Material Safety Data Sheet

Date of issue 20 June 2011
Version 2

1 . Product and company identification

Product name : Calcium Hypochlorite
Code : 55196
Synonym : Calcium Hypochlorite; Cal Hypo Granules; Ca(OCl)2; MSDS No. 55196
Supplier : PPG Industries, Inc.
One PPG Place
Pittsburgh, PA 15272
Emergency telephone number : (412) 434-4515 (U.S.)
(514) 645-1320 (Canada)
01-800-00-21-400 (Mexico)
Technical Phone Number : 1-800-245-2974 (Cal Hypo)

2 . Hazards identification

Emergency overview : DANGER!

STRONG OXIDIZER. CONTACT WITH OTHER MATERIAL MAY CAUSE FIRE. DO NOT MIX WITH OTHER CHEMICALS, INCLUDING ANY OTHER POOL CHEMICALS OF ANY KIND. MIXING WITH OTHER CHEMICALS COULD CAUSE A FIRE OR EXPLOSION. Contamination with moisture, acids, organic matter, other chemicals (including, but not limited to cleaning chemicals and other pool chemicals), petroleum or paint products or other easily combustible materials may start a chemical reaction with generation of heat, liberation of hazardous gases and possible violent reaction leading to fire or explosion. ALWAYS ADD PRODUCT TO LARGE QUANTITIES OF WATER TO FULLY DISSOLVE PRODUCT. DO NOT POUR WATER INTO PRODUCT, ALWAYS ADD PRODUCT TO WATER. Do not add this product to any dispensing device containing remnants of any other product or pool chemical.

CAUSES EYE AND SKIN BURNS. CAUSES RESPIRATORY TRACT IRRITATION. HARMFUL IF INHALED. HARMFUL OR FATAL IF SWALLOWED. CONTAINS MATERIAL THAT MAY CAUSE TARGET ORGAN DAMAGE, BASED ON ANIMAL DATA.

Very toxic to aquatic organisms.

Keep away from heat, sparks, flames, direct sunlight, and other sources of heat, including lighted tobacco products. Keep away from incompatible materials and combustible materials. Do not swallow. Do not get in eyes or on skin or clothing. Use only with adequate ventilation. Keep container closed. If product becomes contaminated or decomposes do not reseal container. If possible isolate container in open air or well-ventilated area. Wash thoroughly after handling. Keep out of waterways.

Potential acute health effects

Inhalation : Harmful if inhaled. Severely irritating to the respiratory system. Can irritate eyes, nose, mouth and throat.
Ingestion : Harmful or fatal if swallowed. May cause burns to mouth, throat and stomach.
Skin : Corrosive to the skin. Causes burns. Harmful in contact with skin.
Eyes : Corrosive to eyes. Causes burns.

Over-exposure signs/symptoms

Inhalation : Adverse symptoms may include the following:
Respiratory tract irritation
coughing
breathing difficulty or shortness of breath
pulmonary edema

2 . Hazards identification

Ingestion : Adverse symptoms may include the following:
stomach pains
nausea or vomiting
gastric perforation

Skin : Adverse symptoms may include the following:
pain or irritation
redness
blistering may occur

Eyes : Adverse symptoms may include the following:
pain
watering
redness
Direct contact with the eyes can cause irreversible damage, including blindness.

Medical conditions aggravated by over-exposure : Pre-existing disorders involving any target organs mentioned in this MSDS as being at risk may be aggravated by over-exposure to this product.

This Material Safety Data Sheet has been prepared in accordance with Canada's Workplace Hazardous Materials Information System (WHMIS) and the OSHA Hazard Communication Standard (29 CFR 1910.1200).

See toxicological information (Section 11)

3 . Composition/information on ingredients

Name	CAS number	%
calcium hypochlorite	7778-54-3	65 - 76
sodium chloride	7647-14-5	10 - 30
calcium carbonate	471-34-1	1 - 3
calcium dihydroxide	1305-62-0	1 - 3
calcium chlorate	10137-74-3	0 - 3

Notes: Available Chlorine: 65-76%, Inert ingredients 24-35 %(includes 5.5-8.5% water).

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.

4 . First aid measures

If ingestion, irritation, any type of overexposure or symptoms of overexposure occur during or persists after use of this product, contact a POISON CONTROL CENTER, EMERGENCY ROOM OR PHYSICIAN immediately; have Material Safety Data Sheet information available. Never give anything by mouth to an unconscious or convulsing person.

