



# Safety Data Sheet

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28-March-08

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27-September-12

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2

## 1. PRODUCT AND COMPANY IDENTIFICATION

<b>Product Name</b>	<b>Sodium Hydroxide Solution</b>
<b>UN-No</b>	1824
<b>Synonyms</b>	Caustic Soda solution, Lye solution, Sodium hydrate solution, Sodium hydroxide liquid.
<b>Manufactured by</b>	National Titanium Dioxide Company, Ltd. P.O. Box 13586 Jeddah 21414, Kingdom of Saudi Arabia Telephone: +966(0)2-652-9966 Fax: +966(0)2-652-9933
<b>Other Information</b>	E-mail contact: cldemille@crystal.com
<b>Emergency Telephone Number</b>	SGS +966-3-362-21-93 (Al-Jubail)

## 2. HAZARDS IDENTIFICATION

### Emergency Overview

*Dangerous.  
Poison.  
Corrosive.  
Harmful or fatal if swallowed.  
Harmful by inhalation.  
Can cause burns to skin, eyes and respiratory tract.  
Reacts with water, acids and other materials.*

**Appearance**  
Clear, colorless solution

**Physical State**  
Liquid

**Odor**  
Odorless

### Potential Health Effects

#### Acute Toxicity

<b>Skin</b>	Both the solid and strong solution forms are primary irritants which will rapidly destroy tissue causing caustic burns which are slow to heal and likely to scar.
<b>Inhalation</b>	Severe irritant. Effects from inhalation of mist may cause damage of the upper respiratory tract and to lung tissue depending on the severity of exposure. Effects may vary from mild irritation of the mucous membranes of the nose to severe lung irritation. Symptoms may include sneezing, sore throat or runny nose. Severe pneumonitis may occur.
<b>Ingestion</b>	Can burn mouth, throat, esophagus and stomach. May be fatal if swallowed.
<b>Eyes</b>	Avoid contact with eyes. Risk of serious damage to eyes. May cause corneal ulcers and permanent loss of vision.

**Chronic Toxicity**

**Chronic effects** Prolonged contact with skin will cause a destructive effect.

**Aggravated Medical Conditions** Persons with pre-existing skin, eye or respiratory disorders may be more susceptible to the effects of exposure.

### 3. COMPOSITION/INFORMATION ON INGREDIENTS

**Formula** NaOH + water

Chemical Name	CAS-No.	Weight %
Sodium hydroxide	1310-73-2	10 - 60

### 4. FIRST AID MEASURES

**General Advice** Immediate medical attention is required in all cases of exposure or when symptoms are present. First aid and medical treatment should be done as soon as possible. Severe damage may result if treatment is delayed.

**Eye contact** Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Immediate medical attention is required.

**Skin contact** Wash off immediately with plenty of water for at least 15 minutes. Remove and wash contaminated clothing before re-use. In the case of skin irritation or allergic reactions see a physician.

**Inhalation** Move to fresh air. If not breathing, give artificial respiration. Administer oxygen if breathing is difficult and you are trained. Consult a physician.

**Ingestion** Do NOT induce vomiting. Rinse mouth with water and afterwards drink plenty of water or milk. Never give anything by mouth to an unconscious person. call a physician or Poison Control Center immediately.

### 5. FIRE-FIGHTING MEASURES

**Flammable Properties** Not flammable. Hot or molten material can react violently with water. Contact with metals (i.e. aluminum, magnesium) may generate hydrogen gas. Evolved hydrogen gas may be ignited. May cause fire when in contact with incompatible materials (see Section 10).

**Flash Point** Not applicable.

**Suitable Extinguishing Media** Use extinguishing measures that are appropriate to local circumstances and the surrounding environment. Adding water to caustic solution will generate heat.

**Hazardous Combustion Products** Not applicable.

**Protective Equipment and Precautions for Firefighters** As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

**NFPA Rating**

<b>Health Hazard</b>	3
<b>Flammability</b>	0
<b>Stability</b>	1
<b>Specific Hazard</b>	OX

## 6. ACCIDENTAL RELEASE MEASURES

<b>Personal Precautions</b>	Keep unprotected and unnecessary people away from spill. Wear personal protective equipment as specified in Section 8.
<b>Methods for Containment</b>	Prevent further leakage or spillage if safe to do so. Use dyking or absorbant to prevent run-off from entering waterways.
<b>Methods for Cleaning Up</b>	Ventilate area of leak or spill. Liquid spills should be neutralized with dilute acid, absorbed onto clay or other inert material and shoveled into a container suitable for disposal. Follow clean-up by washing with water and collect rinsings for treatment/disposal.
<b>Other information</b>	If a reportable quantity has been spilled and released from the site, contact local authorities.

