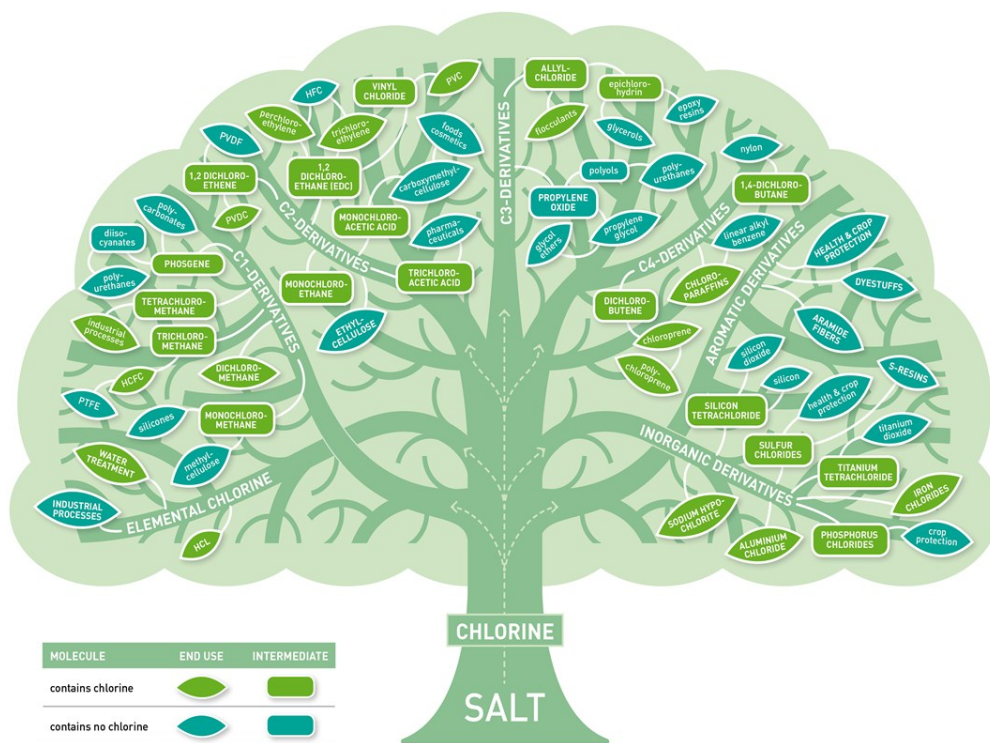


The chlorine tree

Chlorine is a major building block in modern chemistry

Whether you insulate a house, make synthetic rubber, use microchips or solar cells, purify waste water or simply apply some deodorant, chlorine is always in the game. Based on plain salt, chlorine is a major building block in today's chemistry. This does not necessarily mean that end products contain chlorine. But chlorine and chlorinated substances are used in many hundreds of production processes. Some examples of applications are shown here in the chlorine tree.



✱ Aluminium chloride

A major industrial catalyst. It accelerates chemical reactions used to make medicines, paints, rubber, lubricants, wood preservatives, the plastic polystyrene (through its use in production of ethylbenzene to make the styrene) and detergents.

✱ Aramide fibers

Aramid fibers (aromatic polyamide) are a class of heat-resistant and superstrong synthetic fibers, used in aerospace and military applications, for body armor fabric, in bicycle tires and as an asbestos substitute.

✱ Carboxymethylcellulose

An acid derivative of cellulose that is the chief constituent of all

plant tissues. It is used in food science as a thickener and to stabilize emulsions including ice cream. It is also a constituent of toothpaste, laxatives, diet pills, water-based paints, detergents, textile sizing and various paper products.

✱ Chloroparaffins - Chlorinated paraffins

Chlorinated Paraffins (CPs) are straight-chain hydrocarbons that have been chlorinated. The largest application is as a plasticiser in flexible PVC and in paint, sealants and adhesives.

