ARGO INTERNATIONAL LTD
IMPORTERS & EXPORTERS

MATERIAL SAFETY DATA SHEET

SECTION 1:IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

Product Name: **CALCIUM HYPOCHLORITE**
Trade Name: **HTH® DRY CHLORINE GRANULAR**
Restriction of Use: **Refer to Section 15**
Synonym(s):
Product Use: Sanitiser and Oxidiser, Water Treatment Chemical
Supplier Name: Argo International Ltd
Address: 9 St Benedicts St, Eden Terrace, Auckland
Telephone: +64 9 377 5061
Fax: +64 9 309 1992
Email: argo@argoint.co.nz
Website: Argoint.co.nz
Emergency Number(s): **For advice, contact the National Poisons Centre (New Zealand: Phone 0800 764 766) or a doctor**

SECTION 2: HAZARDS IDENTIFICATION

This substance is hazardous according to the EPA Hazardous Substances (Classification) Notice 2017.

Approval No: Oxidising [5.1.1], Corrosive substances Group Standard 2017 – HSR002632

Pictograms:

Oxidising Toxic Corrosive Exotoxic

Signal Word: DANGER

HSNO Classification	Hazard Code	Hazard Statement	GHS Category
5.1.1B	H272	May intensify fire oxidiser.	Ox. Sol. 2
6.1D (oral)	H302	Harmful if swallowed.	Acute Tox. 4
8.1A	H290	May be corrosive to metals.	Met. Corr. 1
8.2B	H314	Causes severe skin burns and eye damage.	Skin Corr. 1B
8.3A	H318	Causes serious eye damage.	Eye Corr. 1
9.1A	H410	Very toxic to aquatic life with long lasting effects.	Aquatic Chronic 1
9.2A	H421	Very toxic to the soil environment.	-
9.3C	H433	Harmful to terrestrial vertebrates.	-

Prevention Code	Prevention Statement
P102	Keep out of reach of children.
P103	Read label before use.
P210	Keep away from heat, sparks, open flames or hot surfaces. No smoking.

P220	Keep or Store away from clothing or combustible materials.
P221	Take any precaution to avoid mixing with combustibles.
P234	Keep only in original container.
P260	Do not breathe dust.
P264	Wash hands thoroughly after handling.
P270	Do not eat, drink or smoke when using this product.
P273	Avoid release to the environment.
P280	Wear protective PPE as described in Section 8.

Response code	**Response Statement**
P101	If medical advice is needed, have product container or label at hand.
P310	Immediately call a POISON CENTER or doctor/physician.
P363	Wash contaminated clothing before reuse.
P390	Absorb spillage to prevent material damage.
P391	Collect spillage.
P301 + P312	IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell.
P301 + P330+P331	IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
P303 + P361+P353	IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.
P304 + P340	IF INHALED: Remove to fresh air and keep at rest in a position comfortable for breathing.
P305 + P351+P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P370 + P378	In case of fire: Use dry chemical powder or foam.

Storage Code	**Storage Statement**
P405	Store locked up.
P406	Store in corrosive resistant/... container with a resistant inner liner.

Disposal Code	**Disposal Statement**
P501	Dispose of according to Local Regulations or Authorities

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

CHEMICAL NAME	**CAS #**	**% RANGE**
CALCIUM HYPOCHLORITE	7778-54-3	60 - 80
SODIUM CHLORIDE	7647-14-5	10 - 20
CALCIUM CHLORATE	10137-74-3	0-5
CALCIUM CHLORIDE	10043-52-4	0-5
CALCIUM HYDROXIDE	1305-62-0	0-4
CALCIUM CARBONATE	471-34-1	0-5
Water	7732-18-5	5.5 -10

SECTION 4: FIRST AID MEASURES

Eyes: Immediately flush with large amounts of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Call a physician at once.

Skin: Immediately flush with water for at least 15 minutes. Call a physician. If clothing comes in contact with the product, it should be removed immediately and laundered before reuse.

