



GUJARAT ALKALIES AND CHEMICALS LIMITED

MATERIAL SAFETY DATA SHEET

SODIUM CHLORATE

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT IDENTIFICATION

Brand Name..... Sodium Chlorate
Chemical Name..... Sodium Chlorate
Common Name..... Sodium Chlorate
Formula..... NaClO_3
Molecular Weight..... 106, 44
Product Use..... Non-selective herbicide; material in the Manufacture of Chlorine dioxide; oxidizing agent in Chemical manufacture

MANUFACTURE

EMERGENCY TELEPHONE NUMBER

Guajrat Alkalies and Chemicals Ltd.
P.O.: Dahej, Ta: Vagra. GUJARAT

Mob.: 7567654502
(02641) 256315-18 / 256325/35 Ext. 460

2. COMPOSITION/INFORMATION ON INGREDIENTS

CHEMICAL NAME	CAS NUMBER	WEGHT %
Sodium Chlorate	7775-09-9	99.5

3. HAZARDOUS IDENTIFICATION

CAS No..... 7775 – 09 – 9
UN No..... 1495

EMERGENCY OVERVIEW

Odorless, white granular solid; soluble in water. Harmful if swallowed. May be irritating to the respiratory system if inhaled, or to eyes or skin in case of contact.

DANGER: Strong oxide. Contact with other material such as paper, wood, hydrocarbon, petroleum products and clothing may cause fire or explosion. Can produce shock-sensitive mixtures. Thermally unstable at elevated temperatures.

In case of spill, wear full protective equipment (see Section 8).

Will not burn in a fire, but may cause combustible materials to ignite; it will accelerate the burning of other materials and increase the fire hazards. In case of a fire, **use water only**. Use flooding amounts for large fire.

POTENTIAL HEALTH EFFECTS

PRIMARY ROUTE(S) OF ENTRY: Inhalation (breathing); eye and skin contact; ingestion (swallowing).

SYMPTOMS OF EXPOSURE:

- Inhalation :Irritation or burning in respiratory tract; coughing and sneezing
- Eye Contact : Itching or mild irritation.
- Skin Contact : Itching or mild irritation; prolonged and repeated contact may cause dermatitis
- Ingestion : Ingesting large quantity can cause abnormal pain, nausea, diarrhea and cyanosis. Possibly progress to headache, difficulty in breathing, dizziness, seizures or coma. Large doses can cause kidney or liver damage.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE

Breathing or respiratory disorders, digestive tract, kidney and blood disorders could be aggravated by exposure to this chemical.

REPORTED AS CARCINOGEN OR POTENTIAL CARCINOGEN : Not applicable

4. FIRST AID MEASURES

- Inhalation: If inhaled, remove to fresh air, if not breathing. Clear airway and start mouth to mouth artificial respiration or use a bag- mask respirator. Get immediate medical attention. If victim is having trouble breathing, transport to medical care and, if available, give supplemental oxygen.
- Eye contact: Immediately rinse eye with water. Remove any contact lenses. And continue flushing eye with running water for at least 15 minutes. Hold eyelids apart to ensure rinsing to the entire surface of the eye and lids with water. Get immediate medical attention.
- Skin Contact: Wash affected areas with plenty of water, and soap if available, for several minutes. Remove and clean contaminated clothing and shoes. Seek medical attention if irritation develops or persists.
- Ingestion: Immediately give 3-4 glasses of water, and induce vomiting. Give fluids until vomitus is clear. Do not induce vomiting or give anything by mouth to an unconscious person or convulsing person. Get immediate medical attention.

NOTE TO PHYSICIAN

Chemical of exposure is sodium chlorate, a strong oxidizer and met hemoglobin former. Cyanosis, resistant to oxygen therapy, may be noted within several hours following inhalation or ingestion. Large doses can affect the kidney, liver, and central nervous system.

5. FIRE FIGHTING MEASURES

Flash Point and Method : N/A

GENERAL HAZARD : This product is not flammable, but may cause combustible materials to ignite; it will accelerate the burning of these materials and increase the fire hazard. Thermally unstable under fire conditions; may undergo a violent decomposition.

EXTINGUISHING MEDIA: Use water only. For small fire, do not use CO₂ or dry chemical. For large fires, use flooding quantities of water as fog or spray applied from a distance. For a massive fire in storage area use unmanned hose holder or monitor nozzles, if this is impossible, withdraw from the area and let the fire burn.

