28.36 - Carbonates; peroxocarbonates (percarbonates); commercial ammonium carbonate containing ammonium carbamate.

2836.20 - Disodium carbonate

2836.30 - Sodium hydrogencarbonate (sodium bicarbonate)

2836.40 - Potassium carbonates

2836.50 - Calcium carbonate

2836.60 - Barium carbonate

- Other :

2836.91 - - Lithium carbonates

2836.92 - - Strontium carbonate

2836.99 - - Other

Subject to the **exclusions** mentioned in the introduction to this sub-Chapter, this heading covers :

(I) **Carbonates (neutral carbonates, hydrogencarbonates or bicarbonates, basic carbonates)** - metal salts of the non-isolated carbonic acid (H_2CO_3), whose anhydride (CO_2) falls in heading 28.11.

(II) **Peroxocarbonates** (percarbonates), i.e., carbonates containing an excess of oxygen, such as (Na_2CO_4) (peroxomonocarbonates) or ($Na_2C_2O_6$) (peroxodicarbonates); these result from the action of carbon dioxide on metal peroxides.

(A) CARBONATES

(1) **Ammonium carbonates**. Obtained by heating a mixture of chalk and ammonium sulphate (or chloride), or by combining carbon dioxide with gaseous ammonia in presence of steam.

These processes give **commercial ammonium carbonate** which, in addition to various impurities (chlorides, sulphates, organic matter), contains ammonium hydrogen carbonate and ammonium carbamate (NH_2COONH_4). Commercial ammonium carbonate (included in this heading) occurs in white crystalline masses or in powder, soluble in hot water. It deteriorates in a humid atmosphere with superficial formation of the acid carbonate, but may still be used in this state.

Ammonium carbonate is used as a mordant in textile dyeing or printing; as a detergent for wool; an expectorant in medicine; in the manufacture of smelling salts or of baking powders; in tanning; in the rubber industry; in cadmium metallurgy; in organic synthesis, etc.

(2) **Sodium carbonates**.

(a) **Disodium carbonate** (neutral carbonate) (Na_2CO_3). Improperly called " carbonate of soda " or " commercial soda "; not to be confused with sodium hydroxide (caustic soda) of **heading 28.15**. May be obtained by heating a solution of sodium chloride and ammonia with carbon dioxide, and decomposing by heating the resulting acid sodium carbonate.

Occurs as an anhydrous (or dehydrated) powder, or in hydrated crystals (soda crystals, washing soda) with 10 H_2O, efflorescing in the air to give a monohydrate (with 1 H_2O). Used in numerous industries : as a flux in glass-making and in ceramics; in the textile industry; in the manufacture of washing preparations; in dyeing; in the tin-sizing of silk (with stannic chloride); as an anti-scaling product (see Explanatory Note to heading 38.24); in the preparation of sodium hydroxide, sodium salts and indigo; in the metallurgy of tungsten, bismuth antimony or vanadium; in photography; for purifying industrial water (lime soda process) and, mixed with lime, for purifying coal gas.

(b) **Sodium hydrogencarbonate** (acid carbonate, sodium bicarbonate) ($NaHCO_3$). Usually a crystalline powder or white crystals, soluble in water, especially when hot, and liable to deteriorate in a humid atmosphere. Used in medicine (for treating gravel); for manufacturing digestive tablets and aerated beverages; in the preparation of baking powders; in the porcelain industry, etc.

Natural sodium carbonate (natron, etc.) is **excluded** (**heading 25.30**).

(3) **Potassium carbonates**.

(a) **Dipotassium carbonate**(neutral carbonate) (K_2CO_3). Improperly called " potash "; not to be confused with potassium hydroxide (caustic potash) of **heading 28.15**. Obtained from vegetable ashes, residual beetwash and suint but mainly from potassium chloride. White, crystalline masses, very deliquescent, soluble in water. Used in the manufacture of glass or ceramics; for bleaching linen or scouring textiles; to clean paintings; to prepare potassium salts, cyanides, Prussian blue; as an anti-scale preparation, etc.

(b) **Potassium hydrogencarbonate** (acid carbonate, potassium bicarbonate) ($KHCO_3$). Prepared by the action of carbon dioxide on the neutral carbonate; white crystals, soluble in water, slightly deliquescent. Used in fire-extinguishers; in the preparation of baking powders; in medicine and in oenology (anti-acid).

(4) **Precipitated calcium carbonate**. Precipitated calcium carbonate ($CaCO_3$) included in this heading results from the treatment of solutions of calcium salts with carbon dioxide. Used as an extender, in the preparation of toothpastes and face-powder, in medicine (treatment of rickets), etc.

The heading **excludes** natural limestone (**Chapter 25**) and chalk (natural calcium carbonate), whether or not washed and ground (**heading 25.09**) and calcium carbonate in powder form, the particles of which are coated with a water-repellent film of fatty acids (e.g., stearic acid) (**heading 38.24**).

(5) **Precipitated barium carbonate**. Precipitated barium carbonate ($BaCO_3$) included in this heading is obtained from sodium carbonate and barium sulphide. White powder insoluble in water. Used for purifying industrial water; for manufacturing parasiticides, optical glass and pure barium oxide; as a pigment and flux in enamels; in the rubber, paper, soap or sugar industries; in pyrotechnics (green lights).

Natural barium carbonate (witherite) is **excluded** (**heading 25.11**).

(6) **Lead carbonates**.

