(12) Sulphur Monochloride, S_2Cl_2
CAS No. 10025-67-9
HS No. 28.12.10.90
TDG No. 1828
NIOSH/RTECS No. WS4300000
Merck 8949

Synonyms: Chloride of sulfur, Disulfur dichloride, sulfur chloride, Thiosulfurous dichloride, Sulfur subchloride.

Physical Properties: MW: 135.03, mp: -80°, bp: 138°, d1.688, n_D^{20} 1.6700; it is a yellow orange liquid with a pungent odour. Insoluble in water but soluble in many organic solvents such as benzene.

Synthesis: Sulphur monochloride is made commercially by the direct chlorination of sulphur usually using a heel of S_2Cl_2 from a previous batch; iron, iodine or ferric chloride may be added as a catalyst. Sulphur monochloride is also a byproduct of the chlorination of carbon disulphide in the preparation of carbon tetrachloride.

Reactivity: There are many useful reactions, it can be used to prepare thionyl chloride, it reacts with ethylene to form mustard gas, it gives resinous products with unsaturated oils, it vulcanizes (crosslinks) rubber, the chlorine atom can be displaced by nucleophiles, it gives disulphides with aromatic compounds and it can be used as a chlorinating agent.

Toxicology: It is poisonous by inhalation or ingestion. This fuming corrosive liquid is irritating ot the eye, skin and mucous membranes. Hydrolysis produces HCl, thiosulphuric acid and sulphur. Exposure limit is 1 ppm. It is reported in the EDA TSCA inventory.

Uses: Principle uses are in the manufacture of lubricants and as a vulcanizing agent for rubber.

Suppliers: There are six listed suppliers: USA (1), India (1), Japan (2), France (1) and UK (1).