✱ Chloroprene

A synthetic rubber with very balanced properties such as good mechanical strength, high ozone and weather resistance, good aging resistance, low flammability, good chemical resistance.



✧ Dichloromethane

A chlorinated solvent, largely used in pharmaceutical production.

✧ Dyestuffs

Intensely coloured complex organic compounds used to colour textiles, leather, paper and other materials. Indigo (jeans) is a dyestuff.

✧ Epoxy resins

Epoxy resins make great adhesives and are one of the few adhesives that can be used on metals. They are also used for protective coatings, in electronic circuit boards and for patching holes in concrete pavement.

✧ Ethylcellulose

Water-insoluble polymer used in controlled-release pharmaceuticals.

✧ Flocculants

Flocculants consist of various polymers, used to increase the efficiency of waste water purification.

✧ Glycerol

Also called glycerin, viscous liquid that is widely used in pharmaceutical formulations and food preparations.

✧ Glycol ethers

Solvents used in cleaning compounds, liquid soaps, cosmetics.

✧ HCFC

Hydrochlorofluorocarbons used as a precursor to polytetrafluoroethylene (e.g. Teflon®). Former applications as propellants and in air conditioning systems were phased out due to ozone depletion potential.

✧ HCl

Hydrochloric acid, the solution of hydrogen chloride (HCl) in water. A corrosive, strong mineral acid with major industrial uses. It is found naturally in gastric acid.

✧ HFC

Hydrofluorocarbons, used as refrigerants and foam propellants.

✧ Iron chloride

Ferrous chloride (FeCl₂) and ferric chloride (FeCl₃) serve as flocculating agents in wastewater treatment.

✧ Linear alkyl benzene

An intermediate in detergent production.

✧ Methylcellulose

Derived from plant cellulose and used as a thickener and emulsifier in various food and cosmetic products

✧ Nylon

Polyamide, a family of one of the most commonly used polymers, e.g. for fabrics.

✧ Perchloroethylene

Chlorinated solvent typically used in dry-cleaning.

✧ Polycarbonate

Synthetic polymer used for e.g. car lamps, CDs and DVDs.

✧ Polychloroprene

A family of synthetic rubbers produced by polymerization of chloroprene.

✧ Polyurethane

A family of synthetic polymers used as foams (insulation, seats, mattresses, shoe soles etc.) or in its hard form (e.g. ski boots).

✧ Propylene glycol

Or 1,2-propanediol, an alcohol used in brake and hydraulic fluid and as industrial antifreeze.

✧ PTFE

Polytetrafluoroethylene (e.g. Teflon®), a synthetic resin with many applications, from non-stick material on cookware to lubricant.

✧ PVC

Polyvinyl chloride, popular synthetic polymer used in construction (door and window frames, flooring material), car dashboards, flexible hoses, water piping, cling film, toys and many more.

✧ PVDC

Polyvinylidene dichloride, a high-tech plastic, used in the form of films or fibres.

✧ PVDF

PVDF is a specialty plastic of the fluoropolymer family; it is used generally in applications requiring the highest purity, strength and resistance to solvents, acids, bases and heat.

✧ Silicon

Chemical element (symbol Si and atomic number 14). Chlorine is used to produce high-purity silicon for solar cells.

✧ Silicon dioxide

SiO₂ or sand. Raw material for silicon production.

✧ Sodium hypochlorite

Has been used for centuries for bleaching and disinfecting. Commonly called bleach. Formula NaOCl.

✧ s-Resins

Chemically inert, low coloured, water repellent resins used as additives in the rubber industry.

✧ Titanium dioxide

A widely used white pigment, for cosmetics, paper, paint etc. Chlorine is used to purify the titanium dioxide from its minerals.

✧ Trichloroethylene

A chlorinated solvent used as feedstock to produce fluorinated hydrocarbons (e.g. for use in refrigeration) and fluorinated polymers and as an industrial solvent in various applications.

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