HARMONIZED SYSTEM

EXPLANATORY NOTES

2012 Edition

(English text)

Amending Supplement n° 5

JUNE 2014

(17 sheets)

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1° ) Remove the following sheets and substitute those annexed:

I-3-1 and 2 | I-0302-2 and 3 | I-0305-1 and 2
I-0511-1 and 2 | II-0712-1 and II-0713-1 | IV-1604-2 and IV-1605-1
VI-2825-4 and 5 * | VI-2833-1 and 2 | VI-2909-3 and 4
VI-2915-1 and 2 | VI-2920-1 and 2 | VI-2934-1 and 2
VI-29-Annex-9 and 10 | VI-29-Annex-31 and 32 * | VI-3002-1 to VI-3003-1
VII-3907-1 and 2 *

Note: Only the page modified by a new Amending Supplement has a reference to this Amending Supplement. A vertical line in the margin indicates where the text has been modified.

* : The replacement of this sheet was necessitated by printing errors.
Chapter 3

Fish and crustaceans, molluscs and other aquatic invertebrates

Notes.

1.- This Chapter does not cover:

(a) Mammals of heading 01.06;

(b) Meat of mammals of heading 01.06 (heading 02.08 or 02.10);

(c) Fish (including livers and roes thereof) or crustaceans, molluscs or other aquatic invertebrates, dead and unfit or unsuitable for human consumption by reason of either their species or their condition (Chapter 5); flours, meals or pellets of fish or of crustaceans, molluscs or other aquatic invertebrates, unfit for human consumption (heading 23.01); or

(d) Caviar or caviar substitutes prepared from fish eggs (heading 16.04).

2.- In this Chapter the term “pellets” means products which have been agglomerated either directly by compression or by the addition of a small quantity of binder.

GENERAL

This Chapter covers all fish and crustaceans, molluscs and other aquatic invertebrates, whether live or dead, presented for direct consumption, or for industrial purposes (canning, etc.), for spawning, for aquaria, etc., with the exception of dead fish (including livers and roes thereof), crustaceans, molluscs and other aquatic invertebrates which are unfit or unsuitable for human consumption by reason of either their species or their condition (Chapter 5).

The term “chilled” means that the temperature of a product has been reduced, generally to around 0 °C, without the product being frozen. The expression “frozen” means that the product has been cooled to below the product’s freezing point until it is frozen throughout.

This Chapter also covers edible fish roes and milt, not prepared or preserved, or prepared or preserved only by processes provided for in this Chapter. Otherwise prepared or preserved edible roes and milt, or those suitable for immediate consumption as caviar or caviar substitutes are classified in heading 16.04.

Distinction between goods of this Chapter and those of Chapter 16.

This Chapter is limited to fish (including livers and roes thereof) and crustaceans, molluscs and other aquatic invertebrates in the states described in the headings. Subject to this proviso, they remain classified in the Chapter whether or not they have been cut, chopped, minced, ground, etc. In addition, mixtures or combinations of products of different headings of the Chapter (e.g., fish of headings 03.02 to 03.04 combined with crustaceans of heading 03.06) remain classified in this Chapter.
On the other hand, fish and crustaceans, molluscs and other aquatic invertebrates are classified in Chapter 16 if they have been cooked or otherwise prepared or preserved by processes not provided for in this Chapter (e.g., fish fillets merely covered with batter or bread crumbs, cooked fish); it should, however, be noted that smoked fish and smoked crustaceans, molluscs and other aquatic invertebrates, which may have undergone cooking during or before the smoking process, and crustaceans in their shells simply steamed or boiled in water, remain classified in headings 03.05, 03.06, 03.07 and 03.08, respectively, and that flours, meals and pellets obtained from cooked fish and cooked crustaceans, molluscs or other aquatic invertebrates remain classified in headings 03.05, 03.06, 03.07 and 03.08, respectively.

It should also be noted that fish and crustaceans, molluscs and other aquatic invertebrates of this Chapter remain classified here even if put up in airtight containers (e.g., smoked salmon in cans). In most cases, however, products put up in these packings have been prepared or preserved otherwise than as provided for in the headings of this Chapter, and accordingly fall to be classified in Chapter 16.

Similarly, fish and crustaceans, molluscs and other aquatic invertebrates of this Chapter remain classified here (e.g., fresh or chilled fish) when subjected to packaging by means of a Modified Atmospheric Packaging (MAP) process. In a MAP process the atmosphere surrounding the product is altered or controlled (e.g., by removing or reducing the oxygen content and replacing it with or increasing the nitrogen or carbon dioxide content).