Eye contact : Check for and remove any contact lenses. Immediately flush eyes with running water for at least 15 minutes, keeping eyelids open. Continue rinsing until medical attention can be obtained.

Skin contact : In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Get immediate medical attention.

Inhalation : Remove to fresh air. Keep person warm and at rest. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. Get medical attention immediately.

Ingestion : If swallowed, seek medical advice immediately and show this container or label. Keep person warm and at rest. Do not induce vomiting. Get medical attention immediately.

Notes to physician : No specific treatment. Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.

5 . Fire-fighting measures

Flammability of the product : Product is not known to be flammable, combustible, or pyrophoric. This material increases the risk of fire and may aid combustion. Contact with combustible material may cause fire. This product is a strong oxidizer which is capable of intensifying a fire once started. Container may rupture.

Extinguishing media

Suitable : Drench with large quantities of water only.

Not suitable : Do not use dry chemicals or foams. Product supplies own oxygen, therefore attempts to smother fire with a wet blanket, carbon dioxide, dry chemical extinguisher or other means are not effective. Product has the potential to cause a violent reaction if dry chemical fire extinguishers are used.

Special exposure hazards : Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training. Emits toxic fumes under fire conditions. Chlorine gas may be generated. This material is very toxic to aquatic organisms. Fire water contaminated with this material must be contained and prevented from being discharged to any waterway, sewer or drain.

Hazardous combustion products : Decomposition products may include the following materials:
carbon oxides
halogenated compounds
metal oxide/oxides

Special protective equipment for fire-fighters : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

6 . Accidental release measures

Personal precautions : No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Shut off all ignition sources. No flares, smoking or flames in hazard area. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.

Environmental precautions : Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air). Water polluting material. May be harmful to the environment if released in large quantities.

Large spill : Use extreme caution in handling spilled material. Use spark-proof tools and explosion-proof equipment. Do not mix this product with any other chemicals, including any other pool chemicals of any kind, such as other disinfection or "shock" pool products. Contamination with moisture, acids, organic matter, other chemicals (including, but not limited to cleaning chemicals and other pool chemicals), petroleum or paint products or other easily combustible materials may start a chemical reaction with generation of heat, liberation of hazardous gases and possible violent reaction leading to fire or explosion. If fire or decomposition occurs in area of spill, immediately douse with plenty of water. Otherwise, sweep up all visible material using a clean (new, if possible), dry shovel and broom and immediately dissolve material in a water-filled container. Spilled material that has been swept up and dissolved in water should be used immediately in the normal application for which this product is being consumed. Prevent entry into sewers, water courses, basements or confined areas. Note: see section 1 for emergency contact information and section 13 for waste disposal.

Small spill : Use extreme caution in handling spilled material. Use spark-proof tools and explosion-proof equipment. Do not mix this product with any other chemicals, including any other pool chemicals of any kind, such as other disinfection or "shock" pool products. Contamination with moisture, acids, organic matter, other chemicals (including, but not limited to cleaning chemicals and other pool chemicals), petroleum or paint products or other easily combustible materials may start a chemical reaction with generation of heat, liberation of hazardous gases and possible violent reaction leading to fire or explosion. If fire or decomposition occurs in area of spill, immediately douse with plenty of water.

6 . Accidental release measures

Otherwise, sweep up all visible material using a clean (new, if possible), dry shovel and broom and immediately dissolve material in a water-filled container. Spilled material that has been swept up and dissolved in water should be used immediately in the normal application for which this product is being consumed. Prevent entry into sewers, water courses, basements or confined areas. Note: see section 1 for emergency contact information and section 13 for waste disposal.

Reference to other sections : See Section 1 for emergency contact information.
See Section 8 for information on appropriate personal protective equipment.
See Section 13 for additional waste treatment information.

7 . Handling and storage

Handling : Use extreme caution in handling spilled material. Put on appropriate personal protective equipment (see Section 8). Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Do not swallow. Do not get in eyes or on skin or clothing. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Keep in the original container with the lid securely closed. Keep away from heat, sparks, flames, direct sunlight, and other sources of heat, including lighted tobacco products. Keep away from combustible material. Add this product only to water. Never add water to this product. Always add the product to large quantities of water. Do not mix this product with any other chemicals, including any other pool chemicals of any kind, such as other disinfection or "shock" pool products. Fire may result if contaminated with acids, organic materials and other easily combustible materials such as oil, kerosene, gasoline, paint products wood and paper. Use only a clean (new, if possible), dry scoop made of metal or plastic each time product is taken from the container. Do not add this product to any dispensing device containing remnants of any other product or pool chemical. Such use may cause violent reaction leading to fire or explosion. Empty containers retain product residue and can be hazardous. Do not reuse container. Residual material remaining in empty container can react to cause fire. Thoroughly flush empty container with water then destroy by placing in trash collection.