## 7. HANDLING AND STORAGE

<b>Handling</b>	When blending, always add caustic to water; never the reverse. Avoid contact with skin and avoid breathing vapors. Do not eat, drink, or smoke in work area. Wash hands prior to eating, drinking, or using restroom. Any protective clothing, or shoes which become contaminated with hydrochloric acid should be removed immediately, and laundered before wearing again. Follow protective controls set forth in Section 8 when handling this product.
<b>Storage</b>	Store in a tightly closed container and keep product covered when not being used. Store in a cool, dry, ventilated area. Prevent freezing (will occur at ~16°C). Do not store with acids or with organic chemicals.

## 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Chemical Name	ACGIH TLV	OSHA PEL
Sodium hydroxide 1310-73-2	Ceiling: 2 mg/m <sup>3</sup>	TWA: 2 mg/m <sup>3</sup> (vacated) Ceiling: 2 mg/m <sup>3</sup>

<b>Engineering measures</b>	A local and/or general exhaust is recommended to keep employee exposures as low as possible. Eye wash and safety shower devices should be readily accessible where sodium hydroxide solution is being processed.
<b>Personal Protective Equipment</b>	
<b>Eye/Face Protection</b>	If splashes are likely to occur, wear; Chemical splash goggles or full length faceshield and safety glasses with sideshields.
<b>Skin and Body Protection</b>	Wear impervious protective clothing, including boots, gloves, lab coat, apron or coveralls, as appropriate, to prevent skin contact.
<b>Respiratory Protection</b>	If the exposure limit is exceeded and engineering controls are not feasible, a full facepiece respirator with an acid gas cartridge may be worn up to 50 times the exposure limit or the maximum use concentration specified by the appropriate regulatory agency or respirator supplier, whichever is lowest. For emergencies or instances where the exposure levels are not known, use a full facepiece positive pressure, air supplied respirator. WARNING: Air purifying respirators do not protect workers in oxygen deficient atmospheres.
<b>Hygiene Measures</b>	Wash thoroughly after handling.

## 9. PHYSICAL AND CHEMICAL PROPERTIES

<b>Appearance</b>	Clear, colorless solution	<b>Odor</b>	Odorless
<b>Physical State</b>	Liquid	<b>pH</b>	14
<b>Flash Point</b>	Not applicable	<b>Autoignition Temperature</b>	Not applicable
<b>Boiling Point/Range</b>	10% soln: 105°C 30% soln: 115°C 50% soln: 140°C	<b>Melting Point/Range</b>	10% soln: 10°C 30% soln: 1°C 50% soln: 12°C
<b>Explosion Limits</b>	Not applicable	<b>Flammability Limits in Air</b>	Not applicable
<b>Specific Gravity</b>	10% soln: 1.11 30% soln: 1.33 50% soln: 1.53	<b>Water Solubility</b>	Miscible with water
<b>Evaporation Rate</b>	No information available	<b>Vapor Pressure</b>	13 mm Hg @ 60°C (50% soln)
<b>Vapor Density</b>	No information available	<b>VOC Content(%)</b>	None

## 10. STABILITY AND REACTIVITY

<b>Stability</b>	Stable under normal conditions.
<b>Incompatible Products</b>	Sodium hydroxide in contact with acids, organic halogenated compounds (i.e. trichloroethylene), may cause violent reaction. Contact with nitro- compounds (i.e. nitromethane) may cause formation of shock sensitive salts. Contact with metals (i.e. aluminum, magnesium, tin, zinc) may cause formation of flammable hydrogen gas. Sodium hydroxide in contact with sugars may cause carbon monoxide formation.
<b>Conditions to avoid</b>	Heat, moisture, incompatible materials.
<b>Hazardous decomposition products</b>	None known.
<b>Hazardous Reactions</b>	Reacts violently with many compounds e.g. (strong) reducers, combustible materials, organic material with risk of spontaneous ignition.
<b>Hazardous Polymerization</b>	Hazardous polymerization does not occur.

