

Cleaning products: How they work and safety considerations



Product	Ingredient/ Chemical Name	PH	How It Works	Special Considerations	EWG	Bio	Rec
Toilet Cleaner	Hydrochloric Acid	1 -2	Dissolves limescale; calcium deposits; metals	Considered a POISON. Do not let it splash. Ventilate. Wear PPE. Can corrode pipes. NEVER mix.	F	No	No
White Vinegar	Acetic Acid 4-7%	2.5	Dissolves rust, minerals deposits, soap scum, hard water stains	Good window, glass, drain, and toilet cleaner. Neutralizes some odors. Mild disinfectant killing most microbes. Do not leave on surface area.	A	Yes	Yes
Soap – Basic bar/liquid	Surfactants from potassium hydroxide & fats	5-9	Soap molecules encapsulate dirt & microorganisms, are then rinsed away	Good, safe, mild (if lower PH) overall basic cleaner. Can be used on plants. Does not foam well in hard water, creating soap scum. Natural ingredients.	A	Yes	Yes
Peroxide 3%	Hydrogen Peroxide	6	Oxidizes organic materials creating heat and oxygen	Used as a mild bleach, disinfectant and on certain stains. Best on stains before they dry. Works well on all types of molds.	A	Yes	Yes
Enzymes	Specialized proteins	6-8	Speeds up the breakdown of organic matter	Proteases break down proteins like blood, poop, vomit, egg, gravy; Amylases break down starches; Lipases break down fats; cellulases break down cellulose	B	Yes	Yes
Baking Soda	Sodium Bicarbonate	8-9	Dissolves organic compounds like dirt & grease. Used as abrasive.	Great as basic mild alkaline cleaner mixed with water. Wet slightly for mild abrasive. Deodorizes acidic odors. Do not use on aluminum. Mix with vinegar when fizzy action is desired. Cleans silver.	A	Yes	Yes
Laundry Detergent	Many ingredients, mostly synthetic	7-10	Synthetic surfactants: builders and enzymes help release and breakdown fats	Many additional synthetic chemicals make it possible to breakdown dirt in cold and hard water. Optical brightening agents brighten fabrics.	A - F	No	Yes & No
Castile	Surfactants from potassium hydroxide & vegetable fats/oil	9	Soap molecules encapsulate dirt & microorganisms, are then rinsed away	Due to a higher PH, known for its grease-grabbing qualities. With its plant-based and minimal ingredients, it is hypoallergenic, hydrating and non-comedogenic. Excellent multipurpose cleaner.	A	Yes	Yes
Borax	Sodium Borate	10	Reacts slightly to create hydrogen peroxide; acts as buffer to stabilize PH	Brightens clothing and reduces stains; considered a laundry booster. Used as a natural pesticide, it is not meant for ingestion or inhalation; use safely.	F	No	No
Oxyclean Brand	Sodium percarbonate, sodium carbonate ...	10.5	Oxidizes and breaks the magnetic charge between stains and fabrics	Works well pre-soaking. Spot test first, especially carpets and fabrics, as it may work "too well." Do NOT mix with other chemicals. Wear gloves. Not for delicates. Good on grass stains.	A	Yes	Yes
All-Purpose Cleaner	Many ingredients, mostly synthetic	9 - 11	Surfactants breakup fats, builders stabilize PH, solvents, polymers increase release	Able to release VOCs. Avoid using sprays which increases VOCs. Avoid eye & skin contact. Ventilate. Do not mix with other products. Always rinse well. Wear gloves. Read directions.	A - F	No	Yes & No
Ammonia	Ammonium Hydroxide	11	Emulsifies grease/oils; can convert oils into other compounds	Evaporates quickly for streak-free results. Powerful degreaser. Can cause nose, eyes and throat irritation. Ventilate. NEVER mix with bleach.	F	Yes	No
Washing Soda	Sodium Carbonate	11-12	Breaks/dissolves fat and grease into small particles	Naturally from burnt plant ashes. Emulsifies grease making is water soluble. Good for laundry stains. Can be used as an oven cleaner.	A	Yes	Yes
Standard Chlorine Bleach	Sodium Hypochlorite 3-8%	12	Releases oxygen molecules that break the chemical bonds of chromophore making it colorless	Very corrosive; tough on fabrics. Kills germs. NEVER mix with anything. Reacting with organic materials can result in multiple disinfection byproducts (DBPs). Several DBPs are possible carcinogens.	F	Yes	No
Oven/Drain Cleaners	Sodium or Potassium Hydroxide (lye)	13 - 14	Dissolves/decomposes fats, grease, proteins and other materials	Extremely caustic; can cause serious burns. Contains chemicals of concern. Wear PPE. Ventilate. Follow directions. Can damage pipes and surfaces.	F	No	No