

ORIENT PAPER MILLS - CAUSTIC SODA UNIT, AMLAI, ANUPPUR (M.P.)

MATERIAL SAFETY DATA SHEET

Section 1 – Chemical product and Company identification


PRODUCT IDENTIFICATION	SODIUM HYDROXIDE, FLAKES (F-NaOH)
RECOMMENDED USAGE	Neutralizing Agent, Industrial Cleaner, Pulping And Bleaching, Catalyst.
MANUFACTURER:	ORIENT PAPER MILLS, CAUSTIC SODA UNIT, AMLAI, DIST: ANUPPUR (M.P.) INDIA. TEL. No. 07652-286266, FAX NO. 091-7652-286290,
EMERGENCY PHONE NUMBER:	1800-111735

Section 2 - Composition, Information on Ingredients

CHEMICAL IDENTITY	:	Sodium Hydroxide, Flakes
TRADE NAMES/SYNONYMS	:	Caustic Soda; White Caustic; Bead; Dry; Flake; Solid; Sodiumhydrate; Sodium Hydroxide (NaOH); Dry Solid, Flake, Bead, Or Granular;
MINIMUM PERCENTAGE	:	97.0%

Section 3 - Hazards Identification

GHS Classification:



Health	Environmental	Physical	GHS Label:
Acute Toxicity - Category 3 Eye Corrosion - Category 1A Skin Corrosion - Category 1A Skin Sensitization - Category 1 Mutagenicity - Category 1A Carcinogenicity - Category 1B Reproductive/Developmental - Category 1A Target Organ Toxicity (Repeated) – Category 1	Aquatic Toxicity: • Acute 1 • Chronic 1	Substance which in contact with water emit flammable gasses - Category 1	Symbols: skull and crossbones, corrosion, health hazard 

Hazard Statements Danger!

- Extremely Corrosive.
- Fatal If Inhaled.
- Avoid Swallowing.
- Causes Severe Skin Burns and Eye Damage. Can Cause Blindness, Permanent Scarring and Death.
- Toxic If Swallowed And In Contact With Skin. Suspected Of Damaging The Unborn Child. Suspected Of Causing Genetic Defects. May Cause Damage To Cardiovascular, Respiratory, Nervous, And Gastrointestinal Systems And Liver And Blood Through Prolonged Or Repeated Exposure. Harmful To Aquatic Life.

Precautionary Statements

- Do Not Breathe Mist/Vapors.
- Keep Container Tightly Closed.
- Wear Protective Gloves And Eye/Face Protection.
- Store Container Tightly Closed In Cool/ Well-Ventilated Place.
- Wash Thoroughly After Handling.

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Section 4 - First Aid Measures

Inhalation: If adverse effects occur, remove to uncontaminated area. Give artificial respiration if not breathing. If breathing is difficult, oxygen should be administered by qualified personnel. Get immediate medical attention.

Skin Contact: Wash skin with soap and water for at least 15 minutes while removing contaminated clothing and shoes. Get immediate medical attention. Thoroughly clean and dry contaminated clothing and shoes before reuse. Destroy contaminated shoes.

Eye Contact: Immediately flush eyes with plenty of water for at least 15 minutes. Then get immediate medical attention.

Ingestion: If swallowed, drink plenty of water, do NOT induce vomiting. Get immediate medical attention.

Note to Physician: For inhalation, consider oxygen. Avoid gastric lavage or emesis.

Section 5 - Fire Fighting Measures

- Suitable Extinguishing Media** : Regular dry chemical, carbon dioxide, water, regular foam
- Large fires** : Use regular foam or flood with fine water spray.
- Fire And Explosion Hazards** : Negligible fire hazard.
- Fire Fighting** : Move container from fire area if it can be done without risk. Cool containers with water spray until well after the fire is out. Stay away from the ends of tanks.