Ingestion: Immediately drink large quantities of water. Do NOT induce vomiting. Call a physician at once. Do NOT give anything by mouth if the person is unconscious or if having convulsions.

Inhalation: Remove victim to fresh air. Support respiration if needed. Call a physician.

Most important symptoms and effects, both acute and delayed

Symptoms:

Ingestion: May be harmful if swallowed.

Inhalation: Not applicable.

Skin: Causes severe skin burns and eye damage.

Eye: Causes serious eye damage.

SECTION 5: FIRE FIGHTING MEASURES

Flammability: **Oxidising Product.**

Personal Protection for Fire Fighting: Response to this material requires the use of a full encapsulated suit and a NIOSH approved positive pressure supplied air respirator. Use water to cool containers exposed to fire.

Extinguishing media: Do not use dry extinguishers containing Ammonium compounds.

Decomposition Products: Chlorine

SECTION 6: ACCIDENTAL RELEASE MEASURES

Spill Mitigation Procedures: Hazardous concentrations in air may be found in local spill area and immediately downwind. Remove all sources of ignition. Stop source of spill as soon as possible and notify appropriate personnel.

Air Release: Vapours may be suppressed by the use of a water fog. All water utilised to assist in fume suppression, decontamination or fire suppression may be contaminated and must be contained before disposal and/or treatment.

Water Release: This material is heavier than water. This material is soluble in water. Monitor all exit water for available Chlorine and pH. Advise local authorities of any contaminated water release.

Land Spill: Danger: All spills of this product should be treated as contaminated. Contaminated product may initiate a chemical reaction which may spontaneously ignite any combustible material present, resulting in a fire of great intensity. In case of a spill, separate all spilled product from packaging, debris and other material. Using a clean broom or shovel, place all spilled product into plastic bags, and place those bags into a clean, dry disposal container, properly marked and labelled. Disposal containers made of plastic or metal are recommended. Do not seal disposal containers tightly. Immediately remove all product in disposal containers to an isolated area outdoors. Place all damaged packaging material in a disposal container of water to assure decontamination (i.e. removal of all product) before disposal. Place all undamaged packaging in a clean, dry container properly marked and labelled. Call for disposal procedures.

Personal Protection for Emergency Spill: Response to this material requires the use of a full encapsulated suit and a NIOSH approved positive pressure supplied air respirator.

SECTION 7: HANDLING AND STORAGE

Do not take internally. Avoid inhalation of dust and fumes. Avoid contact with eyes, skin or clothing. Upon contact with skin or eyes, wash off with water. Remove and wash contaminated clothing before reuse.

Handling: Avoid inhalation of dust and fumes. Do not take internally. Avoid contact with skin, eyes and clothing. Upon contact with skin or eyes, wash off with water. Remove contaminated clothing and wash before reuse.

Storage: Keep product tightly sealed in original containers. Store product in a cool, dry, well-ventilated area. Store away from combustible or flammable products. Keep product packaging clean and free of all contamination, including, e.g. other pool treatment products, acids, organic materials, Nitrogen-containing compounds, dry powder fire extinguishers (containing Mono-ammonium Phosphate), oxidizers, all corrosive liquids, flammable or combustible materials, etc.

Shelf Life Limitations: Do not store product where the average daily temperature exceeds 35°C. Storage above this temperature may result in rapid decomposition, evolution of chlorine gas and heat sufficient to ignite combustible products. Shelf life (that is, the period of time before the product goes below stated label strength) is determined by storage time and temperatures. Store in a cool, dry and well ventilated area. Prolonged storage at elevated temperatures will significantly shorten the shelf life. Storage in a climate controlled storage area or building is recommended in those areas where extremes of high temperature occur. Do not store product where the average daily temperature exceeds 35° C. Storage above this temperature may result in rapid decomposition, evolution of chlorine gas and heat sufficient to ignite combustible products. Shelf life (that is, the period of time before the product goes below stated label strength) is determined by storage time and temperatures. Store in a cool, dry and well ventilated area. Prolonged storage at elevated temperatures will significantly shorten the shelf life. Storage in a climate controlled storage area or building is recommended in those areas where extremes of high temperature occur., Average daily temperature of 35° C. Storage above this temperature may result in rapid decomposition, evolution of Chlorine gas and heat sufficient to ignite combustible products.