In addition to the exclusions referred to above, the Chapter also excludes:

(a) Mammals of heading 01.06.
(b) Meat of mammals of heading 01.06 (heading 02.08 or 02.10).
(c) Fish waste and inedible roes (e.g., salted cod roes used as fishing bait) (heading 05.11).
(d) Flours, meals and pellets of fish or of crustaceans, molluscs or other aquatic invertebrates, unfit for human consumption (heading 23.01).
- Herrings (Clupea harengus, Clupea pallasii), anchovies (Engraulis spp.), sardines (Sardina pilchardus, Sardinops spp.), sardinella (Sardinella spp.), brisling or sprats (Sprattus sprattus), mackerel (Scomber scombrus, Scomber australasicus, Scomber japonicus), jack and horse mackerel (Trachurus spp.), cobia (Rachycentron canadum) and swordfish (Xiphias gladius), excluding livers and roes:

0302.41 - - Herrings (Clupea harengus, Clupea pallasii)
0302.42 - - Anchovies (Engraulis spp.)
0302.43 - - Sardines (Sardina pilchardus, Sardinops spp.), sardinella (Sardinella spp.), brisling or sprats (Sprattus sprattus)
0302.44 - - Mackerel (Scomber scombrus, Scomber australasicus, Scomber japonicus)
0302.45 - - Jack and horse mackerel (Trachurus spp.)
0302.46 - - Cobia (Rachycentron canadum)
0302.47 - - Swordfish (Xiphias gladius)

- Fish of the families Bregmacerotidae, Euclichthyidae, Gadidae, Macrouridae, Melanidae, Merlucciidae, Moridae and Muraenolepididae, excluding livers and roes:

0302.51 - - Cod (Gadus morhua, Gadus ogac, Gadus macrocephalus)
0302.52 - - Haddock (Melanogrammus aeglefinus)
0302.53 - - Coalfish (Pollachius virens)
0302.54 - - Hake (Merluccius spp., Urophycis spp.)
0302.55 - - Alaska Pollack (Theragra chalcogramma)
0302.56 - - Blue whitings (Micromesistius poutassou, Micromesistius australis)
0302.59 - - Other

- Tilapias (Oreochromis spp.), catfish (Pangasius spp., Silurus spp., Clarias spp., Ictalurus spp.), carp (Cyprinus carpio, Carassius carassius, Ctenopharyngodon idellus, Hypophthalmichthys spp., Cirrhinus spp., Mylopharyngodon piceus), eels (Anguilla spp.), Nile perch (Lates niloticus) and snakeheads (Channa spp.), excluding livers and roes:

0302.71 - - Tilapias (Oreochromis spp.)
0302.72 - - Catfish (Pangasius spp., Silurus spp., Clarias spp., Ictalurus spp.)
0302.73 - - Carp (Cyprinus carpio, Carassius carassius, Ctenopharyngodon idellus, Hypophthalmichthys spp., Cirrhinus spp., Mylopharyngodon piceus)
0302.74 - - Eels (Anguilla spp.)
0302.79 - - Other
- Other fish, excluding livers and roes:
  0302.81  - - Dogfish and other sharks
  0302.82  - - Rays and skates (Rajidae)
  0302.83  - - Toothfish (Dissostichus spp.)
  0302.84  - - Seabass (Dicentrarchus spp.)
  0302.85  - - Seabream (Sparidae)
  0302.89  - - Other
  0302.90  - Livers and roes

This heading covers fish, fresh or chilled, whether whole, headless, gutted, or in cuts containing bones or cartilage. However, the heading does not include fish fillets and other fish meat of heading 03.04. The fish may be packed with salt or ice or sprinkled with salt water as a temporary preservative during transport.

Fish slightly sugared or packed with a few bay leaves remains in this heading.

Edible fish skins and other edible fish offal, livers, roes and milt, fresh or chilled, are also classified in this heading.
03.05 - Fish, dried, salted or in brine; smoked fish, whether or not cooked before or during the smoking process; flours, meals and pellets of fish, fit for human consumption (+).

0305.10 - Flours, meals and pellets of fish, fit for human consumption

0305.20 - Livers and roes of fish, dried, smoked, salted or in brine
  - Fish fillets, dried, salted or in brine, but not smoked:
    0305.31 - Tilapias (Oreochromis spp.), catfish (Pangasius spp., Silurus spp., Clarias spp., Ictalurus spp.), carp (Cyprinus carpio, Carassius carassius, Ctenopharyngodon idellus, Hypophthalmichthys spp., Cirrhus spp., Mylopharyngodon piceus), eels (Anguilla spp.), Nile perch (Lates niloticus) and snakeheads (Channa spp.)