Storage : Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see section 10) and food and drink. Separate from reducing agents and combustible materials. See NFPA 400. Hazardous Materials Code for further information. (Please note that NFPA 400, Hazardous Materials Code recently replaced NFPA 430, Code for Storage of Liquid and Solid Oxidizers.) Keep container closed. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. If product becomes contaminated or decomposes do not reseal container. If possible isolate container in open air or well-ventilated area. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination. Do not contaminate water, food, or feed by storage or disposal of this product.

8 . Exposure controls/personal protection

Name	Result	ACGIH	OSHA	Ontario	Mexico	PPG
calcium hypochlorite	TWA STEL	Not established Not established	Not established Not established	Not established Not established	Not established Not established	1 mg/m³ 2 mg/m³
calcium carbonate	TWA	10 MG/M3 TD 3 MG/M3 R	5 mg/m³ R 15 mg/m³ TD 5 mg/m3 R 15 mg/m3	Not established	Not established	Not established
calcium dihydroxide	TWA	5 mg/m³	5 mg/m³ R	5 mg/m³	5 mg/m³	Not

8 . Exposure controls/personal protection

			15 mg/m³ TD			established

Key to abbreviations

A	=	Acceptable Maximum Peak	S	=	Potential skin absorption
ACGIH	=	American Conference of Governmental Industrial Hygienists.	SR	=	Respiratory sensitization
C	=	Ceiling Limit	SS	=	Skin sensitization
F	=	Fume	STEL	=	Short term Exposure limit values
IPEL	=	Internal Permissible Exposure Limit	TD	=	Total dust
OSHA	=	Occupational Safety and Health Administration.	TLV	=	Threshold Limit Value
R	=	Respirable	TWA	=	Time Weighted Average
Z	=	OSHA 29CFR 1910.1200 Subpart Z - Toxic and Hazardous Substances			

Consult local authorities for acceptable exposure limits.

Recommended monitoring procedures : If this product contains ingredients with exposure limits, personal, workplace atmosphere or biological monitoring may be required to determine the effectiveness of the ventilation or other control measures and/or the necessity to use respiratory protective equipment.

Engineering measures : Use only with adequate ventilation. If user operations generate dust, fumes, gas, vapor or mist, use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits. Engineering controls may be required to control the primary or secondary risks associated with this product.

Hygiene measures : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

Personal protection

Eyes : Chemical splash goggles and face shield.

Hands : Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary.

Gloves : nitrile, neoprene, butyl rubber.

Respiratory : If workers are exposed to concentrations above the exposure limit, they must use appropriate, certified respirators. Use a properly fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

Skin : Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.

Environmental exposure controls : Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

9 . Physical and chemical properties

Physical state : Solid. [Granular solid.]

Flash point : Closed cup: Not applicable.

Decomposition temperature : 170 to 180°C (338 to 356°F)

Material supports combustion. : Yes.

Color : Various

Odor : Slight CHLORINE

pH : Alkaline.

Boiling/condensation point : Decomposes. @ 170-180°C (338-356°F)

Melting/freezing point : Not available.

9 . Physical and chemical properties

Specific gravity : Not available.
Vapor pressure : Not available.
Vapor density : Not available.
Volatility : 0% (v/v), 0% (w/w)
Evaporation rate : Not available.
Viscosity : Not Applicable
Partition coefficient: n-octanol/water : Not available.
% Solid. (w/w) : 100

Bulk Density: 63-67 lbs/ft3 (1 - 1.07 g/cm^3)

10 . Stability and reactivity

Stability : Stable under recommended storage and handling conditions (see section 7). Product decomposes at approximately 170-180°C (338-356°F) releasing oxygen gas and some chlorine gas.
Conditions to avoid : Heating may cause a fire or explosion. Excessive heat will cause decomposition resulting in the release of oxygen and chlorine gas.
Materials to avoid : Highly reactive or incompatible with the following materials: moisture, combustible materials, organic materials, metals, acids, alkalis, oxidizing materials, reducing materials, Ammonia., Petroleum products., Paint products., Wood and paper., Pool chemicals.

