Caustic Soda

Chemical

Caustic Soda solution is a strong metallic base which is used in a wide range of industrial and chemical processes.

The fluid ranges from 1-40cPs depending on the temperature and the concentration of the solution. The S.G. will range between 1.1 at about 10% concentration to 1.4 at 50%.

Caustic soda may cause an exothermic reaction in contact with other fluids, particularly with water. Residual amounts of the solution will crystallize. Caustic soda is highly corrosive and will cause severe burns and degrade human tissue.

Applications

- The production of paper uses a significant proportion of the world’s caustic soda. The solution is used to separate lignin from cellulose fibres in the production of pulp. The solution is used again as part of the bleaching process to obtain the brightness of the paper product and in de-inking.
- Caustic soda is also used for pH correction as part of chemical production, treatment of waste water.
- For domestic use, caustic soda is traditionally used in household cleaning chemicals such as drain unblocking where the food/hair build-up is quickly dissolved. Many oven cleaner products contain caustic solution as fats and grease are broken down without damaging the tray and lining of the oven. Caustic may also be found in lower concentrations in hair products for ‘softening’ hair and is still used in soap making.
- In heavy industries and utilities, caustic soda is used for processing metals and glass products such as etching and surface finishing. In the burning of coal at power stations, caustic is used to react with the carbon dioxide as a ‘scrubbing’ agent, capturing the gas.
- Food production utilises caustic soda in the cleaning and peeling of vegetables, as lye water in the making of traditional foods and as a brine solution for the softening of olives. In CIP processes, caustic can be used for the ‘scrubbing’ of build-up of product in production and even pub beer lines.
Pumping considerations

For organisations handling caustic soda include chemical compatibility; caustic is highly reactive with aluminium, carbon steel and can cause problems with viton and flurocarbon.

Depending on the concentration of the solution, most metals may be specified as can polypropylene, PVDF, PTFE and EPDM. Where the concentration is very high, specialist alloys and synthetic materials are recommended.

Eliminating leaks

Leak-free, contained handling is highly recommended as exposure to the workforce, either through a leak from the pump directly or during clean-up from a spill can be highly dangerous.

Where a mechanical seal allows ‘weeping’ of the fluid the caustic can crystallize quickly, causing abrasive wear around the shaft. It is therefore recommended that a double seal is used and for absolute containment, particularly at higher concentrations a pump with no mechanical seals, such as a mag drive centrifugal model.

Dosing

Caustic is often dosed as part of a process such as in water and sewage treatment. Peristaltic pumps can provide a good working solution for the accurate delivery, especially on a diurnal cycle where an inverter and pH probe system can alter the rate of chemical being dosed.

Verder UK supply pumps for virtually every chemical type and application. The Verder range includes leak-free mag drive pumps, chemically inert non-metallic AODD pumps, peristaltic dosing pumps for the accurate delivery of chemical including abrasive and solid-laden types.

Contact us for advice on specifying a pump for your sodium hydroxide process on 01924 221 001 or email sales@verder.co.uk

Disclaimer: The information contained in this sheet has been researched from credible sources and should be considered as a guide only. Due to the many variables in a process, it is recommended contacting Verder for advice about your exact fluid and operating conditions.