

(7) Arsenic Trichloride, AsCl₃

CAS No. 7784-34-1

HS No. 28.27.39.00

TDG 1560, Class 6.1, Packing Group I.

NIOSH/RTECS No. CG1750000

Merck 829

Synonyms: Arsenous trichloride, trichloroarsine, arsenic butter, caustic arsenic chloride

Physical Characteristics: MW: 181.28 colourless oily liquid. b.p:130°, mp: -13°, s.g. 2.205. Solubilities: miscible in chloroform, carbon tetrachloride and ether, sinks and reacts in water. Decomposed by ultraviolet light.

Synthesis: spontaneous combustion of arsenic in chlorine; the reaction of chlorine with arsenic trioxide, As₂O₃; the reaction of hydrochloric acid, HCl with arsenic trioxide; the reaction of sulphur chloride, S₂Cl₂ with As₂O₃.

Reactivity: reacts with water to produce hydrochloric acid, emits toxic fumes when heated to decomposition, explodes on contact with sodium, potassium or aluminium, corrodes metals.

Toxicology: All arsenic compounds are toxic with the trivalent inorganic compounds being the most toxic. The Threshold Limit Value for AsCl₃ is 0.2 mg/m³ as As; toxicity by ingestion is Grade 3; oral LD₅₀ 138 mg/kg (rat) with the fatal human dose in the range of 70-180 mg. AsCl₃ is poisonous by inhalation. It is reported in EPA TSCA inventory and on the EPA Extremely Hazardous Substance List.

Uses: Major use as an intermediate for the production of organic arsenicals for pharmaceuticals and insecticides. Arsenical compounds find uses as insecticides, herbicides, defoliants and rodent ocide.

Suppliers: A review of three directories of chemical suppliers produced two manufacturers, and at least six sources of its major precursor. There is one supplier in the United States and another in Germany.

Literature Survey:

Examination of Chemical Abstracts from 1986 till May 1992 produced 150 references from 23 countries. About a third of the publications are technology related e.g., semi-conductor related with 26% of the papers being published by industry and 26% being patents. (Annex 1).