0305.32 - Fish of the families Bregmacerotidae, Euclichthyidae, Gadidae, Macrouridae, Melanoidae, Merluciidiae, Moridae and Muraenolepididae

0305.39 - Other
  - Smoked fish, including fillets, other than edible fish offal:
    0305.41 - Pacific salmon (Oncorhynchus nerka, Oncorhynchus gorbuscha, Oncorhynchus keta, Oncorhynchus tschawytscha, Oncorhynchus kisutch, Oncorhynchus masou and Oncorhynchus rhodurus), Atlantic salmon (Salmo salar) and Danube salmon (Hucho hucho)

0305.42 - Herrings (Clupea harengus, Clupea pallasii)

0305.43 - Trout (Salmo trutta, Oncorhynchus mykiss, Oncorhynchus clarkii, Oncorhynchus aquabonita, Oncorhynchus gilae, Oncorhynchus apache and Oncorhynchus chrysogaster)

0305.44 - Tilapias (Oreochromis spp.), catfish (Pangasius spp., Silurus spp., Clarias spp., Ictalurus spp.), carp (Cyprinus carpio, Carassius carassius, Ctenopharyngodon idellus, Hypophthalmichthys spp., Cirrhus spp., Mylopharyngodon piceus), eels (Anguilla spp.), Nile perch (Lates niloticus) and snakeheads (Channa spp.)

0305.49 - Other
  - Dried fish, other than edible fish offal, whether or not salted but not smoked:
    0305.51 - Cod (Gadus morhua, Gadus ogac, Gadus macrocephalus)

0305.59 - Other
- Fish, salted but not dried or smoked and fish in brine, other than edible fish offal:

0305.61 - - Herrings (Clupea harengus, Clupea pallasii)
0305.62 - - Cod (Gadus morhua, Gadus ogac, Gadus macrocephalus)
0305.63 - - Anchovies (Engraulis spp.)
0305.64 - - Tilapias (Oreochromis spp.), catfish (Pangasius spp., Silurus spp., Clarias spp., Ictalurus spp.), carp (Cyprinus carpio, Carassius carassius, Ctenopharyngodon idellus, Hypophthalmichthys spp., Cirrhinus spp., Mylopharyngodon piceus), eels (Anguilla spp.), Nile perch (Lates niloticus) and snakeheads (Channa spp.)
0305.69 - - Other

- Fish fins, heads, tails, maws and other edible fish offal:

0305.71 - - Shark fins
0305.72 - - Fish heads, tails and maws
0305.79 - - Other

This heading covers fish (whole, headless, in pieces, in fillets or minced) and edible fish offal which are:

1. dried;
2. salted or in brine; or
3. smoked.

The salt used in the preparation of fish, salted or in brine, may contain added sodium nitrite or sodium nitrate. Small quantities of sugar may be used in the preparation of salted fish without affecting the classification of the fish in this heading.

Fish having undergone two or more of these processes remains classified here, as do fish flour and fish meal (whether or not defatted (for example, defatted by a solvent-extract method) or subjected to heat treatment) and pellets of fish, fit for human consumption.

Smoked fish is sometimes submitted, either before smoking or during smoking (hot smoking), to a heat treatment which partly or wholly cooks the meat; this does not affect its classification in this heading provided that it has not undergone any other processing which deprives it of the character of smoked fish.

The principal varieties of fish prepared in the manner covered by this heading are sardines, anchovies, pilchards, sprats, tunas, mackerel, salmon, herring, cod, haddock and halibut.

Edible fish offal separated from the rest of the body of the fish (e.g., skins, tails, maws (air bladders), heads and halves of heads (with or without the brains, cheeks, tongues, eyes, jaws or lips), stomachs, fins), as well as livers, roes and milt, dried, salted, in brine or smoked, are also classified in this heading.
05.11 - Animal products not elsewhere specified or included; dead animals of Chapter 1 or 3, unfit for human consumption.

0511.10 - Bovine semen

- Other:

0511.91 - - Products of fish or crustaceans, molluscs or other aquatic invertebrates; dead animals of Chapter 3

0511.99 - - Other

This heading includes:

(1) **Animal semen.**

(2) **Animal embryos**, which are shipped frozen with the intended purpose of transplanting them into a recipient mother.

