

## 1-Material Specifications


<b>Material Name</b>	Caustic soda flakes (Sodium Hydroxide), NaOH
<b>Chemical name</b>	Sodium hydroxide
<b>Common Name</b>	Caustic soda flakes, Alkali Soda
<b>Use of the substance/mixture</b>	Industrial use †Laboratory chemicals †not for food, drug or household use
<b>CAS NO.</b>	1310-73- 2
<b>EU NO.</b>	215-185- 5

## 2- Physical and Chemical Properties

Chemical name	Structural Formula	Molar Mass	Purity	Melting Point	Boiling Point	Density
Sodium hydroxide	NaOH	39.9971(gmol <sup>-1</sup> )	%98	318°C	1388°C	2.13(g.cm <sup>3</sup> (


## 3- Hazards of Contact

<b>Damage organs</b>	<b>Eyes, respiratory system, skin</b>
----------------------	---------------------------------------


	<b>Emergency</b>	1- It causes severe respiratory irritation and breathing failure. 2- It causes severe eye irritation.
	<b>Ways of exposure</b>	Inhalation, skin contact, eye contact
	<b>Eye</b>	Causing severe eye burn and severe eye damage.
	<b>Skin</b>	Prolonged contact with skin causes skin burn.
	<b>Inhalation</b>	Severe respiratory irritation, resulting in wheezing, pulmonary edema, and respiratory failure.
	<b>Swallow</b>	If swallowed it causes lips, mouth and esophagus burning, diarrhea and vomiting.
	<b>Chronic effects</b>	Long-term exposure to the skin causes severe burns, burns and inflammation of the skin.



#### 4- First Aids

	<b>measures after eye contact</b>	While keeping eyes completely open, wash them for 15 minutes with water and meet a doctor immediately
	<b>measures after skin contact</b>	Remove any clothes and shoes then rinse the injured part(s) for 15 minutes with soap and water and meet a doctor immediately
	<b>Inhalation</b>	Go to an open space and breathe clean fresh air. In case of problem in breathing, use oxygen masks
	<b>Swallow</b>	Rinse the stricken person's mouth and give him plenty of water to drink. Do not induce vomiting. In case of vomiting, keep him bounding forward. If possible, give him milk and check his consciousness.
	<b>measures general</b>	Check the vital functions. Unconscious: maintain adequate airway and respiration. Respiratory arrest: artificial respiration or oxygen. Cardiac arrest: perform resuscitation. Victim conscious with laboured breathing: half-seated. Victim in shock: on his back with legs slightly raised Vomiting: prevent asphyxia/aspiration pneumonia. Prevent cooling by covering the victim (no warming up). Keep watching the victim. Give psychological aid. Keep the victim calm, avoid physical strain. Depending on the victim's condition: doctor/hospital.


## 5- Actions in case of Fire

	<b>Extinguishing element</b>	Use a suitable fire extinguisher to put out the fire. Never use water for putting out its fire because adding water to caustic soda flakes produce a large amount of heat.
	<b>Protective equipment</b>	Take the soda container to a safe place far from the fire carefully and wear protective clothes, mask and helmet.
	<b>Other Details</b>	If exposed to heat, caustic soda flakes would be decomposed and would release toxic vapor.

## 6- Action in Case of accidental dispersion

<b>Methods for Discharge</b>	Ventilate the closed space before entering.
<b>Methods for containment</b>	Avoid pouring caustic soda flakes into the water disposal channel or burying it under the ground. If possible, stop the leakage flow cautiously.
<b>Methods for cleaning up</b>	Prevent making any dust, while gathering the material by means of a spade or a trowel.

## 7- Shipment and Warehousin

	<b>packing</b>	It must be kept in two-ply polypropylene or polyethylene packages, which are properly sewed
	<b>Shipment</b>	Carry the container carefully and try to keep the inside of the container dry and cool. When carrying the substance be careful not to contact your skin, eyes and clothes with it. When your job finished, wash your hands and face with water.
	<b>warehousin</b>	Keep caustic soda flakes away from foods, drinks, reach of children and animal's foods.



## 8- personal Protective equipments

	<b>Materials for protective clothing</b>	Give good resistance: natural rubber. neoprene. nitrile rubber. give less resistance: butyl rubber. polyethylene.PVA.give Poor resistance: natural fibres
	<b>Eye protection</b>	Face shield. In case of dust production: protective goggles
	<b>Skin and body protection</b>	Corrosion-proof clothing. In case of dust production: head/neck protection
	<b>Hand protection</b>	Gloves
	<b>Respiratory protection</b>	Dust production: dust mask with filter type P3. High dust production: self-contained breathing apparatus

## 9- Environmental precautions

	<b>Environmental Considerations</b>	It can be neutralized by means of acids. It increases the alkaline property of water and soil.
	<b>the environment</b>	high concentrations cause the destruction of organisms. The carbon dioxide in the air combines the effect of the flake to some extent.
	<b>Ability decomposed</b>	In contact with heat and flame, it would be decomposed and produce toxic vapor.
	<b>Aquatic environment</b>	10 to 20 mg in water causes 50 percent of the fish to die.