Incompatible Materials for Storage: Do not allow product to come in contact with other materials, including e.g. other pool treatment products, acids, organic materials, Nitrogen-containing compounds, dry powder fire extinguishers (containing Mono-ammonium Phosphate), oxidizers, all corrosive liquids, flammable or combustible materials, etc. A chemical reaction with such substances can cause a fire of great intensity. Do not allow product to come in contact with other materials, including e.g. other pool treatment products, acids, organic materials, nitrogen-containing compounds, dry powder fire extinguishers (containing mono-ammonium phosphate), oxidizers, all corrosive liquids, flammable or combustible materials, etc. A chemical reaction with such substances can cause a fire of great intensity.

Do Not Store at Temperatures Above: Average daily temperature of 35° C . Storage above this temperature may result in rapid decomposition, evolution of Chlorine gas and heat sufficient to ignite combustible products.

SECTION 8: EXPOSURE CONTROLS AND PERSONAL PROTECTION

WORKPLACE EXPOSURE STANDARDS (provided for guidance only)

Substance	TWA ppm	TWA mg/m³	STEL ppm	STEL mg/m³
Calcium hydroxide [1305-62-0]		5		
Marble (Calcium carbonate) [471-34-1]		10		

Workplace Exposure Standard – Time Weighted Average (WES-TWA).The time-weighted average exposure standard designed to protect the worker from the effects of long-term exposure. Workplace Exposure Standard – Short-Term Exposure Limit (WESSTEL). The 15-minute average exposure standard. Applies to any 15- Minute period in the working day and is designed to protect the worker against adverse effects of irritation, chronic or irreversible tissue change, or narcosis that may increase the likelihood of accidents. The WES-STEL is not an alternative to the WES-TWA; both the short-term and time-weighted average exposures apply. Workplace Exposure Standards and Biological Exposure Indices NOV 2017 9TH EDITION.

Ventilation: Local exhaust ventilation or other engineering controls are normally required when handling or using this product to keep airborne exposures below the TLV, PEL or other recommended exposure limit.

Protective Equipment for Routine Use of Product

Respiratory Protection: Wear a NIOSH approved respirator if levels above the exposure limits are possible. Wear a NIOSH approved respirator if levels above the exposure limits are possible., A NIOSH approved full-face air purifying respirator equipped with combination chlorine/P100 cartridges. Air purifying respirators should not be used in oxygen deficient or IDLH atmospheres or if exposure concentrations exceed ten (10) times the published limit.

Respirator Type: A NIOSH approved full-face air purifying respirator equipped with combination chlorine/P100 cartridges. Air purifying respirators should not be **used in oxygen deficient or IDLH atmospheres or if exposure concentrations** exceed ten (10) times the published limit.

Skin Protection: Wear impervious gloves to avoid skin contact. A full impervious suit is recommended if exposure is possible to a large portion of the body. A safety shower should be provided in the immediate work area.

Eye Protection: Use chemical goggles. Emergency eyewash should be provided in the immediate work area.

Protective Clothing Type: Neoprene, Nitrile, Natural rubber (This includes: gloves, boots, apron, protective suit).

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

Appearance: White, free flowing powder.
Freezing Point: Not applicable.
Boiling Point: Not applicable.
Decomposition Temperature: Onset approximately 170-180°C (338-356 Deg. F).
Specific Gravity: Not applicable.
Bulk Density: 0.8 g/cc, loose.
pH @ 25°C: 10.4-10.8 (1% solution).
Vapour Pressure @ 25°C: Not applicable.
Solubility in Water: Approximately 18% @ 25°C. (Product also contains Calcium Hydroxide and Calcium Carbonate which will leave a residue.)
Volatiles, percent by volume: Not applicable.

Evaporation Rate: Not applicable.
Vapour Density: Not applicable.
Molecular Weight: 143 (Active ingredient).
Odour: Chlorine-like.