(3) **Animal blood**, liquid or dried, edible or not.

   The heading *excludes* animal blood prepared for therapeutic, prophylactic or diagnostic uses ([heading 30.02](#)).

(4) **Cochineal and similar insects.** The cochineal is an insect which lives on certain cactus plants. There are three kinds of cochineal on the market - black, grey or silver, and reddish. The cochineal furnishes a red dye (cochineal extract) ([heading 32.03](#)) which is used in the preparation of carmine lake ([heading 32.05](#)).

   Amongst the insects similar to the cochineal the most important is the animal kermes, which lives on a variety of dwarf oak tree. Kermes is used for the preparation of vivid and lasting red dyes which are classified in [heading 32.03](#). Animal kermes should not be confused with "kermes mineral" ([heading 38.24](#)).

Cochineal and kermes are presented dried and may be whole or powdered.

(5) **Inedible fish eggs, roes and milt.**

   These comprise:

   (i) Fertile eggs for hatching, recognisable by the presence of black spots which are the embryonic eyes.

   (ii) Salted roes (e.g., of cod or mackerel) used as fishing bait. These can be distinguished from caviar substitutes ([heading 16.04](#)) by their strong disagreeable odour and because they are usually packed in bulk.

   The heading *excludes* edible roes and milt ([Chapter 3](#)).

(6) **Waste of fish or crustaceans, molluscs or other aquatic invertebrates.**

   This category covers, *inter alia*:

   (i) Scales of whitebait or of similar fish, fresh or preserved (but not in solution); these are used for the preparation of pearl essence for the coating of imitation pearls.
(ii) Fish bladders, raw, dried or salted, used in the manufacture of isinglass and fish glues.

(iii) Fish guts and waste of skins used for glue manufacture, etc.

(iv) Fish waste.

The heading also excludes:

(a) Edible fish livers, fish fins, heads, tails, maws and other edible fish offal (Chapter 3).

(b) Shells of molluscs, crustaceans or echinoderms of heading 05.08.

(c) Inedible fish livers used in the preparation of pharmaceutical products (heading 05.10).

(7) Silkworm eggs. These have the appearance of small seeds, pale yellow turning gradually to ash grey or earthy yellow. They are usually presented in boxes (or cellular combs) or in cloth sachets.

(8) Ant eggs.

(9) Sinews and tendons used, like the waste cited in Items (10) and (11) below, mainly as raw materials for the manufacture of glue.

(10) Parings and similar waste, of raw hides or skins.

(11) Waste of raw furskins, clearly not capable of use by furriers.

(12) Dead animals of Chapter 1 or 3 and their meat or meat offals unfit for human consumption other than products of heading 02.09 or of one of the preceding headings of this Chapter.

(13) Horsehair and horsehair waste, whether or not put up as a layer with or without supporting material. This category covers hair of the manes or tails of equine or bovine animals. It includes not only unworked horsehair but also horsehair which has been washed, scoured, bleached, dyed, curled or otherwise prepared. The goods may be in bulk, in bunches or may be put up in skeins, etc.

This heading also covers a layer of horsehair on a support of textile fabric, paper, etc., or put up between sheets of textile fabric, paper, etc., by stapling or simple sewing.

The heading excludes horsehair which has undergone a spinning process and horsehair knotted end to end (Chapter 51).

(14) Natural sponges of animal origin. They comprise both raw sponges (including those merely washed) and sponges which have been prepared (e.g., by removal of calcareous matter or by bleaching). This category also covers waste sponge.

Loofah, also known as vegetable sponge, is classified in heading 14.04.

The heading further excludes:

(a) Shellac, seed lac, stick lac and other lacs (heading 13.01).

(b) Animal fats of Chapter 15.

(c) Collections and collectors’ pieces of zoological interest, consisting of stuffed or otherwise preserved animals, butterflies and other insects, eggs, etc. (heading 97.05).
07.12 - Dried vegetables, whole, cut, sliced, broken or in powder, but not further prepared.

0712.20 - Onions
    - Mushrooms, wood ears (Auricularia spp.), jelly fungi (Tremella spp.) and
      truffles:

0712.31 - Mushrooms of the genus Agaricus

0712.32 - Wood ears (Auricularia spp.)

0712.33 - Jelly fungi (Tremella spp.)

