



MIND - MAP

10. Halogen Derivatives



New Indian Era (NIE)



Instagram : Prashant

Table 10.1 Names of some halogen derivatives

Common name	Chemical name	Structure	Uses
Chloroform	Trichloromethane	<chem>CCl3</chem>	As a solvent for organic compounds, as a refrigerant, and as a propellant in aerosols.
Carbon tetrachloride	Tetrachloromethane	<chem>CCl4</chem>	As a solvent for organic compounds, as a refrigerant, and as a propellant in aerosols.
Freon-12	Dichlorodifluoromethane	<chem>CCl2F2</chem>	As a refrigerant and as a propellant in aerosols.
Freon-11	Trichlorofluoromethane	<chem>CCl3F</chem>	As a refrigerant and as a propellant in aerosols.
Freon-113	1,1,2-Trichloro-1,2,2,2-tetrafluoroethane	<chem>CClFClCF3</chem>	As a refrigerant and as a propellant in aerosols.
Freon-114	1,2-Dichloro-1,1,2,2-tetrafluoroethane	<chem>CCl2F2</chem>	As a refrigerant and as a propellant in aerosols.
Freon-22	Chlorodifluoromethane	<chem>CClF2</chem>	As a refrigerant and as a propellant in aerosols.
Freon-134a	1,1,1,2-Tetrafluoroethane	<chem>CCF3CF3</chem>	As a refrigerant and as a propellant in aerosols.
Freon-135a	1,1,1-Trifluoroethane	<chem>CCF3CF3</chem>	As a refrigerant and as a propellant in aerosols.
Freon-152a	1,1-Difluoroethane	<chem>CCF2CF3</chem>	As a refrigerant and as a propellant in aerosols.
Freon-160	1,1-Difluoroethane	<chem>CCF2CF3</chem>	As a refrigerant and as a propellant in aerosols.
Freon-170	1,1,1-Trifluoroethane	<chem>CCF3CF3</chem>	As a refrigerant and as a propellant in aerosols.
Freon-172a	1,1,1,2-Tetrafluoroethane	<chem>CCF3CF3</chem>	As a refrigerant and as a propellant in aerosols.
Freon-180	1,1,1,2-Tetrafluoroethane	<chem>CCF3CF3</chem>	As a refrigerant and as a propellant in aerosols.
Freon-182	1,1,1,2-Tetrafluoroethane	<chem>CCF3CF3</chem>	As a refrigerant and as a propellant in aerosols.
Freon-183	1,1,1,2-Tetrafluoroethane	<chem>CCF3CF3</chem>	As a refrigerant and as a propellant in aerosols.
Freon-184	1,1,1,2-Tetrafluoroethane	<chem>CCF3CF3</chem>	As a refrigerant and as a propellant in aerosols.
Freon-185	1,1,1,2-Tetrafluoroethane	<chem>CCF3CF3</chem>	As a refrigerant and as a propellant in aerosols.
Freon-186	1,1,1,2-Tetrafluoroethane	<chem>CCF3CF3</chem>	As a refrigerant and as a propellant in aerosols.
Freon-187	1,1,1,2-Tetrafluoroethane	<chem>CCF3CF3</chem>	As a refrigerant and as a propellant in aerosols.
Freon-188	1,1,1,2-Tetrafluoroethane	<chem>CCF3CF3</chem>	As a refrigerant and as a propellant in aerosols.
Freon-189	1,1,1,2-Tetrafluoroethane	<chem>CCF3CF3</chem>	As a refrigerant and as a propellant in aerosols.
Freon-190	1,1,1,2-Tetrafluoroethane	<chem>CCF3CF3</chem>	As a refrigerant and as a propellant in aerosols.
Freon-191	1,1,1,2-Tetrafluoroethane	<chem>CCF3CF3</chem>	As a refrigerant and as a propellant in aerosols.
Freon-192	1,1,1,2-Tetrafluoroethane	<chem>CCF3CF3</chem>	As a refrigerant and as a propellant in aerosols.
Freon-193	1,1,1,2-Tetrafluoroethane	<chem>CCF3CF3</chem>	As a refrigerant and as a propellant in aerosols.
Freon-194	1,1,1,2-Tetrafluoroethane	<chem>CCF3CF3</chem>	As a refrigerant and as a propellant in aerosols.
Freon-195	1,1,1,2-Tetrafluoroethane	<chem>CCF3CF3</chem>	As a refrigerant and as a propellant in aerosols.
Freon-196	1,1,1,2-Tetrafluoroethane	<chem>CCF3CF3</chem>	As a refrigerant and as a propellant in aerosols.
Freon-197	1,1,1,2-Tetrafluoroethane	<chem>CCF3CF3</chem>	As a refrigerant and as a propellant in aerosols.
Freon-198	1,1,1,2-Tetrafluoroethane	<chem>CCF3CF3</chem>	As a refrigerant and as a propellant in aerosols.
Freon-199	1,1,1,2-Tetrafluoroethane	<chem>CCF3CF3</chem>	As a refrigerant and as a propellant in aerosols.
Freon-200	1,1,1,2-Tetrafluoroethane	<chem>CCF3CF3</chem>	As a refrigerant and as a propellant in aerosols.

