

EVERYDAY CHEMICALS: HYDROGEN PEROXIDE

Hydrogen peroxide is a colourless liquid that resembles water; in fact, its chemical formula is very similar to that of water, but it contains an extra oxygen atom. It is a strong oxidiser, and is commonly used as a bleaching agent & disinfectant. It's also one of the compounds that helps make glow sticks glow.

BLEACHING PAPER & STAINS



PERHYDROXYL ION
Primary oxidising species

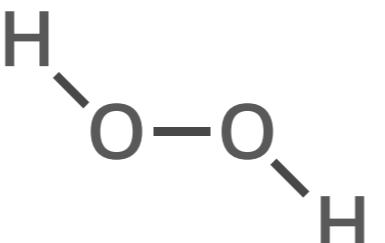
Around half of the two million tons of hydrogen peroxide produced each year is used to bleach paper. In homes, it's found in some bleaches as an alternative to chlorine bleaches. It's also used in some stain remover sprays as a bleaching agent, as it destroys the parts of chemical structures, called chromophores, that cause colouration.

DISINFECTING WOUNDS



DECOMPOSITION OF
HYDROGEN PEROXIDE

Hydrogen peroxide is sometimes used as a disinfectant for cuts, though its efficacy is debated. When it comes into contact with blood, it foams. This isn't due to any kind of cleaning or disinfectant action, but because an enzyme in blood catalyses the breakdown of hydrogen peroxide into water and oxygen gas.

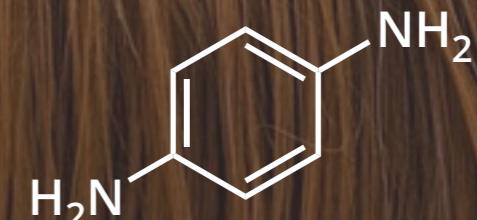


HYDROGEN PEROXIDE

Colourless liquid



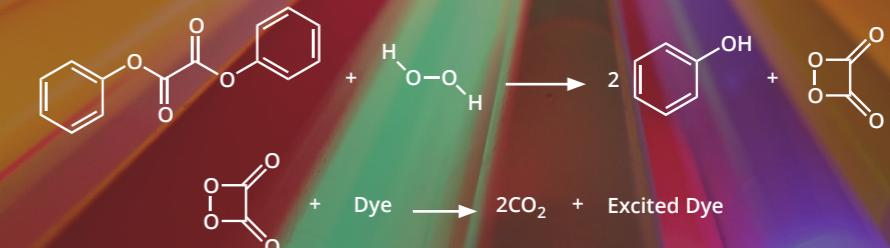
IN HAIR DYES



PARAPHENYLENEDIAMINE

Hydrogen peroxide is used in hair dyes as an oxidiser, oxidising the natural melanin pigments in hair and causing them to lose their colour. It also aids the dyeing process by oxidising other chemicals in the dye mixture, such as paraphenylenediamine (PPD), to help produce the dye molecules that then colour the hair.

IN GLOW STICKS



GLOWSTICK REACTIONS

Hydrogen peroxide is included in a compartment of glow sticks. An ester compound is in the other compartment. When the glow stick is snapped, the hydrogen peroxide and the ester compound react, and the product of this reaction then decomposes, produces energy that excites dye molecules and leads to emitted light.