Coefficient of Oil/Water Distribution: Not applicable.

SECTION 10: STABILITY AND REACTIVITY

Stability and Reactivity Summary: Product is not sensitive to mechanical shock or impact. Product is not sensitive to electrical static discharge. Product will not undergo hazardous polymerization. Product is an NFPA Class 3 oxidizer which can cause a severe increase in fire intensity. Not pyrophoric. Not an organic peroxide. If subjected to excessive temperatures, the product may undergo rapid decomposition, evolution of chlorine gas, and heat sufficient to ignite combustible substances. If product is exposed to small amounts of water, it can react violently to produce heat and toxic gases and spatter. Use copious amounts of water for fires involving this product. Product will not undergo hazardous polymerization., NFPA Oxidizer Class: Meets the criteria of an NFPA Class 3 Oxidizer, Hazardous decomposition products formed under fire conditions.

Reactive Properties: Product is not sensitive to mechanical shock or impact. Product is not sensitive to electrical static discharge. Not pyrophoric. Not an organic peroxide.

Conditions to Avoid: Do not store next to heat source, in direct sunlight, or elevated storage temperature. Do not store where the daily average temperature exceeds 95 °F. Prevent ingress of humidity and moisture into container or package. Always close the lid.

Chemical Incompatibility: This product is chemically reactive with many substances, including, e.g., other pool treatment products, acids, organics, nitrogen-containing compounds, dry powder fire extinguishers (containing mono-ammonium phosphate), oxidizers, corrosive ,flammable or combustible materials. Do not allow product to contact any foreign matter, including other water treatment products. Contamination or improper use may cause a fire of great intensity, explosion or the release of toxic gases. If product is exposed to small amounts of water, it can react violently to produce heat and toxic gases and spatter.

Hazardous Decomposition Products: Chlorine.
Decomposition Temperature: 170 - 180 °C -

SECTION 11: TOXICOLOGICAL INFORMATION

Component Animal Toxicology
Oral LD50 value:

CALCIUM HYPOCHLORITE	LD50 (65% Calcium Hypochlorite) 850 mg/kg Rat.
SODIUM CHLORIDE	LD50 = 3,000 mg/kg Rat.
CALCIUM CHLORIDE	LD50 = 1,000 mg/kg Rat.
CALCIUM HYDROXIDE	LD50 = 7,340 mg/kg Rat.

Component Animal Toxicology
Dermal LD50 value:

CALCIUM HYPOCHLORITE	LD50 (65% Calcium Hypochlorite) > 2,000 mg/kg Rabbit.

SODIUM CHLORIDE	LD50 > 10,000 mg/kg Rabbit.
CALCIUM CHLORIDE	LD50 = 2,630 mg/kg Rat.
CALCIUM HYDROXIDE	No data.

Component Animal Toxicology
Inhalation LC50 value:

CALCIUM HYPOCHLORITE	Inhalation LC50 1 h (65% Calcium Hypochlorate) (Nose Only) = 2.04 mg/l Rat. Inhalation LC50 4 h (65% calcium hypochlorite) (Nose Only) = 0.51 mg/l Rat.
SODIUM CHLORIDE	Inhalation LC50 1 h > 42 mg/l Rat.
CALCIUM CHLORIDE	No data.
CALCIUM HYDROXIDE	No data.

Acute Effects:

Swallowed	Harmful if swallowed.
Dermal	Not applicable.
Inhalation	Not applicable.
Eye	Causes serious eye damage.
Skin	Causes severe skin burns and eye damage.

Chronic Effects:

Carcinogenicity	Not applicable.
Reproductive Toxicity	Not applicable.
Germ Cell Mutagenicity	Not applicable.
Aspiration	Not applicable.
STOT / SE	Not applicable.
STOT / RE	Not applicable.

Product Animal Toxicity

Oral LD50 value: LD50 Approximately 800 mg/kg Rat.

Dermal LD50 value: LD50 > 2,000 mg/kg Rabbit.