Acid or ammonia contamination will release toxic gases.
Hazardous decomposition products : Product slowly releases chlorine gas.
Possibility of hazardous reactions : Under normal conditions of storage and use, hazardous polymerization will not occur.

11 . Toxicological information

Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
calcium hypochlorite	LD50 Oral	Rat	850 mg/kg	-
	LD50 Dermal	Rabbit	>1000 mg/kg	-
sodium chloride	LD50 Oral	Rat	3000 mg/kg	-
calcium carbonate	LD50 Oral	Rat	6450 mg/kg	-
calcium dihydroxide	LD50 Oral	Rat	7340 mg/kg	-
calcium chlorate	LD50 Oral	Rat	4.5 g/kg	-

Conclusion/Summary : Harmful or fatal if swallowed. May be harmful if absorbed through skin. May be harmful if inhaled.

Chronic toxicity

Conclusion/Summary : Not available.

Irritation/Corrosion

Skin : Corrosive. Causes burns.
Eyes : Corrosive. Causes eye burns.
Respiratory : Severely irritating to the respiratory system.

Sensitization

Skin : Not available.
Respiratory : Not available.

Potential chronic health effects : Corrosive to the eyes, skin, respiratory system and digestive tract.

11 . Toxicological information

Target organs : Contains material which may cause damage to the following organs: lungs, mucous membranes, gastrointestinal tract, upper respiratory tract, skin, eye, lens or cornea, stomach.

Carcinogenicity

Classification

Product/ingredient name	ACGIH	IARC	EPA	NIOSH	NTP	OSHA
calcium hypochlorite	-	3	-	-	-	-

Mutagenicity

Product/ingredient name	Test	Experiment	Result
calcium hypochlorite	OECD 471 Bacterial Reverse Mutation Test	Experiment: In vitro Subject: Bacteria	Positive
	-	Experiment: In vitro Subject: Mammalian-Animal	Positive
	OECD 474 Mammalian Erythrocyte Micronucleus Test	Experiment: In vivo Subject: Mammalian-Animal	Negative

Conclusion/Summary : Mutagenic effects - Equivocal evidence.

12 . Ecological information

Environmental effects : Very toxic to aquatic organisms.

Aquatic ecotoxicity

Product/ingredient name	Result	Species	Exposure
calcium hypochlorite	Acute LC50 57 to 60 ug/L Fresh water	Fish - Bluegill - Lepomis macrochirus	96 hours
	Acute LC50 37 ug/L Marine water	Fish - Atlantic silverside - Menidia menidia	96 hours
	Acute EC50 0.073 to 0.079 ppm Fresh water	Daphnia - Water flea - Daphnia magna	48 hours
sodium chloride	Acute LC50 1294600 ug/L Fresh water	Fish - Bluegill - Lepomis macrochirus	96 hours
	Acute EC50 402600 to 469200 ug/L Fresh water	Daphnia - Water flea - Daphnia magna	48 hours
	Chronic NEL 0.86 g/L Fresh water	Fish - Fathead minnow - Pimephales promelas	96 hours
calcium dihydroxide	Acute LC50 356 mg/L Marine water	Fish - Guppy - Poecilia reticulata	96 hours
	Chronic NOEC 56 mg/L Marine water	Fish - Guppy - Poecilia reticulata	96 hours

13 . Disposal considerations

Waste disposal : The generation of waste should be avoided or minimized wherever possible. This material and its container must be disposed of in a safe way. Spilled material that has been swept up and dissolved in water should be used immediately in the normal application for which this product is being consumed. If this is not possible, material may be neutralized. Please contact PPG Industries, Inc. Emergency Response team for guidance at 412-434-4515. Note: Only properly neutralized material should be flushed to sewer. Unneutralized material can cause environmental damage to receiving water or can interfere with treatment plant operation. Care must be taken when using or disposing

13 . Disposal considerations

of chemical materials and/or their containers to prevent environmental contamination. Empty containers retain product residue and can be hazardous. Residual material remaining in empty container can react to cause fire. Thoroughly flush empty container with water then destroy by placing in trash collection. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements.

Disposal should be in accordance with applicable regional, national and local laws and regulations.

