Safety Data Sheet

Product name:

Candle, Chlorate with Match, Ignition

Revised edition no: OCL 138 - Rev B
Date: 9-May-2025
Supersedes: Revision edition no: OCL 138 – Rev A

molecular

Section 1	PRODUCT AND COMPANY IDENTIFICATION	
1.1	Product Name	Candle, chlorate with match, ignition
1.2	CAS Number	Mixture
1.3	Product Use	Relevant identified uses: A source of oxygen for life support or industrial applications
1.4	U.N. Number	3356
1.5	U.N. Dangerous Goods Class	5.1 Oxidizers
1.6	Supplier / Manufacturer's Name	O.C. Lugo, Co. Inc. (A subsidiary of Molecular Products Inc) 633 CTC Boulevard Suite 200, Louisville CO 80233, USA
1.7	Emergency Contact	1-888-665-7763 (Hours: 7:00AM – 5:00PM Mountain Time)
1.8	Date of Initial Preparation	16-Nov-2023
1.9	Date of Previous Revision	29-Jan-2025

Section 2	HAZARDS IDENTIFICATION					
2.1	Classification of the substance or mixture (Chlorate candle)					
2.1.1	Classified according to OSHA 2012 HCS 29 CFR 1910.1200 and the Canadian Hazardous Products Act WHMIS 2015. The product is classified and labelled according to the Globally Harmonized System (GHS).					
	Oxidizing Solid 1	H271	Acute Oral Toxicity 4	H302	Skin corr. 1	H314
	Aquatic Chronic 2	H411				
2.1.2	Classified according to EC Directives 67/548/EEC (CHIP 4)					
	O	R9	Xn	R22	N	R51, 53
2.2	Labelling elements					
2.2.1	Labelling in accordance with 29 CFR 1910 (OSHA HCS)					
	Pictograms				Signal Word	DANGER
	GHS Hazard Classification(s)					
	Hazard Statement(s)	May cause fire or explosion, strong oxidizer. Harmful if swallowed				
	H271	May cause fire or explosion; strong odor				
	H302	Harmful if swallowed				
	H314	Causes severe skin burns and eye damage				
	H411	Toxic to aquatic life with long lasting effects				
	Precautionary Statement(s)					

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Section 2	HAZARDS IDENTIFICATION	
	P220	Keep/store away from organic and combustible materials
	P270	Do not eat, drink, or smoke when using this product
	P273	Avoid release to the environment
	P391	Collect spillage
	P301/312	If swallowed: call a poison control center or doctor/physician if you feel unwell
	P371/380/375	In case of fire: evacuate area. Fight fire remotely due to the risk of explosion
	EU Hazard Classification per Directive 1999/45/EC	

Section 3	COMPOSITION AND INFORMATION ON INGREDIENTS			
	Chemical characterization	*Mixture of inorganic substances*		
	Hazardous Ingredients	Concentration	*CAS #*	*Hazard Classification / Risk Phrases*
	Sodium Chlorate	90% - 95%	7775-09-9	Oxidizing Solid 1 H271 Acute Toxicity 4 H302 Aquatic chronic 2 H411
	Barium peroxide	1% - 5%	1304-29-6	Oxidizing Solid 1 H271 Acute Toxicity 4 H302 Causes severe skin burns and eye damage H314
	Inerts	Balance		Not classified

NOTE:

Section 4	FIRST-AID MEASURES	
4.1	Description of measures	
	Contaminated individuals of chemical exposure must be taken for medical attention if any adverse effect occurs. Rescuers should be taken for medical attention, if necessary. Take copy of label and MSDS to health professional with contaminated individual.	
	Eye Contact	Check for and remove any contact lenses. Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Avoid strong stream of water due to the risk of mechanical damage to the cornea. Seek medical advice if necessary.
	Skin Contact	Immediately remove contaminated clothing. Flush contaminated skin with plenty of water with soap and more water. Seek medical advice if necessary.
	Inhalation	Remove casualty to fresh air and provide warmth and rest. Seek medical attention if you feel unwell.
	Ingestion	Do NOT induce vomiting. Rinse mouth out with water and then drink plenty of water. Seek medical advice if necessary.
4.2	Most important effects/symptoms both acute and delayed	
	Inhalation	Persons exposed to high levels of the product are susceptible to respiratory diseases. The repeated inhalation of dust may cause damage to the central nervous system. Harmful if inhaled.
	Eye Contact	Significant concentration of dust or direct ingress of substances into the eyes may cause irritation, redness, tearing, burning and conjunctivitis.
	Skin Contact	May cause irritation, redness, dryness, itching and inflammation

Section 4	FIRST-AID MEASURES	
	Ingestion	May cause irritation of the mucous membrane of the digestive tract and stomach, nausea, vomiting, diarrhea, and stomach pain. Harmful if swallowed.
4.3	Immediate/special treatment	
		Remove affected person from the contaminated product. In the event of health problems, immediately consult your doctor or a centra of toxicological concern. Provide the information contained in the SDS. If unconscious do not give anything by mouth.

Section 5	FIRE-FIGHTING MEASURES	
	Flash Point	Non-flammable, strong oxidizer that enhances combustion of other substances (esp. organic materials.)
5.1	Fire Extinguishing Materials	To suit local surroundings (e.g. chemical powder, carbon dioxide and dry sand)
	Unsuitable media	Water jet
5.2	Special Hazards	Avoid inhalation of combustion products
5.3	Advice for Fire Fighters	Wear full protective equipment and self-contained breathing apparatus (SCBA). If containers are exposed to high temperatures cool with water and if possible, remove from area. Take up mechanically. Keep out of drains, surface water and soil. Place water waste in containers and dispose of contents/container to authorized recipient of hazardous waste.

Section 6	ACCIDENTAL RELEASE MEASURES	
6.1	Personal Precautions	Adhere to personal protective measures.
6.2	Environmental Precautions	Do not allow to get into waste water or waterways; if this occurs, inform the relevant authority at once.
6.3	Methods and materials for cleaning up	In the event of spillage, take up large and small fragments mechanically (e.g. sweep or vacuum up small fragments being first treated with damp sand) into tightly closed containers. Adhere to personal protective measures. Label contained ands dispose of as prescribed. Do NOT sweep up dry dust (possibility of explosion).
6.4	Reference to other sections	See section 8 for personal protective equipment.

Section 7	HANDLING AND STORAGE	
7.1	Precautions for safe handling	Handle in accordance with good chemical hygiene and safety practice. Avoid the raising and deposition of dust.
7.2	Conditions for safe storage	Ensure adequate ventilation of the storage area. Keep containers tightly closed, cool and dry, avoiding direct sunlight and away from organic, oxidizing combustible materials and strong acids.
7.3	Specific end use(s)	See section 1.2

Section 8	EXPOSURE CONTROLS / PERSONAL PROTECTION

8.1 Exposure Limits/Guidelines

Chemical Name	*CAS #*	*OSHA TWA (8 hours)*
Barium sulphate (inhalable dust)	7727-43-7	10 mg/m^3
Barium sulphate (respirable dust)	7727-43-7	4 mg/m^3
Data for sodium hydrogen sulphite	7631-90-5	5 mg/m^3

Substance Name	Sodium Chlorate		
EC number	231-887-4	CAS number	7775-09-9

DNELs

	Workers				Consumers			
Route of exposure	Acute effect local	Acute effects systemic	Chronic effects local	Chronic effects systemic	Acute effects local	Acute effects systemic	Chronic effects local	Chronic effects systemic
Oral	Not required				No data	No hazard identified	No data	0.05 mh/kg bw/day
Inhalation	No hazard identified	No hazard identified	No hazard identified	5 mg/m^3	No hazard identified	No hazard identified	No hazard identified	No hazard identified
Dermal	No hazard identified	No hazard identified	No hazard identified	3.08 mg/kg bw/day	No hazard identified	No hazard identified	No hazard identified	No hazard identified

