


# Material Safety Data Sheet

## 1. Identification of the Product & Company

Product Name : <b>Sodium Hydroxide (32% 45%)</b>
Other Name : —
Suggested Use and Restriction :
Company Name, Address, and Telephone No. : Yee Fong Chemical & Industrial Co., Ltd. Taoyuan Plant/No. 377, Haihu E. Rd., Lujhu Township, Taoyuan County, Taiwan
Emergency Telephone No./Fax No. : TEL : (03) 3541944 ; FAX : (03) 3541957

## 2. Hazard Identification

GHS Classification :  1. Acute Toxicity Category 4 (Skin) 2. Metal Corroded Substance Category 1 3. Corrosive/Skin Irritated Substance Category 1 4. Serious Damage/Eyes Irritated Substance Category 1
Label Element :  • Symbol :  • Signal Word : <b>Warning</b> • Hazard Statement : 1. Causes metal erosion. 2. Causes skin burning and eyes damage. 3. Causes serious eyes damage. • Precautionary Statements : 1. If in eyes, rinse with water and seek for medical advice. 2. Seek for medical advice immediately if in accident. 3. If leaking, use acid to neutralize and pour into waste water processing system. 4. Wear protective equipment when operating.
Other Hazard : —

### 3. Composition, Information on Ingredients

English Name : <b>Sodium Hydroxide</b>
Synonym : Sodium Hydroxide Solution、 Sodium Hydroxide、 Caustic Soda、 Soda Lye、 Sodium Hydrate、 White Caustic
CAS No. : 01310-73-2
Hazardous Ingredients(%) : 32%, 45%

### 4. First Aid Measures

<p>First Aid Procedures Under Different Exposure :</p> <ul style="list-style-type: none"><li>• In Breathe :<ol style="list-style-type: none"><li>1. Medical personnel should wear suitable protective equipment.</li><li>2. Remove contaminants or move patient to air-freshing area.</li><li>3. If in hard breathing, give patient oxygen by well-trained personnel.</li><li>4. Do not remove patient.</li><li>5. The symptom of pulmonary edema may delaying.</li><li>6. Seek for medical treatment immediately.</li></ol></li><li>• Skin Contact :<ol style="list-style-type: none"><li>1. Wear gloves to avoid direct contacting the chemicals.</li><li>2. Flush with plenty of warm water immediately for over 60 minutes.</li><li>3. Do not interrupt flushing.</li><li>4. Take off contaminated clothes and shoes while in flushing.</li><li>5. Seek for medical advice immediately.</li><li>6. The contaminated clothes should be cleaned complete to reuse or abandon.</li></ol></li><li>• Eye Contact :<ol style="list-style-type: none"><li>1. Wear gloves to avoid direct contacting the chemicals.</li><li>2. Brush out extra chemicals immediately.</li><li>3. Rinse with warm water immediately for over 60 minutes.</li><li>4. Flush with physiological saline if possible and do not interrupt while in brushing.</li><li>5. Be cautious of contaminated water flow into another eye.</li><li>6. Keep rinsing with warm water if irritation is persisting.</li><li>7. Seek for medical treatment immediately.</li></ol></li><li>• Ingestion :<ol style="list-style-type: none"><li>1. Do not feed if patient is unconscious or convulsion.</li><li>2. Wash mouth with water thoroughly.</li></ol></li></ul>
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<ol style="list-style-type: none"> <li>3. Do not vomit.</li> <li>4. Give patient drink 240-300ml water to neutralize the chemicals.</li> <li>5. Give patient drinks milk if possible.</li> <li>6. If patient is vomiting, make his body forward and give water persistently.</li> <li>7. Seek for medical treatment immediately.</li> </ol>
<p>The Most Dangerous Symptoms &amp; Hazardous Effects : High corrosive will cause burning, irritation and ablepsia.</p>
<p>Protection for Medical Personnel : Personnel are not allowed to enter contaminated area to remove patient if not wearing level A protective clothes. Personnel should wear level C protective equipment to do first-aid in safe area.</p>
<p>Doctor' s Advices : If in eyes or ingest, flush with water and give water immediately. If in breathe, give patient oxygen, avoid doing gastric lavage or vomiting.</p>