Inhalation LC50 value: Inhalation LC50 1.00h (Nose only) > 2.04 mg/l Rat.
Inhalation LC50 4 h (Nose only) > 0.51 mg/l Rat.
LC50 1 h >2.04 mg/l Rat.
LC50 4 h > 0.51 mg/l Rat.

Acute Toxicity: This product is corrosive to all tissues contacted and upon inhalation, may cause irritation to mucous membranes and respiratory tract. The dry material is irritating to the skin. However when wet, it will produce burns to the skin.

Subchronic/Chronic Toxicity: There are no known or reported effects from reperated exposure except those secondary tp burns.

Reproductive and Developmental Toxicity: Calcium Hypochlorite has been tested for teratongenicity in laboratory animals. Results of this study have shown that Calcium Hypochlorite is not a teratogen.

CALCIUM CHLORIDE Not known or reported to cause reproductive or deveopmental toxicity.

Mutagenicity: Calcium Hypochlorite has been tested in the Dominant lethal assay in male mice, and it did not induce a dominant lethal response. Calcium hypochlorite has been reported to produce mutagenic activity in two in vitro assays. It

has, however, been shown to lack the capability to produce mutations in animals based on results from the micronucleus assay. In vitro assays frequently are inappropriate to judge the mutagenic potential of bactericidal chemicals due to a high degree of cellular toxicity. The concentration which produces mutations in these in vitro assays is significantly greater than the concentrations used for disinfection. Based on high cellular toxicity in in vitro assays and the lack of mutagenicity in animals, the risk of genetic damage to humans is judged not significant.

CALCIUM CHLORIDE This product was determined to be non-mutagenic in the Ames assay. It was also shown to be non-clastogenic in the chromosomal aberration test.

Carcinogenicity: This product is not known or reported to be carcinogenic by any reference source including IARC, OSHA, NTP or EPA. One hundred mice were exposed dermally 3 times a week for 18 months to a solution of calcium hypochlorite. Histopathological examination failed to show an increased incidence of tumors. IARC (International Agency for Research on Cancer) reviewed studies conducted with several Hypochlorite salts. IARC has classified Hypochlorite salts as having inadequate evidence for carcinogenicity to humans and animals. IARC therefore considers Hypochlorite salts to be not classifiable as to their carcinogenicity to humans (Group 3 Substance).

CALCIUM CHLORIDE This chemical is not known or reported to be carcinogenic by any reference source including IARC, OSHA, NTP, or EPA.

SECTION 12: ECOLOGICAL INFORMATION

HSNO Classes: 9.1A = Very toxic to aquatic life with long lasting effects.
9.2A = Very toxic to the soil environment.
9.3C = Harmful to terrestrial vertebrates.

Ecological Toxicity Values for: CALCIUM HYPOCHLORITE

Bluegill - (nominal, static). 96 h LC50 0.088 mg/l.
Rainbow trout (Salmo Gaidneri) - (nominal, static). 96 h LC50 0.16 mg/l.
Daphnia magna - (nominal, static). 48 h LC50 0.11 mg/l.
Bobwhite quail - Dietary LC50 > 5,000 ppm.
Mallard ducklings - Dietary LC50 > 5,000 ppm.
Bobwhite quail - Oral LD50 3,474 mg/kg.

Ecological Toxicity Values for: CALCIUM CHLORIDE

Bluegill - (nominal, static). 96 h LC50 = 10,650 mg/l.
Mosquito Fish - (nominal, static). 96 h LC50 = 13,400 mg/l.
Pimephales (fathead minnow) - (nominal, static). 96 h LC50 = 4,630 mg/l.
Daphnia magna - (nominal, static). 48 h LC50 = 2770 mg/l.
Ceriodahnia dubia - (nominal, static). 48 h LC50 = 1830 mg/l.
Nitzschia linearis (diatom) - (nominal, static). 5 day LC50 = 3,130 mg/l.

Mobility in soil. No information available.
Persistence/ Degradability: No information available.
Bio-accumulative Potential: No information available.
Other adverse effects: No information available.