PNECs

Environmental Protection target	PNEC
Fresh water	1 mg/L
Fresh water sediments	No hazard identified
Marine water	1 mg/L
Marine sediments	No hazard identified
Food chain	0.01 g/kg food
Microorganisms in sewage treatment	100 mg/L
Soil (agriculture)	3.33 mg/kg soil dw
Air	No hazard identified

Section 8	EXPOSURE CONTROLS / PERSONAL PROTECTION								
	Substance name	Iron Powder							
	EC Number	231-096-4			CAS number	7439-89-6			
	DNELs (No data)								
		Workers				Consumers			
	Route of exposure	Acute effect local	Acute effects systemic	Chronic effects local	Chronic effects systemic	Acute effects local	Acute effects systemic	Chronic effects local	Chronic effect systemic
	Oral	Not required				No data	No hazard identified	No data	0.71 mg/kg bw/day
	Inhalation	No hazard identified	No hazard identified	3 mg/m^3	No hazard identified	No hazard identified	No hazard identified	1.5 mg/m^3	No hazard identified
	Dermal	No hazard identified	No hazard identified	No hazard identified	No hazard identified	No hazard identified	No hazard identified	No hazard identified	No hazard identified

	PNECs	
	Environmental protection target	PNEC
	Fresh water	No data: aquatic toxicity unlikely
	Freshwater sediments	Insufficient hazard data available
	Marine water	No data: aquatic toxicity unlikely
	Marine sediments	Insufficient hazard data available
	Food chain	Insufficient hazard data available
	Microorganisms in sewage treatment	No data: aquatic toxicity unlikely
	Soil (agriculture)	Insufficient hazard data available
	Air	No hazard identified

8.2	Exposure controls	
	The following information on appropriate Personal Protective Equipment is provided to assist employers in complying with OSHA regulations found in 29 CFR Subpart I (beginning at 1910.132) or equivalent standard of Canada, or standards of EU member states (including EN 149 for respiratory PPE, and EN 166 for face/eye protection), and those of Japan. Please reference applicable regulations and standards for relevant details.	
	Engineering controls	Mandatory general regulations on occupational health. For hazardous constituents, do not allow the environmental and workplace concentration limits to exceed values stated above. Ensure that exposed skin is washed and contaminated clothing is disposed of/cleaned if reused. Do not eat, drink, or smoke. Avoid skin and eye contact, wash hands and face before and after working with the product. Avoid inhalation of dust and provide adequate local and general ventilation
	Personal protection	Observe normal standards for handling chemicals Wash hands before breaks and after work Avoid inhalation of dust is raised Wear personal protective equipment appropriate to the task (see below)
	Eye Protection	Wear suitable protective glasses/goggles e.g. Polycarbonate (EN 166)

Section 8	EXPOSURE CONTROLS / PERSONAL PROTECTION	
	Skin protection	Wear protective chemical resistant gloves (EN 374, PVC, thickness 1.5mm) break through time <480 mins
	Respiratory Protection	Wear approved dust mask or respirator with filter APF 10/APF 20
	Other Protection	Protective overalls. Concentrations of hazardous substances should be monitored in accordance with recognized test methods. Mode, method, type and frequency of testing (measurement of harmful factors) should meet the requirements of local/regional/national laws
	Environmental exposure	Do not introduce the product to ground water, sewage, wastewater, or soil

Section 9	PHYSICAL AND CHEMICAL PROPERTIES			
9.1	Basic Physical and chemical properties			
	Physical State	Solid	Color	Grey
	Odor	Odorless	pH	Not determined
	Boiling pt/range	Not determined.	Melting pt/range	Approx. 200°C
	Flash point	Not applicable	Relative density	2.0 g/cm^3
	Water solubility	Partial	Odor threshold	Not applicable
	Evaporation rate	Not applicable	Flammability	Not applicable
	Explosion limits	Not applicable	Vapor pressure	Not applicable
	Vapor density	Not applicable	Partition coeff.	Not applicable
	Auto-ignition temperature	Not applicable	Viscosity	Not applicable
	Explosive properties	Not determined	Oxidizing properties	Strong oxidizer
	Decomposition temperature	300° C		
9.2	Other information	Strong oxidizer		