0712.39 - Other

0712.90 - Other vegetables; mixtures of vegetables

This heading covers vegetables of headings 07.01 to 07.11 which have been dried (including
dehydrated, evaporated or freeze-dried) i.e., with their natural water content removed by various
processes. The principal kinds of vegetables treated in this way are potatoes, onions,
mushrooms, wood ears (Auricularia spp.), jelly fungi (Tremella spp.), truffles, carrots, cabbage
and spinach. They are usually prepared in strips or slices, either of one variety or mixed
(julienne).

The heading also covers dried vegetables, broken or powdered, such as asparagus, cauliflower,
parsley, chervil, onion, garlic, celery, generally used either as flavouring materials or in the
preparation of soups.

The heading excludes, inter alia:

(a) Dried leguminous vegetables, shelled (heading 07.13).

(b) Dried, crushed or ground fruits of the genus Capsicum or of the genus Pimenta (heading 09.04),
potato flour, meal, powder, flakes, granules and pellets (heading 11.05), flour, meal and powder of
the dried leguminous vegetables of heading 07.13 (heading 11.06).

(c) Mixed condiments and mixed seasonings (heading 21.03).

(d) Soup preparations based on dried vegetables (heading 21.04).
07.13

07.13 - Dried leguminous vegetables, shelled, whether or not skinned or split (+).

0713.10 - Peas (*Pisum sativum*)
0713.20 - Chickpeas (garbanzos)
   - Beans (*Vigna spp.*, *Phaseolus spp.*):
     0713.31 - - Beans of the species *Vigna mungo* (L.) Hepper or *Vigna radiata* (L.) Wilczek
     0713.32 - - Small red (Adzuki) beans (*Phaseolus* or *Vigna angularis*)
     0713.33 - - Kidney beans, including white pea beans (*Phaseolus vulgaris*)
     0713.34 - - Bambara beans (*Vigna subterranea* or *Voandzeia subterranea*)
     0713.35 - - Cow peas (*Vigna unguiculata*)
     0713.39 - - Other
0713.40 - Lentils
0713.50 - Broad beans (*Vicia faba var. major*) and horse beans (*Vicia faba var. equina, Vicia faba var. minor*)
0713.60 - Pigeon peas (*Cajanus cajan*)
0713.90 - Other

This heading covers leguminous vegetables of heading 07.08 which have been dried and shelled, of a kind used for human or animal consumption (e.g., peas, chickpeas, Adzuki and other beans, lentils, broad beans, horse beans, guar seeds), even if intended for sowing (whether or not rendered inedible by chemical treatment) or for other purposes. They may have undergone moderate heat treatment designed mainly to ensure better preservation by inactivating the enzymes (the peroxidases in particular) and eliminating part of the moisture; however, such treatment should not affect the internal character of the cotyledon.

The dried leguminous vegetables of this heading may be skinned or split.

This heading excludes:
(a) Flour, meal and powder of dried shelled leguminous vegetables (heading 11.06).
(b) Soya beans (heading 12.01).
(c) Seeds of vetches (other than broad beans and horse beans), tares and lupines (heading 12.09).
(d) Locust beans (heading 12.12).

Subheading Explanatory Note.

Subheading 0713.31

This subheading covers only beans of the species *Vigna mungo* (L.) *Hepper*, also known as urd or black gram, and beans of the species *Vigna radiata* (L.) *Wilczek*, also known as mung or green gram. Both species are widely used for bean sprout production.
(6) Caviar substitutes. These are products consumed as caviar but prepared from the eggs of fish other than sturgeon (e.g., salmon, carp, pike, tuna, mullet, cod, lumpfish), which have been washed, cleaned of adherent organs, salted and sometimes pressed or dried. Such fish eggs may also be seasoned and coloured.

All these products remain classified in the heading whether or not put up in airtight containers.

This heading also excludes:

(a) Fish roes, i.e., fish eggs, and milt, not prepared or preserved or prepared or preserved only by processes provided for in Chapter 3, other than those suitable for immediate consumption as caviar or caviar substitutes (Chapter 3).

(b) Fish extracts and juices (heading 16.03).

(c) Pasta stuffed with fish (heading 19.02).

(d) Sauces and preparations therefor, mixed condiments and mixed seasonings (heading 21.03).

(e) Soups and broths and preparations therefor and homogenised composite food preparations (heading 21.04).
16.05

16.05 - Crustaceans, molluscs and other aquatic invertebrates, prepared or preserved.