Refer to Section 7: HANDLING AND STORAGE and Section 8: EXPOSURE CONTROLS/PERSONAL PROTECTION for additional handling information and protection of employees. Section 6. Accidental release measures

14 . Transport information

Regulation	UN number	Proper shipping name	Classes	PG*	Additional information
UN	2880	CALCIUM HYPOCHLORITE, HYDRATED	5.1	II	-
IMDG	2880	CALCIUM HYPOCHLORITE, HYDRATED	5.1	II	-
DOT	2880	CALCIUM HYPOCHLORITE, HYDRATED	5.1	II	-

PG* : Packing group

Reportable quantity RQ : ☑CERCLA: Hazardous substances.: calcium hypochlorite: 10 lbs. (4.54 kg);

15 . Regulatory information

United States inventory (TSCA 8b) : All components are listed or exempted.
Australia inventory (AICS) : All components are listed or exempted.
Canada inventory (DSL) : All components are listed or exempted.
China inventory (IECSC) : All components are listed or exempted.
Europe inventory (REACH) : Please contact your supplier for information on the inventory status of this material.
Japan inventory (ENCS) : All components are listed or exempted.
Korea inventory (KECI) : All components are listed or exempted.
New Zealand (NZIoC) : All components are listed or exempted.
Philippines inventory (PICCS) : All components are listed or exempted.

United States

EPA ID No. - Pesticide. : Please contact your supplier to get the information.

SARA 302/304/311/312 extremely hazardous substances: No products were found.
SARA 302/304 emergency planning and notification: No products were found.
SARA 302/304/311/312 hazardous chemicals: calcium dihydroxide; calcium chlorate; calcium carbonate; sodium chloride; calcium hypochlorite
☑CERCLA: Hazardous substances.: calcium hypochlorite: 10 lbs. (4.54 kg);

SARA 311/312 MSDS Distribution - Chemical Inventory - Hazard Identification:

Chemical name	CAS #	Acute	Chronic	Fire	Reactive	Pressure
☑calcium hypochlorite	7778-54-3	Y	N	N	Y	N
sodium chloride	7647-14-5	N	N	N	N	N
calcium dihydroxide	1305-62-0	Y	N	N	N	N
calcium carbonate	471-34-1	N	N	N	N	N
calcium chlorate	10137-74-3	Y	N	N	Y	N
Product as-supplied :		Y	N	N	Y	N

California Prop. 65

15 . Regulatory information

Not applicable.

Canada

WHMIS (Canada) : Class E: Corrosive solid.
Class C: Oxidizing material.

Mexico

Classification

Flammability : 0 **Health** : 3 **Reactivity** : 2

16 . Other information

Hazardous Material Information System (U.S.A.)

Health : 3 **Flammability** : 0 **Physical hazards** : 2

(*) - Chronic effects

Caution: HMIS® ratings are based on a 0-4 rating scale, with 0 representing minimal hazards or risks, and 4 representing significant hazards or risks Although HMIS® ratings are not required on MSDSs under 29 CFR 1910.1200, the preparer may choose to provide them. HMIS® ratings are to be used with a fully implemented HMIS® program. HMIS® is a registered mark of the National Paint & Coatings Association (NPCA). HMIS® materials may be purchased exclusively from J. J. Keller (800) 327-6868.

The customer is responsible for determining the PPE code for this material.

National Fire Protection Association (U.S.A.)

Health : 3 **Flammability** : 0 **Instability** : 2

Other special considerations : NSF Drinking Water Treatment Chemicals Listing - PPG calcium hypochlorite (68% nominal product) is certified for maximum use at 15 mg/L under NSF/ANSI Standard 60. NSF Drinking Water Treatment Chemicals Listing - PPG calcium hypochlorite (73% nominal product) is certified for maximum use at 14 mg/L under NSF/ANSI Standard 60.

This product is registered with U.S. EPA as a pesticide.

Date of previous issue : **10/21/2010.**

Organization that prepared the MSDS : EHS

Indicates information that has changed from previously issued version.

Disclaimer

The information contained in this data sheet is based on present scientific and technical knowledge. The purpose of this information is to draw attention to the health and safety aspects concerning the products supplied by PPG, and to recommend precautionary measures for the storage and handling of the products. No warranty or guarantee is given in respect of the properties of the products. No liability can be accepted for any failure to observe the precautionary measures described in this data sheet or for any misuse of the products.