Section 6 - Accidental Release Measures

PERSONAL PRECAUTIONS, PROTECTIVE EQUIPMENT & EMERGENCY PROCEDURES:

Environment Precaution:

Soil Release: Dig holding area such as lagoon, pond or pit for containment. Cover with plastic sheet or tarp to minimize spreading and protect from contact with water.



Water Release : Neutralize.

Methods & Materials For Containment & Cleaning UP: Do not touch spilled material. Stop leak if possible without personal risk.

Small spills: Absorb with sand or other non-combustible material. Collect spilled material in appropriate Container for disposal.

Small dry spills: Move containers away from spill to a safe area.

Large spills: Dike for later disposal. Keep unnecessary people away, isolate hazard area and deny entry. Notify Local Emergency Planning Committee and State Emergency Response Commission for release greater than or equal.

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Section 7 - Handling and Storage

Precautions For Safe Handling: Use smallest possible amounts in designated areas with adequate ventilation. Keep containers closed when not in use. Empty containers may contain hazardous residues. Transfer solids using tools or equipment, which are corrosion - resistant. Cautiously, transfer into sturdy containers made of compatible materials. Never return contaminated material to its original container. Considerable heat is generated when diluted with water. Proper handling procedures must be followed to prevent vigorous boiling, splattering or violent eruption of the diluted solution. Never add water to caustic.

Always Add Caustic to Water and provide agitation. When mixing with water, stir small amounts in slowly. Use cold water to prevent excessive heat generation. In general, keep solid sodium hydroxide away from water. Post “DO NOT USE WATER” signs in area of use to prevent accidental contact.

Precautions For Safe Storage (including any incompatibilities): Store in a cool, dry, well-ventilated area. This material absorbs water. Keep containers tightly closed when not in use and when empty. Protect from damage. Store away from incompatible materials such as strong acids, nitro aromatic, nitro paraffinic or organo halogen compounds. Use corrosion-resistant structural materials and lighting and ventilation systems in the storage area. Containers made of nickel alloys are preferred. Steel containers are acceptable if temperatures are not elevated. Nickel is the preferred metal for handling this product. Plastics or plastic-lined steel, or FRP tanks of derakane vinyl ester resin may be suitable. If outdoor storage of pearl caustic is unavailable, the pallets should be protected against extremes of weather. Do not expose sealed containers to temperatures above 40°C (104°F).

Section 8 - Exposure Controls, Personal Protection



CONTROL PARAMETERS:

OCCUPATIONAL EXPOSURE LIMIT or BIOLOGICAL LIMIT VALUE:

- 2 mg/m³ OSHA TWA
- 2 mg/m³ OSHA ceiling (vacated by 58 FR 35338, June 30, 1993)

APPROPRIATE ENGINEERING CONTROLS: Local exhaust ventilation should be applied wherever there is an incidence of point source emissions or dispersion of regulated contaminants in the work area. Ventilation control of the contaminant as close to its point of generation is both the most economical and safest method to minimize personnel exposure to airborne contaminants. The most effective measures are the total enclosure of processes and the mechanization of handling procedures to prevent all personal contact. **VENTILATION:** Ensure compliance with applicable exposure limits.

Personal Protective Equipment

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Maintain eye wash fountain and quick-drench facilities in work area. Detailed requirements for personal Protective equipment should be established on a site-specific basis.

Eye Protection: Wear full face-shield and chemical safety goggles when there is potential for contact.

Skin Protection: Wear appropriate personal protective clothing to prevent skin contact. Chemical protective clothing composed of natural rubber, neoprene, nitrile, or styrene/butadiene (SBR)-coated.

Respiratory Protection : Up To 10 mg/m: Supplied Air Respirator (SAR) operated in a continuous-flow mode, eye protection needed or full-face piece respirator with high-efficiency particulate filter(s); or powered air-purifying respirator with dust and mist filter(s), eye protection needed; or full-face piece Self-Contained Breathing Apparatus (SCBA); or full face piece SAR.