1605.10 - Crab
   - Shrimps and prawns:
     1605.21 - Not in airtight container
     1605.29 - Other
     1605.30 - Lobster
     1605.40 - Other crustaceans
       - Molluscs:
         1605.51 - Oysters
         1605.52 - Scallops, including queen scallops
         1605.53 - Mussels
         1605.54 - Cuttle fish and squid
         1605.55 - Octopus
         1605.56 - Clams, cockles and arkshells
         1605.57 - Abalone
         1605.58 - Snails, other than sea snails
         1605.59 - Other
           - Other aquatic invertebrates:
             1605.61 - Sea cucumbers
             1605.62 - Sea urchins
             1605.63 - Jellyfish
             1605.69 - Other

The Explanatory Note to heading 16.04 applies, mutatis mutandis, to crustaceans, molluscs and other aquatic invertebrates, except that crustaceans, in shell, which have been cooked by steaming or by boiling in water (whether or not with small quantities of provisional chemical preserving agents) fall in heading 03.06.

The crustaceans and molluscs most commonly prepared or preserved include crab, shrimps and prawns, lobster, crawfish, crayfish, mussels, octopus, squid and snails. The principal other aquatic invertebrates, prepared or preserved, of this heading are sea-urchins, sea cucumbers (bêches-de-mer) and jellyfish.
(10) **Beryllium oxide and hydroxide.**

(a) **Oxide** (BeO). Prepared from beryllium nitrate or sulphate. White powder, insoluble in water; can be crystallised. Used for making beryllium salts, synthetic precious or semi-precious stones and as a catalyst.

(b) **Hydroxide** (Be(OH)_2). White powder resembling alumina in appearance.

(11) **Calcium oxide, hydroxide and peroxide.** This heading covers only the oxide (CaO) and the hydroxide (Ca(OH)_2), in the pure state (i.e., containing practically no clay, iron oxide, manganese oxide, etc.), such as the product obtained by calcining precipitated calcium carbonate.

The heading also covers fused lime obtained by fusing ordinary quicklime in an electric furnace. This product has a high degree of purity (approximately 98% calcium oxide); it is crystalline and generally colourless. It is used, in particular, for refractory linings for furnaces, in the manufacture of crucibles and for addition to concrete, in small pieces, to increase its resistance to wear.

Calcium peroxide (CaO_2) is a white or yellowish powder, hydrated (usually with 8 H_2O), sparingly soluble in water. Used as a bactericide and as a detergent, in medicine and in the preparation of cosmetics.

Quicklime (calcium oxide) and slaked lime (calcium hydroxide) are excluded (heading 25.22).

(12) **Manganese hydroxides.**

(a) **Manganous hydroxide** (Mn(OH)_2). A whitish powder, insoluble in water.

(b) **Manganic hydroxide** (Mn(OH)_3). Derived from manganic oxide (Mn_2O_3). A brown powder used for preparing colours (manganese brown) and manganese linoleate.

(c) **Manganese saline hydroxide.** Derived from the saline oxide Mn_3O_4.

The heading excludes natural hydrated manganese oxide (natural manganic hydroxide) (manganite) which is an ore of heading 26.02 and non-hydrated manganese oxides (heading 28.20).

(13) **Zirconium dioxide** (zirconia) (ZrO_2), not to be confused with zircon (heading 26.15 or 71.03), which is a crystallised natural zirconium silicate.

The artificial oxide is obtained from the above-mentioned ore or from zirconium salts. It is a refractory whitish powder with a melting point of about 2,600 °C. Zirconia is used as a refractory product resistant to the action of chemical agents, a pigment and ceramic opacifier (zirconium white), an abrasive, a constituent of glass and a catalyst.

Natural zirconium oxide or baddeleyite is an ore of heading 26.15.
(14) **Cadmium oxide and hydroxide.**

(a) **Oxide** (CdO). Powder of a more or less brownish-yellow colour according to the calcination temperature during the preparation from the carbonate or the hydroxide. Used in the ceramic industry and as a catalyst.

(b) **Hydroxide** (Cd(OH)_2). White powder.

(15) **Tin oxides and hydroxides.**

(a) **Stannous oxide** (brown oxide) (SnO). Insoluble in water. It may be grey or black crystals, or olive-brown powder with bluish, reddish or greenish glints, according to the process of preparation.

This oxide is amphoteric and gives the stannites of heading 28.41. It is used in organic synthesis as a reducing agent or catalyst.