## 11. TOXICOLOGICAL INFORMATION

### Acute Toxicity

**Product information** Harmful by inhalation, in contact with skin and if swallowed.

**Animal Toxicology** Rabbit skin: 500 mg for 24 hr - severe irritation.  
Rabbit eye: 50 µg for 24 hr - severe irritation.

Chemical Name	LD50 Oral	LD50 Dermal	LC50 Inhalation
Sodium hydroxide		1350 mg/kg (Rabbit)	

**Chronic effects** Prolonged contact with skin will cause a destructive effect.

**Target organ effects** Eyes. Respiratory system. Skin.

## 12. ECOLOGICAL INFORMATION

**Ecotoxicity effects** Not inherently toxic to aquatic organisms.

Chemical Name	Toxicity to Algae	Toxicity to Fish	Microtox	Daphnia Magna (Water Flea)
Sodium hydroxide		LC50= 45.4 mg/L Oncorhynchus mykiss 96 h		

<b>Persistence and degradability</b>	Not persistent. Degradable.
<b>Bioaccumulation/Accumulation</b>	Does not bioaccumulate.
<b>Mobility</b>	Will likely be mobile in the environment due to its water solubility.

### 13. DISPOSAL CONSIDERATIONS

<b>Waste Disposal Methods</b>	Dispose of in accordance with local regulations. If the product is to be disposed 'as received', it is considered to be a hazardous waste having the characteristic of corrosivity.
<b>Contaminated packaging</b>	Dispose of in accordance with local regulations.
<b>US EPA Waste Number</b>	D002

Chemical Name	California Hazardous Waste Status
Sodium hydroxide	Toxic; Corrosive

### 14. TRANSPORT INFORMATION

#### DOT

<b>Proper Shipping Name</b>	Sodium hydroxide solution
<b>Hazard Class</b>	8
<b>UN-No</b>	1824
<b>Packing Group</b>	II
<b>Note</b>	ERG 154

#### IMDG/IMO

<b>Proper Shipping Name</b>	Sodium hydroxide solution
<b>Hazard Class</b>	8
<b>UN-No</b>	1823
<b>Packing Group</b>	II
<b>EmS No.</b>	F-A, S-B

### 15. REGULATORY INFORMATION

#### International Inventories

<b>USA (TSCA)</b>	Complies
<b>Canada (DSL)</b>	Complies
<b>European Union (EINECS)</b>	Complies
<b>Japan (ENCS)</b>	Complies
<b>China (IECSC)</b>	Complies
<b>Korea (KECL)</b>	Complies

Philippines (PICCS)	Complies
Australia (AICS)	Complies
New Zealand (NZIoC)	Complies

### Federal Regulations

#### SARA 313

Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product does not contain any chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372.

#### SARA 311/312 Hazard Categories

Acute Health Hazard	Yes
Chronic Health Hazard	Yes
Fire Hazard	No
Sudden Release of Pressure Hazard	No
Reactivity Hazard	Yes

#### Clean Water Act

This product contains the following substances which are regulated pollutants pursuant to the Clean Water Act (40 CFR 122.21 and 40 CFR 122.42).

Component	CWA - Reportable Quantities	CWA - Toxic Pollutants	CWA - Priority Pollutants	CWA - Hazardous Substances
Sodium hydroxide 1310-73-2 ( 10 - 60 )	1000 lb			X

#### Clean Air Act, Section 112 Hazardous Air Pollutants (HAPs) (see 40 CFR 61)

This product does not contain any substances regulated as hazardous air pollutants (HAPS) under Section 112 of the Clean Air Act Amendments of 1990.

#### CERCLA

This material, as supplied, contains one or more substances regulated as a hazardous substance under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302).

Chemical Name	Hazardous Substances RQs	Extremely Hazardous Substances RQs
Sodium hydroxide	1000 lb	

### U.S. State Regulations

#### U.S. State Right-to-Know Regulations

Chemical Name	Massachusetts	New Jersey	Pennsylvania	Illinois	Rhode Island
Sodium hydroxide	X	X	X		X

#### Other International Regulations

Chemical Name	Carcinogen Status	Exposure Limits
Sodium hydroxide		Mexico: Ceiling= 2 mg/m <sup>3</sup>

#### Canada

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all the information required by the CPR.

#### WHMIS Hazard Class

E Corrosive material



## 16. OTHER INFORMATION

**Revision Date** 27-September-12

**Reason for revision** Company Logo.

**Disclaimer**

The information provided on this SDS 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 guide for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered as 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 material or in any process, unless specified in the text.

**End of SDS**