SPECIAL FIREFIGHTING INSTRUCTIONS

Keep unnecessary people away; isolate hazard area and deny entry. DONOT attempt to fight a large fire unless you are trained fire fighter. Approach fire from upwind to avoid hazardous vapors and toxic decomposition products. Cool fire-exposed containers with water spray until well after fire is out. Extinguish fire using agent suitable for surrounding fire.

FIREFIGHTING EQUIPMENT

Wear approved positive-pressure self-contained apparatus and full protective gear.

6. ACCIDENTAL RELEASE MEASURES

Wear appropriate protective equipment.

ON LAND: Do not create dust. Scoop up with a shovel or sweep up with a synthetic fiber broom and place in metal container.

Does not mix with combustible materials, Application of sodium carbonate, borax or chloride as a diluents and absorbent will reduce the fire hazard, dispose of as a hazardous waste under DOEF, MOEF, GPCB & CPCB regulations.

IN WATER : Absorb with a noncombustible absorbent (vermiculite). Place in metal container and dispose of as above.

7. HANDLING AND STORAGE

Wear appropriate protective equipment. Avoid contact with eyes, skin, and clothing. Wash thoroughly after handling.

HANDLING

Do not taste or swallow. Use only with adequate ventilation. Wash thoroughly after handling. Keep away from food or drinking water.

Clothing, vegetation, hydrocarbons, petroleum's products, and other organic materials contaminated with sodium chlorate or its solutions are dangerously flammable. Keep from contact with clothing and other combustible materials, Remove and wash contaminated clothing promptly. Do not wear leather shoes, gloves or belts. Wear rubber boots and apron to avoid contact with clothing. Always have a water filled jump tank or deluge shower in immediate work area. If your clothing catches fire, denote use fire blanket. Use the jump tank or deluge shower.

Do not smoke when handling. Do not drop. Skid, or slide containers. Keep away from fire Keep from contact with sparks, impact, abrasion, or any other source of heat.

STORAGE

Store in a dry, well-ventilated area, preferably outdoors, Do not store with ammonia, or amines.

8. EXPOSURE CONTROL/PERSONAL PROTECTION

ENGINEERING CONTROLS

Provide local exhaust and general ventilation system. Do not allow accumulation of dust pipes, structural members, or walkways.

PERSONAL PROTECTION

Respirator: In Operation where dust exposure limits are exceed, use NIOSH-approved respirator that has been selected by a technically qualified person for the specific work conditions.

Eye Protection: Wear safety glasses with side shield (or goggles). Wear a full-face respirator, if needed.

Clothing: Where contact is likely. Wear chemical-resistant gloves, a chemical suit and chemical-resistant boots, Wear easily washable clothing and rubber boots or shoes, and wash clothing after each shift. If clothing becomes contaminated, keep wet until washed. Do not wear leather shoes, gloves or belts.

Other: Eye wash, Safety shower or jump tank.

EXPOSURE CONTROLS

COMPONENT	ACGIHTLV	
	TLV	STEL
Particulates no otherwise classified – inhalable - respirable	10 mg/m ³ 3 mg/m ³	-
Particulates no otherwise classified – total dust - respirable fraction	-	-

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical State	: Granular Solid	Boiling point °C	: N/A
Appearance	: White Crystals	Bulk Density, lb/cu.ft	: Approx 100
Odor	: Odorless	Weight per gallon	: N/A
Vapour pressure	: N/A	Specific gravity @20°C	: 2.49
Melting point °C	: 248	Water solubility @30°C	: 49.5
pH	: N/A	Other solubility	: Soluble in alcohol & Glycerol
Auto ignition Temp °C	: N/A	TDG flammability	: 5.1
Flammability	No		
Explosion Sensitivity to impact		Explodes	
Explosion Sensitivity to static electricity		Explodes	
Hazardous Combustion products		Emits toxic fumes of Cl ₂ and Na ₂ O	
Hazardous Polymerization		Will not occur	

10. STABILITY AND REACTIVITY

STABILITY : Stable under ordinary conditions of use and storage.

REACTIVITY : Normally stable unless contaminated.