Section 10	STABILITY AND REACTIVITY	
10.1	Reactivity	Can burn with exploding violence if in contact with fuels or organic material
10.2	Chemical stability	Stable under normal conditions of handling
10.3	Hazardous reactions	Decomposes to form oxygen on heating or ignition (friction or impact can cause ignition)
10.4	Conditions to Avoid	Contact with water and organic materials
10.5	Incompatible material	Organic material
10.6	Hazardous decomposition products	Chlorine and chlorine dioxide can be evolved following contact with strong acids

Section 11	TOXICOLOGICAL INFORMATION						
11.1	Toxicity: There is no available data for the product, only for the ingredients.						
	Information is for barium peroxide (CAS# 1301-29-6, EC# 215-128-4) and sodium chlorate (CAS# 7775-09-9 EC# 231-887-4)						
	Hazard class	Method	Species	Route of exposure	Effective dose	Exposure time	Results
	Acute toxicity	LD_{50}	Rat	oral	No data	No data	The study does not need to be conducted because the substance is classified as corrosive to the skin.
		LD_{50}	Rabbit (oral)		1200 mg/kg	No data	Data for sodium chlorate
	Skin corrosion/irritation	Corrosive to skin causing irreversible damage					
	Serious eye damage/irritation	Causes severe damage to eyes. Study not undertaken as it causes irreversible damage to the skin.					
	Respiratory or skin sensitization	This study does not need to be conducted because the substance is classified as skin corrosion (Category 1, 1A, 1B or 1C)					
	Carcinogenicity	Not carcinogenic					
	Reproductive Toxicity	No data					
	Summary of evaluation of the CMR properties	Not a CMR					
	STOT -single exposure	This study does not need to be conducted because the substance is classified as skin corrosion (Category 1, 1A, 1B, or 1C)					
	STOT -repeated exposure	This study does not need to be conducted because the substance is classified as skin corrosion (Category 1, 1A, 1B, or 1C)					
	Aspiration hazard	No data					
11.2	Information on other hazards	None.					

Section 12	ECOLOGICAL INFORMATION
12.1	Toxicity (information for sodium chlorate)
	All work practices must be aimed at eliminating environmental contamination.

Section 12	ECOLOGICAL INFORMATION	
	Acute (short-term) toxicity	Fish: EC50 >1000 mg/L Crustacea: EC50 >1000mg/L Algae/aquatic plants: EC50 > 129 mg/L Other organisms: No data
	Chronic (short-term) toxicity	Fish: NOEC >= 500 mg/L Crustacea: NOEC >= 500mg/L Algae/aquatic plants: NOEC >= 62.5 mg/L Other organisms: No data
12.2	Persistence and degradability	Abiotic Degradation: No data Physical- and photo-chemical elimination: No data Biodegradation: No data
	Bioaccumulative potential	Partition coefficient n-octanol /water (log Know): < -2.9 Bioconcentration factor (BCF): No data
	Mobility in soil	Known or predicted distribution to environmental compartments: Surface tension: Not applicable Adsorption/Desorption: Not expected
	Results of PBT and vPvB assessment	Not applicable
	Endocrine disrupting properties	Not regarded as an EDC
	Other adverse effects	None known

Note: This product is readily biodegradable and is not expected to bio-accumulate.

Section 13	DISPOSAL CONSIDERATIONS	
13.1	Waste treatment methods	
	Product/ Packaging disposal	If possible, recycle to supplier or approved recycling company. If not (e.g. designated as waste), dispose of in accordance with national, state, and local laws and regulations,
	Waste treatment- relevant information	Offer surplus and non-recyclable solutions to a licensed disposal company. Contact a licensed professional waste disposal service to dispose of this material. Dissolve or mix the material with a combustible solvent and burn in a chemical incinerator equipped with an afterburner and scrubber.
	Sewage disposal – relevant information	NO data
	Other disposal recommendations	Contaminated packaging, dispose of as unused product.

