

Poly Aluminum Chloride

Used in the following Industries:

Water Treatment

PAC can be used as such to any existing water Treatment plant/ equipment. Simply adding prescribed dosage of undiluted solution to the raw water, followed by immediate high agitation to ensure proper mixing in adequate.

- ▶ Coagulates very effectively in low as well as high turbidity water.
- ▶ Enormous saving in consumption of treatment chemicals & labour cost
- ▶ Significant sludge reduction.
- ▶ Low residual aluminum.
- ▶ Less reduction of pH as compared to alum.
- ▶ Consumption of liquid is 40-60% & powder is 20-25% of solid alum.
- ▶ More effective in cold water also.
- ▶ Rapid & better floc formation
- ▶ Improves filterability.
- ▶ Simplifies plant operation & easy handling.
- ▶ Less ionic load in demin plant.
- ▶ Highly stable.

Paper Industries

Point of application to the paper machine is an important factor in obtaining best results. It can be dosed in the fan pump, machine chest. The best addition point for any machine can be ascertained through actual plant use.

- ▶ Improve paper brightness & strength.
- ▶ Enormous saving in chemicals, powder consumption & labour cost.
- ▶ Less colour reversion in paper sheet.
- ▶ Sulphate free environment.
- ▶ Less deposits on machine.
- ▶ Significant reduction in scaling & biological slime.
- ▶ Reduces brittleness of paper sheet.
- ▶ Optimum utilization of alkaline filters.
- ▶ Improves productivity.

Stable Bleaching Powder

Bleaching powder is an ultra white, free flowing powder without any lumps or impurities. It can be used in wide spectrum of application as listed below:

Water Purification

- ▶ It can be used in water works & water pumping station, municipal corporations, hotels, large industries & institutions can benefit from its potent disinfecting qualities.

Environmental Sanitation & Epidemic Control

- ▶ Destroy Larvae & prevent their breeding in drains, gutters & stagnant water.
- ▶ Also useful in the prevention of epidemics during monsoons or floods/ natural disasters, especially in slums or low lying affected areas.

Disinfection of Public Utility Areas

- ▶ Bleaching powder is highly effective for disinfection & deodorizing of toilets & drains, public utility areas such as hospitals, railway station, airports & schools.

Industrial Applications

- ▶ Bleaching powder can be used as a bleaching agent for cloths & pulp in textile & paper industries respectively.
- ▶ Other industrial application includes ashing of carpets for extra finish & shine, to disinfect & cure leather hides, & also as a disinfectant & deodorant in the soft drink industry.

Shrimp Farming

- ▶ Bleaching powder is used extensively in Aquaculture/Sericulture to keep water free from Viral & bacterial infection.

- ▶ The process of chlorination helps to disinfect the water, prevent growth of algae & other harmful germs.
- ▶ It creates Hygienic Aquatic Environment.
- ▶ Also improves the yield of sea foods like Prawns, Fish, Shrimps, etc.
- ▶ Accelerate the process of breeding.

▶ **Hydrogen peroxide** **Chemical Synthesis**

- ▶ In this field, it has found its use as an oxidizing agent. Hydrogen peroxide has a low molecular weight; it is thus a more efficient oxidizing agent than potassium permanganate or dichromate. It is solvable in several organic solvents including water and the substrate itself.



▶ **Cosmetics & Medicine**

- ▶ Hydrogen peroxide's oxidizing property makes it suitable for use in the cosmetics and medical fields as a disinfectant and a bleaching agent. For instance, in cosmetics, it is used as an antimicrobial agent during oxidative hair dyeing, while in medicine it increases the whiteness of teeth by oxygenating stains.



▶ **Electronics Industry**

- ▶ In this field, it finds its use as an oxidizing and a cleaning agent. The production process of printed circuits boards uses hydrogen peroxide as an etchant. The manufacturing process of semiconductors uses high-quality electronic grade hydrogen peroxide as an oxidizing and cleaning agent.



▶ **Environment**

- ▶ Hydrogen peroxide is environmentally and ecologically friendly; hence, it finds use in a variety of applications related to the environment e.g. in an advanced oxidation process (AOP). The AOP process uses hydroxyl radicals to decompose toxic substances. Technological processes also use hydrogen peroxide to reduce their negative environmental impact.



▶ **Mining**

- ▶ The mining industry uses hydrogen peroxide both as an oxygen source and as an oxidizing agent. For instance, it is used in gold and uranium production processes in concentrates preparation and ore leaching.



▶ **Pulp and Paper Industry**

- ▶ In this industry, it is used as a versatile bleaching agent especially in chemical pulp bleaching sequences. In mechanical pulp bleaching, it is used as the core-bleaching agent. In paper recycling plants, it finds its application as a de-inking agent.



▶ Textile Industry

- ▶ Hydrogen peroxide is the prime bleaching agent in natural and synthetic fibers treatment, which include wool, linen, cotton, silk, and rayon. It gives the fibers a high degree of brightness while at the same time preserving their mechanical properties.

- ▶ **Phosphoric acid** (also known as **orthophosphoric acid** or **phosphoric(V) acid**) is a mineral (inorganic) acid having the chemical formula H_3PO_4 .

In addition to being a chemical reagent, phosphoric acid has a wide variety of uses, including as a rust inhibitor, food additive, dental and orthop(a)edic etchant, electrolyte, tooth paste, soaps & detergent, water treatment, flux, dispersing agent, industrial etchant, fertilizer feedstock, and component of home cleaning products.

Food additive Food-grade phosphoric acid (additive E338^[9]) is used to acidify foods and beverages such as various colas. It provides a tangy and sour taste. Various salts of phosphoric acid, such as monocalcium phosphate, are used as leavening agents. Rust removal

- ▶ Phosphoric acid may be used to remove rust by direct application to rusted iron, steel tools, or other surfaces. The phosphoric acid changes the reddish-brown iron(III) oxide, Fe_2O_3 (rust) to ferric phosphate, $FePO_4$. An empirical
- ▶ Liquid phosphoric acid may be used for dipping, but phosphoric acid for rust removal is more often formulated as a gel. As a thick gel, it may be applied to sloping, vertical, or even overhead surfaces. Different phosphoric acid gel formulations are sold as "rust removers" or "rust killers".
- ▶ **Caustic soda (sodium hydroxide)** is a versatile alkali. Its main **uses** are in the manufacture of pulp and paper, alumina, soap and detergents, petroleum products and chemical production. Other **applications** include water treatment, food, textiles, metal processing, mining, glass making and others.