$\left. \begin{matrix} HI \\ HBr \\ HCl \end{matrix} \right\}$ halogen acids
 phosphorus nitride
 From nitric acid

$\rightarrow 2^\circ$ haloalkane
 $\rightarrow 2^\circ$ haloalkane

haloalkanes
 haloalkanes
 haloalkanes





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SMILES	Common Name	IUPAC Name
<chem>CH2=CH-CH2Br</chem>	Allyl bromide	3-Bromopropene
<chem>CH3-C(=O)-Cl</chem>	Chloro acetyl chloride	Chloroacetyl chloride
<chem>c1ccccc1CBr</chem>	Benzyl bromide	Bromomethylbenzene
<chem>Cc1ccc(Cl)cc1</chem>	p-chlorotoluene	1-(4-chlorophenyl)ethane or 4-chlorotoluene
<chem>C1=CC=C(Cl)C=C1Cl</chem>	m-dichlorobenzene	1,3-dichlorobenzene

From Alcohol

From Hydrocarbon

Electrophilic Substitution

Halogen Exchange

Methods of preparation of Alkyl Halides

International Union of pure and applied chemist

Common Names IUPAC Names

Nomenclature of Halogen Derivatives

Classification of Halogen Derivative

10. HALOGEN DERIVATIVES

- Uses
- Dichloromethane
 - chloroform
 - carbon tetrachloride
 - Iodoform
 - Freons

On the Basis of Hydrocarbon skeleton

- Haloalkanes
- Haloalkenes
- Haloalkynes
- Haloarenes

On the Basis of no. of Halogen atom

- mono Halogen
- Di Halogen
- Tri Halogen
- poly Hal



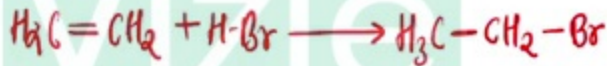
→ saturated hydrocarbon
(NOT suitable with alkene)

→ unsaturated hydrocarbon
(Alkene || Alkyne)



order of Reactivity
(HI > HBr > HCl)

→ Halogenation with
symmetrical alkene



→ Halogenation with
un-symmetrical alkene



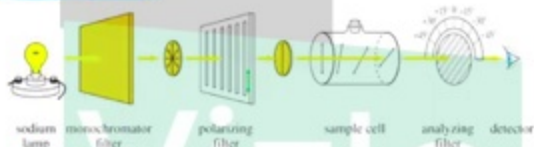
a polarizing filter

■ **Polarimetry** is a laboratory technique that measures the interaction between a compound and plane polarized light.

■ Since enantiomers interact with plane polarized light differently, polarimetry can be used to distinguish between enantiomers.

■ When plane polarized light passes through a solution containing a **single** chiral compound, the chiral compound causes the plane of vibration to rotate.

■ **Polarimeter**

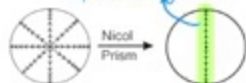


■ Chiral compounds are **optically active**:
■ capable of rotating the plane of polarized light

■ Enantiomers rotate the plane of polarized light by exactly the same amount but in opposite directions.



oscillation only in one plane emerge but:



cross section of ordinary light

cross section of plane polarized light

④ plane polarized light

⑤ optical activity and
⑥ enantiomers

optical

H



at prop

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10.

Alcohol Derivatives



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