

Safe Working Procedure for Benzene

Benzene (C_6H_6) is a colorless liquid with a sweet odor. Benzene is mainly used as solvent and sometimes as starting material or as intermediate to make other chemicals. It has a boiling point of $80\text{ }^\circ\text{C}$, evaporates into the air very quickly and dissolves slightly in water. It is an extremely flammable liquid and vapor. Vapor may cause flash fire. Moreover, it is carcinogenic and highly toxic. It causes damage to the following organs: blood, bone marrow, central nervous system (CNS).

Hexa-deuterated benzene (C_6D_6) is sometimes used as a solvent in NMR spectroscopy. It should be handled in the same way as normal benzene.

Benzene vapors + chlorine and light causes explosion. Reacts explosively with bromine pentafluoride, chlorine, chlorine trifluoride, diborane, nitric acid, nitryl perchlorate, liquid oxygen, ozone and silver perchlorate. Contact with sodium peroxide with benzene causes ignition. Benzene ignites in contact with powdered chromic anhydride. Vigorous or incandescent reaction with hydrogen + Raney nickel (above $210\text{ }^\circ\text{C}$) and bromine trifluoride.

Precautions:

Care must be taken while using benzene. In laboratory research, toluene is now often used as a substitute for benzene. The solvent-properties of the two are similar but toluene is less toxic and has a wider liquid range. Keep benzene away from heat and keep away from sources of ignition. Do not ingest. Always handle inside a well ventilated fumehood. Do not breathe gas, fumes, vapor or spray. Wear proper PPE while handling benzene.

Disposal:

Proper care must be taken even while disposing of used benzene. Always store the waste benzene solvent in separate container and do not mix with other solvents.

Prepared by,



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