Section 9 - Physical and Chemical Properties

APPEARANCE

PHYSICAL STATE	:	Solid or Flake
COLOR	:	white or Grayish
CHANGE IN APPEARANCE	:	hygroscopic
ODOR	:	odorless
ODOR THRESHOLD	:	Not available
MOLECULAR FORMULA	:	Na-O-H
MOLECULAR WEIGHT	:	40.00
PH	:	14 (5% solution)
MELTING POINT	:	604 F (318 C)
BOILING POINT	:	2534 F (1390 C)
FLASH POINT	:	Not available
EVAPORATION RATE	:	Not applicable
FLAMMABILITY (solid, gas)	:	Not available
VAPOR PRESSURE	:	100 mmHg @ 1111 C
VAPOR DENSITY	:	Not applicable
RELATIVE GRAVITY (water1)	:	2.130
SOLUBILITY IN WATER	:	VERY soluble (111 g/100 mL at 20 ° C(68°F))
SOLVENT SOLUBILITY:		
Soluble	:	alcohol, glycerol
Insoluble	:	acetone, ether
PARTITION COEFICIENT <i>n-octanol / water</i> :		Not available
AUTO-IGNITION TEMPERATURE:		Not available
DECOMPOSITION TEMPERTURE:		Not available

Section 10 - Stability and Reactivity

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Stability: Stable at room temperature. Rapidly absorbs carbon dioxide from the air, forming sodium carbonate. Slowly absorbs moisture from the air.

Possibility of Hazardous Reactions:

Reactivity : May react with evolution of heat on contact with water

Conditions To Avoid : Water, moisture, and air. Dangerous gases may accumulate in confined spaces. May ignite or explode on contact with combustible materials.

Incompatibilities : Combustible materials, acids, halo carbons, metals, halogens, oxidizing materials, peroxides, metal salts

Hazardous Decomposition: Thermal decomposition - sodium oxide products

Polymerization : Will not polymerize. However, it can induce hazardous polymerization of acetaldehyde, acrolein, and acrylonitrile.

Section 11 - Toxicological Information



Health Effects

Inhalation:

ACUTE EXPOSURE: Effects due to inhalation of dusts or mist may vary from mild irritation of the nose at 2mg/m³ to severe pneumonitis depending on the severity of exposure. Low concentrations may cause mucous membrane irritation with sore throat, coughing, and dyspnea. Intense exposures may result in destruction of mucous membranes and delayed pulmonary edema or pneumonitis. Shock may occur.

CHRONIC EXPOSURE: Prolonged exposures to high concentrations of dusts or mists may cause discomfort and ulceration of the nasal passages. Repeated exposures of 5000 mg/L were harmless to rats, but 10,000 mg/L led to nervousness, sore eyes, diarrhea and retarded growth. Rats exposed 30 minutes/day to unmeasured concentrations of sodium hydroxide aerosols suffered pulmonary damage after 2-3 months. Death occurred in 2 of 10 rats exposed to an aerosol of 40% aqueous sodium hydroxide for 30 minutes, twice a week for 3 weeks. Histopathological examination showed mostly normal lung tissue with foci of enlarged alveolar septae, emphysema, bronchial ulceration, and enlarged lymph adenoidal tissues. An epidemiologic study of 291 workers chronically exposed to caustic dusts for 30 years or more found no significant increase in mortality in relation to duration or intensity of such exposures.

INGESTION: ACUTE EXPOSURE: The reported lethal dose in rats is 140-340 mg/kg. Ingestion may cause a burning sensation in the mouth, corrosion of the lips, mouth, tongue and pharynx, and severe esophageal and abdominal pain, vomiting of blood and large pieces of mucosa, and bloody diarrhea. Asphyxia can occur from swelling of the throat. Mediastinitis, alkalemia, pallor, weak, slow pulse, cardiovascular collapse, shock, coma

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and death may occur. Perforation of the alimentary tract and constrictive scarring may result. Esophageal stricture may occur weeks, months, or even years later to make swallowing difficult. The estimated fatal dose in man is 5 grams. Cases of squamous cell carcinoma of the esophagus have occurred with latent periods of 12 to 42 years after ingestion. These cancers were believed to be sequela of tissue destruction and possibly scar formation rather than the result of direct carcinogenic action of sodium hydroxide.