(b) **Stannic oxide** (stannic anhydride, dioxide) (SnO_2), also insoluble in water, is a powder, white (tin white) or grey (tin ash). The white oxide is used in the ceramic or glass industries as an opacifier, whereas the grey powder is used for polishing metal, mirrors, etc., and also for obtaining vitrifiable compounds. This oxide is sometimes known as “putty powder”, but this term also covers mixtures of this oxide with lead oxide, which fall in heading 38.24.

Stannic oxide is amphoteric and gives the stannites of heading 28.41.

(c) **Stannic acid** or **stannic hydroxide** (Sn(OH)_2). Obtained by the action of an alkali hydroxide on a stannic salt. A white powder which turns into meta-stannic acid.

(d) **Meta-stannic acid.** Obtained from stannic acid; a powder, insoluble in water. Used as an opacifying colour in ceramics and an abrasive in the glass industry.

These stannic acids give the stannites of heading 28.41.

This heading **does not include**:

(a) Natural tin oxide (cassiterite), an ore (heading 26.09).

(b) Tin dross, a mixture of tin oxide and tin obtained during the melting of the metal (heading 26.20).

(16) **Tungsten oxides and hydroxides.** The most important tungsten oxide is tungstic oxide (tungstic anhydride, tungsten trioxide) (WO_3), obtained in the metallurgy of this metal by treating the natural tungstates ( wolframite or scheelite) (heading 26.11). It is a lemon-yellow, crystalline product which turns orange on heating and is insoluble in water. Used for preparing the tungsten for electric bulb filaments and in ceramic paints.

There are several hydroxides, including tungstic acid (H_2WO_4) (yellow hydrate), which gives the normal tungstates of heading 28.41.

Natural tungsten oxide (tungsten ochre, tungstite) is **excluded** (heading 25.30).
28.33 - Sulphates; alums; peroxosulphates (persulphates).

- Sodium sulphates:
  2833.11 - Disodium sulphate
  2833.19 - Other

- Other sulphates:
  2833.21 - Of magnesium
  2833.22 - Of aluminium
  2833.24 - Of nickel
  2833.25 - Of copper
  2833.27 - Of barium
  2833.29 - Other
  2833.30 - Alums
  2833.40 - Peroxosulphates (persulphates)

(A) SULPHATES

Subject to the exclusions mentioned in the introduction to this sub-Chapter, this heading covers the metal salts of sulphuric acid (H₂SO₄) (heading 28.07), but excludes mercury sulphates which fall in heading 28.52, ammonium sulphate which, even pure, falls in heading 31.02 or 31.05 and potassium sulphate, which, whether or not pure, falls in heading 31.04 or 31.05.

(1) Sodium sulphates include:

(a) Disodium sulphate (neutral sulphate) (Na₂SO₄). Occurs in the anhydrous or hydrated state as a powder or in large transparent crystals, efflorescing in the air and dissolving in water with a fall in temperature. The decahydrate (Na₂SO₄·10H₂O) is known as Glauber’s salt. Impure forms of disodium sulphate (90 - 99 % purity), generally obtained as by-products of various manufacturing processes, are often described as “salt cake” and are classified in this heading. Disodium sulphate is used as an adjuvant in dyeing; as a flux in glass-making to obtain vitrifiable mixtures (manufacture of bottle glass, crystal and optical glass); in tanning for preserving hides; in paper-making (preparation of certain chemical pulps); as a sizing material in the textile industry; in medicine as a purgative, etc.

Natural sodium sulphates (glauberite, bloedite, reussin, astrakanite) are excluded (heading 25.30).

(b) Sodium hydrogen sulphate (acid sulphate) (NaHSO₄). This residual salt of the manufacture of nitric acid occurs in deliquescent fused, white masses. Used instead of sulphuric acid, in particular for pickling metal, regenerating rubber, in the metallurgy of antimony or tantalum and as a weed-killer.

(c) Disodium disulphate (sodium pyrosulphate) (Na₂S₂O₇).
(2) **Magnesium sulphate.** This heading covers artificial magnesium sulphate (\(\text{MgSO}_4\cdot7\text{H}_2\text{O}\)) (Epsom salts, Seidlitz salts) obtained by purifying kieserite, or by the action of sulphuric acid on dolomite. Colourless crystals, slightly efflorescing in air, soluble in water. Used as a filler in sizing textiles, in tanning, for fire-proofing and as a purgative.

The heading **excludes** natural magnesium sulphate (kieserite) (**heading 25.30**).