## 5. Fire Fighting Measures

<p>Suitable Extinguishing : Selects suitable fire extinguisher aim at flaming substance.</p>
<p>Specific hazard that may be encountered when extinguishing :</p> <ol style="list-style-type: none"> <li>1. Sodium hypochlorite will not burn itself, but it is an oxidizer and combustible.</li> <li>2. May react to aluminum, tin, zinc leaking chlorine gas after decomposing.</li> </ol>
<p>Specific Extinguishing Procedures :</p> <ol style="list-style-type: none"> <li>1. Put out fire in safe and protective range.</li> <li>2. Quarantine the unfired substances and protect personnel' s safe.</li> <li>3. Withdraw the containers from the fire place in safety.</li> <li>4. Be cautious of putting out fire with water, personnel should avoid that water will react to potassium hydroxide.</li> <li>5. Cool the containers and storage tanks which are exposed in fire place.</li> <li>6. Personnel who doesn' t wear protective equipment are not allowed to enter in.</li> </ol>
<p>Specific Protection and Equipment for Fire-fighters : Fire-fighters should wear A class airtight chemical protective cloth and air-respirator.</p>

## 6. Accidental Release Measure

### Personal Precautions :

1. Restrict to enter contaminated area before cleaning complete.
2. Confirm the cleaning work is responsible for by well-trained personnel.
3. Wear personal protective equipment.

### Environmental Consideration :

1. Keep the leaking area dry and cool.
2. Put out or remove all the fire-burning substances.
3. Remove all the substances which can react to leaking substance.
4. Report to the security or environmental organization.

### Cleaning Method :

1. Block the leaking substance and scoop it up in safety.
2. Avoid the leaking substance flow into sewer, ditch, or other airtight area.
3. Neutralize the substance which is remained and wash the leaking area.
4. Use sand, soil, or other insert materials to block the leaking substance,
5. Solution can recycle or clean the leaking area with water.
6. If the substance is leaking too much, call the supplier, fire-fighter, or emergency department for helping.

## 7. Handling & Storage

### Handling :

1. The material is corrosive and needs for engineering control and protection equipment. Personnel should be well-trained and be told the dangerous of the substance and the safe of operate methods.
2. Personnel without any protection should avoid operating any equipment which contaminated by material.
3. If material is leaked, wear mask protection and leave the contaminated area.
4. Report immediately if the material is leaked or the air is airtight.
5. Examine whether leaking or not before operate.
6. Use container that manufacturer suggest.

7. Operating area and store area should be separated.
8. Avoid producing dust and prevent dust into working area.
9. Use anti-corrosive equipment to store the materials.
10. Do not operate with different substances.
11. Containers should be labeled the dangerous mark.
12. Pour cold water into corrosive solution slowly to avoid producing heat.
13. Do not pour the contaminated substances into containers.
14. Do not contact with water and label a sign to avoid contacting water.
15. Operating area and storing area should have emergency equipment for the situation of leaking and firing.

- Storage:
1. Stored in cool and dry area; the area should be separated from general area.
  2. Limited store.
  3. Store area should be sign clearly and permitting well-trained personnel to enter.
  4. Post warning sign in appropriate place.
  5. Examine whether leak or damage in regular and avoid storing overdue.
  6. Examine the new container and make sure it is labeled clearly.
  7. Containers should be labeled and close tight to avoid damaging.
  8. Use container that manufacturer suggest.
  9. The store area and working area should be separated.
  10. Use watertight floor and should not be full of cracks.
  11. The door should have slope, threshold, or build a ditch to block the substances to flow into safe place.
  12. Use container which is made by nickel alloy; if temperature is not over 40, the container which made stainless steel also can be used.
  13. The empty bucket should be separated from store area.
  14. The store area should have fire control or leaking protective equipment.
  15. Cleaning in regular to avoid collecting dust.
  16. Using incorrupt lighting and air system.
  17. The container should be on the floor and seal the bottom to

avoid leaking. The tank should have an embankment of overflow protection around the whole container to block leaking.

## 8. Exposure Controls

Engineering Controls : 1. Use anti-corrosiveness air-system and separated from other air-system. 2. Use partial exhaust duct. 3. The ventilator should be connected to outside. 4. Supply enough fresh air to the system which exhausts too much air.			
Control Parameters			
Average Allowable Concentration of Eight Hours Time Weighted	Average Allowable Concentration of Short Period	Maximum Allowable Concentration	Biological Indicators:
2mg/m <sup>3</sup>	4mg/m <sup>3</sup>	—	—
Personal Protection :			
<ul style="list-style-type: none"> <li>• Respiratory Protection : Chemical Protective Respirator</li> <li>• Eye Protection : Chemical Goggles, whole-face mask, eye-washing machine.</li> <li>• Hand Protection : Rubber Gloves</li> <li>• Skin &amp; Body Protection: Wear imperious clothing such as boots or body suits. Body and eye flushing equipment is required in working place.</li> </ul>			
Hygienic Measures :			
<ol style="list-style-type: none"> <li>1. Take off contaminated clothes immediately after work and clean thoroughly before wearing or abandoning. Be sure to tell the danger of contaminants to cloth-washing personnel.</li> <li>2. Do not smoke, eat, or drink in working area.</li> <li>2. Wash hands thoroughly after processing.</li> <li>3. Maintain the working place cleaned.</li> </ol>			