SECTION 13: DISPOSAL CONSIDERATIONS

Waste Disposal Summary: If this product becomes a waste, it meets the criteria of a hazardous waste as defined under 40 CFR 261 and would have the following EPA hazardous waste number: D001.

If this product becomes a waste, it will be a hazardous waste which is subject to the Land Disposal Restrictions under 40 CFR 268 and must be managed accordingly.

Disposal Methods: As a hazardous solid waste, it must be disposed of in accordance with local, state, and federal regulations.

Conditions to avoid: Do not allow to enter waterways.

SECTION 14: TRANSPORT INFORMATION

This product is classified as a Dangerous Good for transport in NZ ; NZS 5433:2012

Road and Rail Transport

UN No:	3487
Class-primary	5.1
Subclass	8
Packing Group	II
Proper Shipping Name:	CALCIUM HYPOCHLORITE CORROSIVE

Air Transport

UN No:	3487
Class-primary	5.1
Subclass	8
Packing Group	II
Proper Shipping Name:	CALCIUM HYPOCHLORITE CORROSIVE

Marine Transport

UN No:	3487
Class-primary	5.1
Subclass	8
Packing Group	II
Proper Shipping Name:	CALCIUM HYPOCHLORITE CORROSIVE
Marine Pollutant:	Yes

SECTION 15: REGULATORY INFORMATION

This substance is classified hazardous according to the EPA Hazardous Substances (Classification) Notice 2017

EPA Approval Code: Oxidising [5.1.1], Corrosive substances Group Standard 2017 – HSR002632

HSNO Classification: 5.1.1B, 6.1D(oral), 8.1A, 8.2B, 8.3A, 9.1A, 9.2A, 9.3C

HSW (HS) Regulations 2017	Trigger Quantity
Certified Handlers	Not required
Location Certificate	If in use: 50 kg (250kg if stored only)
Signage Trigger Quantities (Schedule 3)	100Kg (9.1A)
Emergency Response Plan (Schedule 5)	100Kg (9.1A)

Secondary Containment (Schedule 5)	100Kg (9.1A)
Tracking (Schedule 26)	Not required
Restrictions of Use	Use only as intended.

SECTION 16: OTHER INFORMATION

Glossary

EC_{50}	Median effective concentration.
EEL	Environmental Exposure Limit.
EPA	Environmental Protection Authority
HSNO	Hazardous Substances and New Organisms.
HSW	Health and Safety at Work.
LC_{50}	Lethal concentration that will kill 50% of the test organisms inhaling or ingesting it.
LD_{50}	Lethal dose to kill 50% of test animals/organisms.
LEL	Lower explosive level.
OSHA	American Occupational Safety and Health Administration.
TEL	Tolerable Exposure Limit.
TLV	Threshold Limit Value-an exposure limit set by responsible authority.
UEL	Upper Explosive Level
WES	Workplace Exposure Limit

References:

1. EPA Hazardous Substances (Safety Data Sheets) Notice 2017
2. Workplace Exposure Standards and Biological Exposure Indices Nov 2017 edition.
3. Assigning a hazardous substance to a HSNO Approval (Aug 2013).
4. Transport of Dangerous goods on land NZS 5433:2012
5. HSW (Hazardous Substances) Regulations 2017

Disclaimer

This document has been prepared by TCC (NZ) Ltd and serves as the suppliers Safety Data Sheet ('SDS'). It is based on information concerning the product which has been provided to TCC (NZ) Ltd or obtained from third party sources and is believed to represent the current state of knowledge as to the appropriate safety and handling precautions for the product at the time of issue. Further clarification regarding any aspect of the product should be obtained directly from the manufacturer. While TCC (NZ) have taken all due care to include accurate and up-to-date information in this SDS, it does not provide any warranty as to accuracy or completeness. As far as lawfully possible, TCC (NZ) Ltd accept no liability for any loss, injury or damage (including consequential loss) which may be suffered or incurred by any person as a consequence of their reliance on the information contained in this SDS

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Please contact Argo Internations, if further information is required.

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