[1]The Chlorine Institute: Pamphlet 96 - Sodium Hypochlorite Manual

https://www.doh.wa.gov/YouandYourFamily/HealthyHome/Contaminants/BleachMixingDangers

[2] https://ehs.stanford.edu/wp-content/uploads/Bleach-and-incompatible-FactSheet-LSP-20-116.pdf

[3] https://www.riccachemical.com/keeping-you-safe/blog/never-mix-these-household-chemicals

[4] https://www.chemicalsafetyfacts.org/acetone/

[5] Note that used antifreeze can also contain acids produced during the working cycle of the antifreeze

WORLD chlorine council®

The World Chlorine Council is a global network of regional trade associations and their member companies representing the chlorine and chlorinated products industries.

The Council aims to promote best practices as well as the benefits of chlor-alkali chemistry.

Discover more at **www.worldchlorine.org**

USING BLEACH SAFELY

WORLD chlorine council®

ACCIDENTAL MIXING

Bleach, also called chlorine bleach, Javel Water or sodium hypochlorite water solutions, should not be mixed with other household chemical products because hazardous gases, heat, or explosions may result. Chlorine bleach is most safely mixed with water only.

Do not mix chlorine bleach with:

Ammonia[1] **,** as it will produce hazardous [chloramine] gas. In addition to commercially available ammonia solutions, ammonia can be found in many commonly available glass, bathroom, and floor cleaners, and wax strippers.

Acids, such as vinegar[1] or other acids. Products that contain acids include some drain cleaners, toilet bowl cleaners, stain removers, dishwasher detergents, tile and brick and concrete cleaners.

Mixing acidic products with bleach produces hazardous chlorine gas. Even mixing some soft drinks, such as colas, with bleach can generate chlorine gas.

Alcohols,[2] including many hand sanitisers, alcohol-containing beverages[3], or **acetone**[4] (present in some nail polish removers) as it can produce hazardous gas [chloroform].

If in doubt – check the bottle label before you pour

Hydrogen peroxide or other oxygen-based bleaches and stain removers[1], as it can produce oxygen gas vigorously or explosively.

Green cleaners/ disinfectants, such as those that contain acids (such as vinegar, citric acid, lactic acid, lemon, or lime juice), alcohols, or hydrogen peroxide (see above).

Other disinfectants and cleaners, such as quaternary ammonium compounds or other chlorine-based products to avoid potential chemical incompatibility.

Fuels, fuel oils[1]**, brake fluid, and many antifreeze**[1] **formulations** as these can chemically react with bleach, and in some cases generate heat violently[5].