Artificiallead carbonates, included in this heading, are :

(a) **Neutral lead carbonate** ($PbCO_3$). White powder, crystalline or amorphous, insoluble in water. Used in ceramics and in the manufacture of pigments, mastics and indigo.

(b) **Basic lead carbonates** of the type 2 $PbCO_3.Pb(OH_2)$ in powder, cakes, scales or paste, are known as " white lead ". White lead is obtained from lead acetate resulting from the action of acetic acid on sheet lead or litharge; a drying pigment. Used in the manufacture of oil paints, of fluxes, of special mastics (e.g., for steam-pipe joints) and of orange lead. White lead (used alone or mixed with barium sulphate, zinc oxide, gypsum or kaolin) gives Krems white, Venetian white, Hamburg white, etc.

Natural lead carbonate (cerussite) is **excluded** (**heading 26.07**).

(7) **Lithium carbonates**. Neutral lithium carbonate (Li_2CO_3), obtained by precipitating lithium sulphate with sodium carbonate; white crystalline powder, odourless, unaffected by air, sparingly soluble in water. Used in medicine (uric diathesis) and in the preparation of mixtures for artificial mineral waters.

(8) **Precipitated strontium carbonate**. Precipitated strontium carbonate ($SrCO_3$) included in this heading is a very fine white powder, insoluble in water. Used in pyrotechnics (red lights) and in the preparation of iridescent glass, luminous paints, strontium oxide or strontium salts.

Natural strontium carbonate (strontianite) is **excluded** (**heading 25.30**).

(9) **Bismuth carbonate**. Artificial bismuth carbonate included in this heading is essentially basic bismuth carbonate (bismuthyl carbonate) ($(BiO)_2CO_3$), white or yellowish amorphous powder, insoluble in water. Used in medicine and in the manufacture of cosmetics.

Natural bismuth hydrocarbonate (bismutite) is **excluded** (**heading 26.17**).

(10) **Precipitated magnesium carbonate**. Precipitated magnesium carbonate, included in this heading, is a basic, hydrated carbonate. Obtained by double decomposition of sodium carbonate and magnesium sulphate. Odourless white product, practically insoluble in water. Light carbonate is the pharmacists' white magnesia, a laxative often presented in cubes. Heavy carbonate is a granular white powder. Magnesium carbonate is used as a filler for paper or rubber; also used in cosmetics and as a heat-insulating material.

The heading **excludes** natural magnesium carbonate (magnesite) (**heading 25.19**).

(11) **Manganese carbonates**. Artificial carbonate ($MnCO_3$), anhydrous or hydrated (with 1 H_2O included in this heading, is a fine powder, yellow, pinkish or brownish, insoluble in water. Used as a pigment in paints, rubber and ceramics; also in medicine.

Natural manganese carbonate (rhodocrosite or dialogite) is **excluded** (**heading 26.02**).

(12) **Iron carbonates**. Artificial carbonate ($FeCO_3$) anhydrous or hydrated (with 1 H_2O) included in this heading, is obtained by double decomposition of iron sulphate and sodium carbonate. Greyish crystals, insoluble in water, readily oxidised by air, especially when damp. Used in the preparation of iron salts and of medicaments.

Natural iron carbonate (siderite or chalybite) is **excluded** (**heading 26.01**).

(13) **Cobalt carbonates**. Cobalt carbonate ($CoCO_3$), anhydrous or hydrated (with 6 H_2O) is a crystalline powder, pink, red or greenish, and insoluble in water. Used as a pigment in enamels and for preparing cobalt oxides or salts.

(14) **Nickel carbonates**. Normal artificial nickel carbonate ($NiCO_3$) is a light green powder, insoluble in water; used as a pigment in ceramics and in the preparation of nickel oxide. Hydrated basic carbonate, in greenish crystals, is used in ceramics, glass-making, electroplating, etc.

Natural basic nickel carbonate (zaratite) is **excluded** (**heading 25.30**).

(15) **Copper carbonates**. Artificial carbonates, also called artificial malachite or artificial azure copper, are greenish-blue powders, poisonous and insoluble in water, consisting of neutral carbonate ($CuCO_3$) or of basic carbonates of various kinds. Prepared from sodium carbonate and copper sulphate. Used as pigments, pure or mixed (blue or green copper carbonate, mountain blue or green); as insecticides or fungicides; in medicine (astringents and antidotes against phosphorus poisoning); in electroplating; in pyrotechnics, etc.

Natural copper carbonate, hydrated or not (malachite, azurite) is **excluded** (**heading 26.03**).

(16) **Precipitated zinc carbonate**. Precipitated zinc carbonate ($ZnCO_3$) included in this heading is obtained by double decomposition of sodium carbonate and zinc sulphate; white crystalline powder, practically insoluble in water. Used as a pigment in paints, rubber, ceramics and cosmetics.

Natural zinc carbonate (smithsonite) is **excluded** (**heading 26.08**).

(B) PEROXOCARBONATES (PERCARBONATES)

(1) **Sodium peroxocarbonates**. Prepared by treating sodium peroxide, hydrated or not, with liquid carbon dioxide. White powders, dissolving in water to form oxygen and neutral sodium carbonate. Used for bleaching, in the preparation of domestic detergents and in photography.

(2) **Potassium peroxocarbonates**. Obtained by electrolysing at -10 °C or -15 °C a saturated solution of neutral potassium carbonate. White crystals, very hygroscopic, turning blue in a humid atmosphere and soluble in water. Strong oxidising agents sometimes used for bleaching.

(3) **Other peroxocarbonates**, e.g., ammonium or barium peroxocarbonates.