28.20 - Manganese oxides.

2820.10 - Manganese dioxide

2820.90 - Other

(1) **Manganese dioxide** (manganous anhydride) (MnO_2). The most important manganese oxide. Prepared by the action of a slightly nitric solution of potassium permanganate on a manganous salt (e.g., the sulphate). Brown or blackish masses or powder (specific gravity about 5), insoluble in water.

A very powerful oxidising agent. Uses include pyrotechnics, organic synthesis (preparation of hydroxyanthraquinones, aminoanthraquinones, etc.), in gas-masks, as a depolarising agent in batteries, in the ceramics industry, in the manufacture of driers, printers' ink (manganese black), colours (brown pigments known as mineral bistre, manganese bitumen), certain mastics, and synthetic semi-precious stones (artificial garnet). It is also used in the glass industry (glassmakers' soap) generally to correct the yellow tint of glass.

This oxide has the character of an anhydride from which the manganites of heading 28.41 are derived.

This heading **does not include** the anhydrous natural manganese dioxide (pyrolusite) and hydrated natural manganese dioxide (psilomelane) (**heading 26.02**).

(2) **Manganese oxide** (MnO). Greyish or greenish powder, insoluble in water. Specific gravity about 5.1. Used in textile printing.

Manganous hydroxide is **excluded** (**heading 28.25**).

(3) **Dimanganese trioxide** (manganese sesquioxide, manganic oxide) (Mn_2O_3). This oxide is basic. Brown or black powder (specific gravity about 4.8), insoluble in water. Uses include : in textile printing, as a ceramic colour, in the glass industry, the manufacture of driers (manganese linoleate), as a catalyst in chemistry, inorganic (manufacture of nitric acid) or organic.

The heading **does not include** natural manganic oxide (braunite - **heading 26.02**), nor manganic hydroxide (**heading 28.25**).

(4) **Manganomanganic oxide** (manganese saline oxide) (Mn_3O_4). Resembles saline iron oxide in some respects.

Natural saline oxide of manganese (hausmannite) is **excluded** (**heading 26.02**).

(5) **Permanganic anhydride** (Mn_2O_7). Dark brown liquid which absorbs moisture and detonates towards 40 °C.

This anhydride gives the permanganates of heading 28.41.

Permanganic acid is **excluded** (**heading 28.25**).