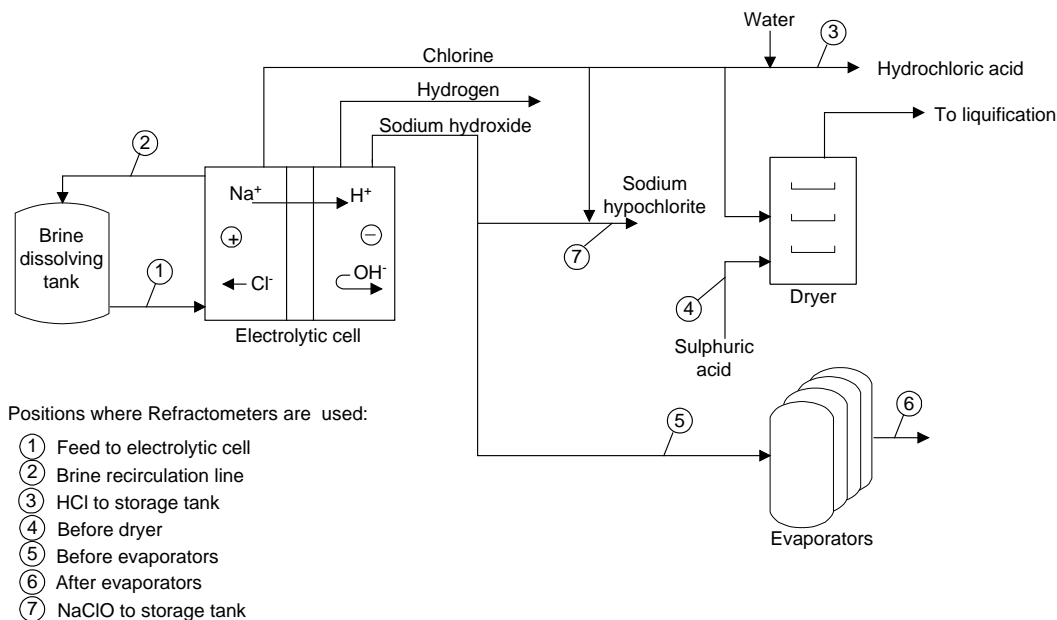


# APPLICATION NOTE

## Chlor-Alkali Process



### Sodium Hydroxide (NaOH), Brine (NaCl), Hydrochloric Acid (HCl), Sodiumhypochloride (NaClO)

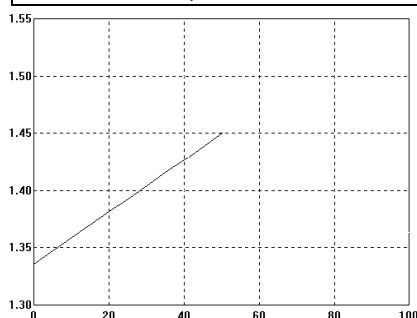
Soluble in

water, ethanol

Typical end products/uses

Rayon, pulp and paper, soap and detergents, aluminum, petrochemicals, fertilizers, in manufacturing of other chemicals

Chemical curve: R.I. per Conc% b.w.



R.I. Ref. temp. 20°C

### Introduction

Sodium hydroxide, caustic soda, NaOH is a white, translucent, hygroscopic solid which is a strong alkaline solution in water.

### Application

Sodium hydroxide is manufactured by the electrolysis of sodium chloride solutions. Brine (NaCl in water) electrolysis produces chloride at the anode and hydrogen along with the alkali hydroxide at the cathode.

Typically sodium hydroxide is delivered in 30-40% NaOH concentration to the customer who will further dilute it the usage concentration of 14-15% NaOH.

These specific concentrations are obtained by mixing a full strength solution with water to achieve the desired percent concentration.

### Installation

Refractometer is used to measure the concentrations in different phases of the process. The first and the second measurements before electrolytic cell and in brine recirculation line are NaCl measurements. Before the cell the concentration varies between 250-320 g/l and the temperature

between 50-70°C (122-158°F). In recirculation line the numbers are 190-210 g/l and 70-90°C (158-194°F) respectively.

The third measurement is HCl measurement. The concentration is 30-35% and the temperature is ambient. Sulphuric acid concentration 88-98% is measured before the dryer under ambient temperature.

Sodium hydroxide measurement is before and after evaporators. The concentration before evaporators is 25-35% and after 45-55%. The temperature decreases from 70-90°C (158-194°F) to 30-50°C (86-122°F).

The last measurement is of NaClO, where concentration is 0-12%. and temperature ambient. In sodium chloride measurements the sensor wetted parts should be titanium or PD titanium and in HCl measurement tantalum or zirconium. Automatic prism cleaning with an integral steam nozzle is recommended.