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Section 14	TRANSPORTATION INFORMATION	
14.1	U.S. DOT, IATA, IMO, and ADR	
14.2	Proper Shipping Name	OXIDIZING SOLID N.O.S, OXYGEN GENERATOR, Chemical
14.3	Hazard Class Number and Description	5.1 Oxidizers
14.4	U.N. Identification Number	UN 1479
14.5	Packing Group	II
14.6	DOT Label(s) Required	
14.7	North American Emergency Response Guidebook Number (2004)	140
14.8	Marine Pollutant	The product should not be marked as a marine pollutant.
14.9	International Air Transport Association (IATA)	OXIDIZING SOLID N.O.S

Section 15	REGULATORY INFORMATION	
	United States Regulations	
	SARA Reporting Requirements	313: This mixture contains 1-5 weight% of barium peroxide, a barium compound, CAS Number: 1304-29-6, a toxic chemical subject to reporting requirements of Section 313 of the Title III of the Superfund Amendments and the Reauthorization Act of 1986 and 40 CFR 372.
	Toxic Control Substance Act (TCSA)	N/A
	SARA 311/312	N/A
	U.S. SARA Threshold Planning Quantity	N/A
	U.S. CERCLA Reportable Quantity (RQ)	N/A
	Clean Water Act (CWA)	N/A
	State Regulations	Pennsylvania: This product contains sodium chlorate and barium peroxide which are subject to the Pennsylvania Worker and Community Right-To-Know Act.
	California Safe Drinking Water and Toxic Enforcement Act (Proposition 65)	The sodium chlorate component sometimes contains trace amounts of chromium (up to 25 parts per million). The following warning is provided to comply with California law. Warning! This product contains a chemical known to the state of California to cause cancer.
	Canadian Regulations	
	Canadian DSL/NDSL Inventory Status	N/A
	Canadian Environmental Protection Act (CEPA) Priorities Substances Lists	N/A
	Canadian WHMIS Classification and Symbols	N/A
	European Economic Community Information	
	EU Labelling and Classification	The SDS has been updated in accordance with EC regulation No 1272/2008 (CLP/GHS)
	Australian Information for Product	

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Section 15	REGULATORY INFORMATION	
	Australian Inventory of Chemical Substances (AICS) Status	N/A
	Standard for the Uniform Scheduling of Drugs and Poisons	N/A
	Japanese Information for Product	
	Japanese Minister of International Trade and Industry (MITI) Status	N/A
	International Chemical Inventories - Listing of the components on individual country Chemical Inventories is as follows.	
	Asia-Pac	N/A
	Australian Inventory of Chemical Substances (AICS)	N/A
	Korea Existing Chemicals List (ECL)	N/A
	Japanese Existing National Inventory of Chemical Substances (ENCS)	N/A
	Philippines Inventory of Chemicals and Chemical Substances (PICCS)	N/A
	Swiss Giftliste List of Toxic Substances	N/A
	U.S. TSCA	N/A

Section 16	OTHER INFORMATION	
	NFPA Ratings	The ratings below are for Sodium chlorate, CAS# 7775-09-9
	Code for Flammability:	0
	Code for Health:	1
	Code for Reactivity:	2
	Code for Special Hazards: X	Strong oxidizing solid
	PREPARED BY	Molecular Products, Inc.
	Disclaimer: The information in this safety data sheet is based on the best knowledge available at the time and current legislation. It provides guidance on health, safety and environmental aspects of the product and should not be construed as any guarantee of technical performance or suitability for a particular application. As the specific conditions of use are outside the control of the supplier, the user is responsible for ensuring that the product is used in a safe way and in compliance with the relevant requirements of legislation.	
	Date of issue	9 May 2025