



Caustic Soda

PRODUCTION PLANTS

Engineering at service
of sustainability



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KERN SD

develops on-site caustic soda production facilities tailored to meet the technical and economical needs of customers.

KERN SD plants are fully customizable in terms of production and concentration.

The overall reaction of the process is :



- KERN SD has an **innovative on-site caustic soda production technology** consisting of a **bipolar membrane electrolyzer** (no mercury).
- Plants designed and developed by KERN SD use safe, environmentally friendly and highly competitive technology due to their low investment and low operating costs (high electrical efficiency and degree of automation).
- Plants are delivered pre-assembled on modular “skids” and depending on the production the plants are assembled in containers (containerized plants).
- KERN SD technology complies with the **EU Best Available Technologies (BAT) Directives for the production of chlor-alkali (Directive 2010/75/EU)**.

TECHNICAL SPECIFICATIONS OF THE PRODUCT (NaOH)

Appearance	White (solid)
Melting point	318 °C
Boiling point	1.388 ° C
Density	2,1 g/cm ³
Molar Mass	39,99 gr/mol
Water solubility	119 g/100 mL (20 °C)



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Production Plants

PLANT FEATURES

Output	From 100 kg/day to 12.000 kg/day of chlorine (final product: in solution or flakes)
Flexibility	50-100%
Concentration	32% (membrane) at electrolyzer output - up to 51% by post-concentration
Raw materials	Salt, Water and Electricity
Materials	Built with high quality materials
Monitoring	Fully automated and monitored plants

- ON-SITE PRODUCTION
- CONTAINERIZED OR FIXED PLANTS
- MODULAR AND SCALABLE
- AUTOMATIC CONTROL
- SAFE OPERATION
- ECONOMIC SAVINGS (low operating and maintenance costs)
- HIGH ENERGY EFFICIENCY
- SIGNIFICANT REDUCTION of associated storage, handling and road transport risks
- HIGH PURITY PRODUCT
- NO ENVIRONMENTAL IMPACT

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According to the World Health Organization (WHO), “chlorine disinfection is the best guarantee of microbiologically safe water”, the best option for water treatment and purification. Sodium hypochlorite is highly effective in combating all types of microbes that may be contained in water, including bacteria, viruses, fungi and yeasts, and the algae and slime that proliferate inside pipes and in tanks.

SOME APPLICATIONS

OF CAUSTIC SODA

- **Organic and Inorganic Chemistry** - manufacture of sodium compounds which may, in turn, be intermediates in the production of end products such as sodium hypochlorite
- **Textile Industry** - finishing and sizing, cleaning and bleaching operations
- **Detergents and Surfactants** - manufacturing process
- **Oil and Gas Production** - in drilling to control the pH of muds and slurries and as a bactericide; in refining to extract sulfur
- **Aluminum production** - extraction of base ore
- **Pulp and Paper Industry** - for cellulose production and as a bleaching agent for recycled raw material
- **Food Industry** - oil refining, bottle cleaning and peeling of fruits and vegetables
- **Water Treatment** - pH control
- **Agricultural Industry** - straw treatment and dairy equipment cleaning
- **Electroplating Industry** - coating of surfaces with metallic layers

In addition, it is used for paint stripping, as an extractor agent in drying, in enameling and even in degreasing and cleaning metals