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Editorial Note on Alkyl Halides

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Editorial Note

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EDITORIAL NOTE

Alkyl halides (also known as halogenoalkanes or alkyl halides) are alkanes that have had one or more hydrogen atoms replaced by halogen atoms (fluorine, chlorine, bromine or iodine). There are certain chemical variations between the various kinds of alkyl halides, depending on how the halogen atom is positioned on the chain of carbon atoms. A halide is another term for a halogen-substituted alkane, especially an alkyl halide. The halogen atom is linked to a carbon atom with sp3 hybridized bonding orbitals and a tetrahedral form. The covalent link between the carbon and halogen atoms is polarized due to electronegativity variations between these atoms, with the carbon atom becoming slightly positive and the halogen atom partly negative.

As we move down the periodic table, the size of halogen atoms increases while their electronegativity decreases. As the halogen atom shifts from fluorine to iodine, the bond length between carbon and halogen becomes longer and less polar. The IUPAC rules for alkanes are used to name alkyl halides. The alkyl group connected to the halogen is named first and then the inorganic halide name for the halogen atom is added.

Acetylene and terminal alkynes are slightly acidic. Alkyl halides, or halo-alkanes, are a family of chemical compounds made up of alkanes that include one or more halogens. Although the distinction is not always emphasized, they are a subset of the general class of halocarbons. The halide ion is liberated and a strong acid is produced in alkyl halide reactions [substitution (CN reactions) or elimination] (HF, HCl, HBr, HI). The presence of the X ion determines the relative acidity of an alkyl halide.

Alkyl halides are frequently made by replacing a halogen atom for the hydroxyl group in alcohols. Hydrochloric (HCl), hydrobromic (HBr) and hydroiodic (HI) acids are successful reagents for this replacement, with tertiary alcohols giving the best returns. Alkyl chlorides, bromides and iodides may all be made Phosphorus tribromide, thionyl chloride and phosphorus triiodide. Alkyl halides are characterized by how the halogen molecule is situated on the carbon particle chain. Primary, secondary and tertiary alkyl halides are the three main categories of alkyl halides. Ethyl chloride CH_3CH_2Cl is an example of a primary or alkyl halide in which the halogen atom is linked to a carbon atom that is bonded to only one neighbouring carbon atom.

Substitution and/or elimination are the two main sorts of reactions that alkyl halides can go through. Because the electrophilic alkyl halide establishes a new bond with the nucleophile that substitutes for (replaces) the halogen at the alpha-carbon, the substitution reaction is called a Nucleophilic Substitution reaction. Alkyl halides are killed by two cycles known as E2 and E1, which are practically identical to SN2 and SN1, individually. Elimination in E2 follows a second-order rate law and takes place in a single concentrated phase. The stability of a tertiary carbocation is higher than that of a secondary carbocation, which is higher than that of a primary carbocation.