28.13 - Sulphides of non-metals; commercial phosphorus trisulphide.

2813.10 - Carbon disulphide

2813.90 - Other

The most important of these binary compounds are :

(1) **Carbon disulphide** (CS_2).

Results from the action of sulphur vapours on burning carbon. Colourless, toxic liquid (specific gravity about 1.3). Not miscible with water. Smells of rotten eggs when impure. Very volatile and highly inflammable, it is dangerous to inhale and to handle. It is presented in stoneware, metal or glass containers encased in straw or osier, and very tightly stoppered.

It is used as a solvent for numerous purposes, e.g., for extracting oils, fats or essential oils, for defatting bones, in medicine, or in the man-made textile or rubber industries. It is also used in agriculture where it is injected into the soil for destroying insects, phylloxera, etc. For the latter use, the derived product potassium thiocarbonate (**heading 28.42**) is sometimes used. (See the Explanatory Note to heading 38.08.)

(2) **Silicon disulphide** (SiS_2).

Obtained by the action of sulphur vapour on strongly heated silicon. White solid; crystallises in volatile needles. Decomposes water with formation of gelatinous silica.

(3) **Arsenic sulphides**.

This heading covers artificial sulphides obtained either from natural sulphides, or from arsenic or arsenous oxide by treatment with sulphur or hydrogen sulphide.

(a) **Diarsenic disulphide** (artificial realgar, false realgar, red sulphide) (As_2S_2 or As_4S_4). Toxic product, occurring in vitreous red or orange-coloured crystals, specific gravity about 3.5. Volatilises without melting. Used for the manufacture of fireworks (mixed with potassium nitrate and sulphur), in paints (ruby arsenic), or in leather dressing for dehairing hides.

(b) **Diarsenic trisulphide** (artificial orpiment, false auripigment, yellow sulphide) (As_2S_3). Toxic yellow powder, specific gravity about 2.7; odourless and insoluble in water. Similar uses to the disulphide, and also as a pigment for leather or rubber, as a parasiticide or in medicine (because it destroys morbid growths). With alkali sulphides, it forms thioarsenites of **heading 28.42**.

(c) **Diarsenic pentasulphide** (As_2S_5). This product, which does not occur in nature, is a light yellow amorphous solid, insoluble in water. Used as a pigment. With alkali sulphides, it also forms thioarsenates of **heading 28.42**.

The heading **excludes** natural arsenic sulphides (disulphide or realgar, trisulphide or orpiment) (**heading 25.30**).

(4) **Phosphorus sulphides**.

(a) **Tetraphosphorus trisulphide** (P_4S_3). Obtained from the constituent elements. Grey or yellow solid. Specific gravity of about 2.1. Occurs either as an amorphous mass or in crystals. Smells of garlic and is not very toxic, though the dust is rather dangerous to inhale. It is decomposed by boiling water, but is not affected by air. It is the most stable phosphorus sulphide. Used in the manufacture of the pentasulphide, and in place of phosphorus in the manufacture of safety matches; also in organic synthesis.

(b) **Diphosphorus pentasulphide** (P_2S_5 or P_4S_{10}). Occurs in yellow crystals; specific gravity 2.03 to 2.09. Used for the same purposes as tetraphosphorus trisulphide or for the preparation of flotation agents for ores.

(c) **Commercial phosphorus trisulphide**. The product known as phosphorus trisulphide is a mixture whose formula approximates to P_2S_3; it occurs in yellowish grey crystalline masses, decomposed by water. Used in organic synthesis.

The heading **excludes** :

(a) The binary combinations of sulphur with halogens (e.g., sulphur chlorides) (**heading 28.12**).

(b) Oxysulphides (e.g., of arsenic, carbon and silicon), and the thiohalides of non-metals (e.g., phosphorus chlorosulphide and thiocarbonyl chloride) (**heading 28.53**).