## 9. Physical and Chemical Properties

Appearance : Colorless Liquid	Odor : No Smell
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Odor Threshold : No Smell	Melting Point : 318.4°C
PH : >14	Boiling Point/Boiling Range : 118°C (32%) 142°C (45%)
Inflammability (solid/ liquid) : —	Flash Point : —
Decomposition : —	Test Method : —
Ignition Temperature : —	Explosion Limits : —
Vapor Pressure : 35(32%) 24.6(45%)mmHg/40°C	Vapor Density : —
Density : 1.34(32%) 1.45(45%)at30°C (water=1)	Solubility : 111g/100ml@20°C water
Octanol/Water Partition Coefficient(log Kow) : —	Evaporation Rate : —

## 10. Stability & Reactivity

Stability : Stable under ordinary conditions of use and storage.
Hazardous Reaction under Specific Conditions : <ol style="list-style-type: none"> <li>1. Mingle with water will produce heat.</li> <li>2. Mingle with metal will produce combustibles and explosive hydrogen.</li> <li>3. Mingle with halide will produce combustible compound.</li> <li>4. Corroding aluminum, zinc, and tin; in high temperature will corrode steel.</li> <li>5. Organic compounds of maleic anhydride, nitro, and chlorine may have reaction of explode.</li> </ol>
Conditions to Avoid : —
Substances to be Avoided : Strong Acid, Water, Metals, Organic Halogens, Nitrogen, Chlorine, Aluminum, Tin, Zinc, Steel, Glycol, Aldehyde, Propenal, Propylene.
Hazardous Decomposition : —

## 11. Toxicological Information

Routes of Exposure : Breathe in, Skin contact, Eye contact, Swallow
Symptoms : Pulmonary Edema, Edema, Irritation, Vomit, Diarrhea, Collapse
Acute Toxicity : <b>Inbreathe:</b> 1. Causes nose, pharynx, and the upper respiratory tract serious irritate. 2. The mist in high consistency will damage lung seriously. 3. Breathe in mist will causes pulmonary edema and even death. <b>Skin Contact:</b> 1. Causes serious skin irritation, burning, and symptoms appear in few hours late. 2. The 4% solution will destroy skin cell in 15minutes and fully destroy in 60 minutes. 3. When in 012% solution will causes skin damaged in an hour. <b>Eye Contact:</b> 1. Causes serious eyes irritation, if consistency is high may damage eyes seriously. 1. Symptoms might appear lately. 2. If seriously will causes ablepsia. <b>Ingest:</b> Causes irritation and corrosion for gullet; it also may causes nausea, vomit, diarrhea, convulsions, and pain. LC50(Animal Test, Exposure Way): 1350mg/kg(Rabbit, skin) LC50(Animal Test, Exposure Way): —
Chronic Toxicity and Long-term Toxicity :

## 12. Ecological Information

Eco-toxicity : LC50(Fish): 43mg/l/96hr
Persistence and Degradability : Great solubility in water.
Bioaccumulation : —
The Liquidity of the Soil : —
Other Adverse effects : —



### 13. Disposal Considerations

Refer to Toxic Chemical Substances Control Act, the industrial waste storage, clearance and processing methods and related laws, prohibit indiscriminate dumping.

### 14. Transport Information

UN NO. : 1823
International Shipping Name : Sodium Hydroxide
Hazard Classification of Transportation: Corrosive Substance Category 8.
Packing Group : II
Marine Pollutant (Yes/No) : No
Specific Delivery Methods and Precautions : —

### 15. Regulatory Information

Applicable Laws & Regulation :
1. Labor Safety and Sanitation rules
2. Organic solvent poisoning prevention rules
3. The rules of the traffic safety
4. General rules of the dangerous and harmful materials
5. Standards of permissible concentration of harmful substances in the working environment
6. Storage of industrial waste clean-up processing methods and facilities standards

### 16. Other Information

Reference	1. CHEMINFO Archives, CCINFO Disk, 99-2 2. RTECS Archives, TOMES PLUS Disk, Vol.41, 1999 3. HSDB Archives, TOMES PLUS Disk, Vol.41, 1999 4. HAZARDTEXT Archives, TOMES PLUS Disk, Vol. 41, 1999
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