INCOMPATIBILITIES:

Incompatibility with other material like Aluminum, strong reducing agents, organic matter and other oxidizer. DANGER! Strong oxidizer – contact with other materials may cause fire or explosive mixtures. May react violently with strong reducing agents. DO NOT MIX with charcoal, shellac, sugar, starch, sulfur and sulfur compounds, ammonia compounds, amines, acids, phosphorus, metal powders, sawdust, explosives and other flammable or oxidizable materials including clothing. Can become shock or friction sensitive when mixed with some of these materials.

HAZARDOUS DECOMPOSITION PRODUCTS

If subjected to intense heat, may release toxic and hazardous fumes of sodium oxide, chlorine and chlorine dioxide.

CONDITIONS TO AVOID: High temperatures; reducing agents.

11. TOXICOLOGICAL INFORMATION

Acute Effects on humans

Humans appear to be more susceptible than animals to acute effects of exposure to sodium chlorate (see data below). Doses of 100 grams or more are invariably fatal to humans. In a study of 14 cases of poisoning by sodium chlorate, the lowest fatal dose reported occurred in a 46 years old woman who ingested 15 grams (estimated to be 280 mg/kg of body weight). In another reported case, however, an 18 years old male survived a dose of 100 grams (estimated to be 1.14 g/kg of body weight) (HSDB, 1998).

LD _{LO} (human)	214 mg/kg – unreported route
LD _{LO} (child)	185 mg/kg – unreported route
Oral TD _{LO} (woman)	800 mg/kg
Oral LD ₅₀ (rat)	1200 mg/kg
Oral LD ₅₀ (mouse)	8350 mg/kg
Oral LD ₅₀ (rabbit)	7200 mg/kg
Oral LD _{LO} (cat)	1350 mg/kg
Oral LD _{LO} (dog)	700 mg/kg
Inhalation LC ₅₀ (rat)	>28 g/m ³ /1 hr
Intraperitoneal LD ₅₀ (mouse)	596 mg/kg
Dermal LD ₅₀ (rabbit)	>10 g/kg
Dermal (rabbit)	500 mg/24hrs – mild irritation
Eye (rabbit)	10 mg – mild irritation

Mutation effects were observed in bacteria and insects.

Potential Chronic Effects

In sub-chronic oral studies, the NOAEL for sodium chlorate was found to be 9 mg/kg-day for Green monkeys dosed via dinking water for 30-60 days; 38-53 mg/kg-day for rats dosed via drinking water for three months; 100 mg/kg-day for rates dosed by gavage for three months; and 360 mg/kg-day for beagle dogs dosed by gavage for three months.

In a one year study on rats dosed via drinking water, no NOAEL was determined; however, the Lowest Observable Adverse Effect Level was 1.8 mg/kg-day.

12. ECOLOGICAL INFORMATION

Sodium chlorate acts as non-selective contact herbicide, acting as a desiccant; it is a semi-permanent soil sterilant.

Sodium chlorate was found to be weakly toxic to aquatic organisms.

13. DISPOSAL CONSIDERATIONS

Sodium chlorate, including spill cleanups, is prohibited from land disposal without prior treatment. Dispose in accordance with applicable MOEF, CPCB & GPCB regulations.

14. TRANSPORT INFORMATION

Proper Shipping Name : Sodium Chlorate
(DOT, TDG)
Hazard Class : 5.1 (Oxidizer)
ID Number : UN 1495
Packing Group : II
Label(s) : Oxidizer
ERG – Guide No. : 140

Further Information :

Vehicle driver is aware of the potential hazards of the load and knows to do in the event of an accident or an emergency.

15. REGULATORY INFORMATION

HAZARD COMMUNICATION STANDARD

WORK PLACE HAZARDOUS MATERIALS INFORMATION SYSTEM

This product has been classified according to the hazard criteria of the MOEF, CPCB, GPCB & DISH Regulations, and the MSDS contains all required information.

16. OTHER INFORMATION

C- Ceiling limit

LOAEL- Lowest Observable Adverse Effect Level

LC₅₀ – The concentration of a substance in air that will kill 50% of test animals within a certain exposure period.

LD_{L0} – The lowest dose of a substance that will kill a test animal.

LD₅₀ – The dose that causes death in 50% of test animals.

N/A – Not applicable

NOAEL – No Observable Adverse Effect Level

PREPARATION INFORMATION

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