CHRONIC EXPOSURE: Depending on the concentration, repeated ingestion of alkaline substances may result in inflammatory and ulcerative effects on the oral mucous membranes and other effects as with acute ingestion.

SKIN CONTACT:



ACUTE EXPOSURE: Upon contact with the skin, damage including redness, cutaneous burns, skin fissures and white eschars may occur without immediate pain. Exposure to solutions as weak as 0.03 N (0.12%) for 1 hour has caused injury to healthy skin. With solutions of 0.4-4%, irritation does not occur until after several hours. Solutions of 25-50% caused no sensation of irritation within 3 minutes in human subjects. Skin biopsies from human subjects having 1 N sodium hydroxide applied to their arms for 15 to 180 minutes showed progressive changes beginning with dissolution of the cells in the horny layer and progressing through edema to total destruction of the epidermis in 60 minutes. A 5% aqueous solution caused severe necrosis to the skin of rabbits when applied for 4 hours. Alkalies penetrate the skin slowly. The extent of injury depends on the duration of contact. If sodium hydroxide is not removed from the skin, severe burns with deep ulceration may occur. Exposure to the dust or mist may cause multiple small burns and temporary loss of hair. Pathologic findings due to alkalies may include gelatinous, necrotic areas at the site of contact.

CHRONIC EXPOSURE: Effects are dependent upon concentration and duration of exposure. Dermatitis or effects similar to those for acute exposure may occur.

EYE CONTACT:

ACUTE EXPOSURE: Contact may cause disintegration and sloughing of conjunctival and corneal epithelium, corneal opacification, marked edema and ulceration. After 7 to 13 days either gradual recovery begins or there is progression of ulceration and corneal opacification. Complications of severe eye burns are symblepharon with overgrowth of the cornea by a vascularized membrane, progressive or recurrent corneal ulceration and permanent corneal opacification. Blindness may occur.

CHRONIC EXPOSURE: Effects are dependent upon concentration and duration of exposure. Conjunctivitis or effects similar to those for acute exposure may occur.

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Section 12- Ecological Information

Ecotoxicity:

Fish Toxicity: 240 µg/L 96 hour(s) LC50 (Mortality) Bluegill (Lepomis macrochirus)

Invertebrate Toxicity: 330000-1000000 ug/L 48 hour(s) LC50 (Mortality) Cockle (Cerastoderma edule)

Algal Toxicity: 765 ug/L 30 day(s) (Biomass) Algae, phytoplankton, algal mat (Algae)

Phytotoxicity: 230 ug/L 21 week(s) (Biomass) Waterweed (Elodea Canadensis)

Fate and Transport:

Bioconcentration: 1066 ug/L 32 hour(s) BCF (Residue) Fathead minnow (Pimephales promelas) 3.1 ug/L

Environmental Summary: Highly toxic to aquatic life.

Section 13 - Disposal Considerations

Review state and local government requirements prior to disposal. Do not dispose of waste with normal garbage, or to sewer systems. Whatever cannot be saved for recovery or recycling, including containers, should be managed in an appropriate and approved waste disposal facility. Processing, use or contamination of this product may change the waste management options.

Section 14 - Transport Information

Product Code No.

Caustic Soda Flakes is packed in 50 kg HDPE bags with liner and transported through Trucks.

Section 15 - Regulatory Information

DANGER/HAZARD SYMBOL: C Corrosive

EC RISK AND SAFETY PHRASES:

R 35 Causes severe burns.

S ½ Keep locked-up and out of reach of children.

S 26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.

S 37/39 Wear suitable gloves and eye/face protection.

S 45 In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

Concentration Limits:



C ≥ 5% C R 35

2% ≤ C < 5% C R 34



0.5% ≤ C < 2% Xi R 36/38

Section 16 - Other Information

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use,

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processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

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