.4 Classification of cargo hazard according to UN recommendations  
ADR/RID:

Class or subclass: 5.1

Additional hazard: No

Packing group: II

14.5 Labeling "Sealed packing". Warning note: "Don't throw".

### 15. REGULATORY INFORMATION

15.1 Applicable regulations

15.1.1 Russian Federation laws On Environment Protection No 7-FL dd 10.01.2002  
On Sanitary-Epidemiological Well-being of Population,

15.2 International conventions and agreements

No 52-FL dd 30.03.1999

On Technical Regulation, No 184-FL dd 27.12.2002

On Waste of Production and Consumption, No 89-FL dd 24.06.1998

On Industrial Safety of Hazardous Production Facilities, No 116-FL dd 21.07.1997

Product is not regulated under international conventions and agreements in the field of a human and environment protection.