Sodium Hydroxide Encyclopedia Article

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Sodium Hydroxide

Sodium hydroxide (NaOH), also known as lye, caustic soda, or sodium hydrate, is an extremely caustic (corrosive and damaging to human tissue) white solid that readily dissolves in **water**, **alcohol**, and glycerin. It absorbs **carbon** dioxide and moisture from the air. Sodium hydroxide is used in the manufacturing of soaps, rayon, and **paper**, in petroleum refining and finds uses in homes as drain cleaners and oven cleaners. Sodium hydroxide is one of the strongest bases commonly used in industry. Solutions of sodium hydroxide in water are at the upper limit (most basic) of the **pH** scale. Sodium hydroxide is made by the **electrolysis** (passing an electric current through a solution) of solutions of **sodium chloride** (table salt) to produce sodium hydroxide and **chlorine** gas.

Two of the more common household products containing sodium hydroxide are drain cleaners such as Drano, and oven cleaners such as Easy-Off. When most pipes are clogged, it is with a combination of fats and grease. Cleaners that contain sodium hydroxide (either as a solid or already dissolved in water) convert the fats to soap that easily dissolves in water. In addition when sodium hydroxide dissolves in water, a great deal of **heat** is given off. This heat helps to melt the clog. Sodium hydroxide is very damaging to human tissue (especially eyes). If a large amount of solid drain cleaner is added to a clogged drain, the heat produced can actually boil the water, leading to a splash in the eyes of a **solution** caustic enough to cause blindness. Some drain cleaners also contain small pieces of **aluminum** metal. Aluminum reacts with sodium hydroxide in water to produce **hydrogen** gas. The bubbles of hydrogen gas help to agitate the mixture, helping to dislodge the clog. Oven cleaners work by converting built up grease (fats and oils) into soap that can then be dissolved and wiped off with a wet sponge.

Sodium hydroxide is used to neutralize acids and as a source of sodium ions for reactions that produce other sodium compounds. In petroleum refining, it is used to neutralize and remove acids. The reaction of **cellulose** with sodium hydroxide is a key step in the manufacturing of rayon and cellophane.