(3) **Aluminium sulphate** (\(\text{Al}_2(\text{SO}_4)_3\)). Obtained by treating bauxite, or natural aluminium silicates, with sulphuric acid; the impurities are mainly iron compounds. In the hydrated state (with 18 \(\text{H}_2\text{O}\)) it appears in white crystals, soluble in water, which can either be crumbly and easily scratched with a fingernail or hard and brittle, according to the degree of concentration of the solution employed; on gentle heating it melts in its water of crystallisation, giving finally the anhydrous sulphate. Used in dyeing as a mordant; in tanning for preserving hides and for alum tanning; in paper-making as a size for paper pulp; in the dyestuffs industry for making lakes, methylene blue or other thiazide dyestuffs. Used also for clarifying tallow, purifying industrial water, in fire extinguishers, etc.

Basic aluminium sulphate, used in dyeing, is also classified here.

(4) **Chromium sulphates.** The best known is chromic sulphate (\(\text{Cr}_2(\text{SO}_4)_3\)), prepared from chromium nitrate and sulphuric acid. Crystalline powder, violet or green, in aqueous solution. Used as a mordant in dyeing (chrome mordanting) or in tanning (chrome tanning). The main products used for the latter purpose are rather unstable solutions of basic chromium sulphates derived from chromic sulphate or from chromous sulphate (\(\text{CrSO}_4\)). These sulphates are included here.

(5) **Nickel sulphates.** The most common of these sulphates has the formula \(\text{NiSO}_4\). Anhydrous in yellow crystals, or hydrated in emerald green crystals (with 7 \(\text{H}_2\text{O}\)) or bluish crystals (with 6 \(\text{H}_2\text{O}\)); soluble in water. Used in electrolytic nickel-plating, as a mordant in dyeing, in the preparation of gas masks and as a catalyst.

(6) **Copper sulphates.**

(a) **Cuprous sulphate** (\(\text{Cu}_2\text{SO}_4\)). Catalyst used in the preparation of synthetic ethanol.

(b) **Cupric sulphate** (\(\text{CuSO}_4\cdot5\text{H}_2\text{O}\)). By-product of electrolytic copper refining; also obtained by treating copper waste or scrap with a weak solution of sulphuric acid. Blue crystals or crystalline powder, soluble in water. It turns into a white anhydrous sulphate when calcinated, which absorbs water with avidity. Used as a fungicide in agriculture (see Explanatory Note to heading 38.08); for preparing spraying mixtures; to prepare cuprous oxide or inorganic copper colours; in dyeworks (for dyeing silk or wool black, purple or lilac); in electrolytic copper refining or copper-plating; as a flotation regulator (for restoring the natural buoyancy of ores); as an antiseptic, etc.

Natural hydrated copper sulphate (brochantite) is **excluded** (**heading 26.03**).
(10) β-Naphthyl methyl and ethyl ethers (artificial neroli oil). Colourless crystalline powders with an odour similar to that of orange-flower oil.

(11) Methyl ethers of \(m\)-cresol and butyl-\(m\)-cresols.

(12) Phenyl tolyl ether.

(13) Ditolyl ether.

(14) Benzyl ethyl ether.

(B) ETHER-ALCOHOLS

These are derived from polyhydric alcohols or phenol-alcohols by replacing the hydrogen of the phenolic hydroxyl group (in the case of phenol-alcohols), or of one of the alcoholic hydroxyl groups (in the case of polyhydric alcohols), by an alkyl or aryl radical.

(1) 2,2'-Oxydiethanol (diethylene glycol, digol). Colourless liquid; used in organic synthesis, as a solvent for gums and resins, for the preparation of explosives and plastic materials.

(2) Monomethyl, monoethyl, monobutyl and other monoalkylethers of ethylene glycol or diethylene glycol.

(3) Monophenyl ethers of ethylene glycol or of diethylene glycol.

(4) Anisyl alcohol.

(5) Guaietolin (INN) (glycerol mono (2-ethoxyphenyl)ether); guaifenesin (INN) (glycerol mono(2-methoxyphenyl)ether).

(C) ETHER-PHENOLS AND ETHER-ALCOHOL-PHENOLS

These are derived from dihydric phenols or phenol alcohols by replacing the hydrogen of the alcohol hydroxyl group (in the case of phenol alcohols), or of one of the phenol hydroxyl groups (in the case of dihydric phenols), by an alkyl or aryl radical.

(1) Guaiacol, found in beech-wood tar. The main component of wood creosote. Colourless crystals with a characteristic aromatic odour; but once melted, guaiacol remains liquid. Used in medicine and in organic synthesis.

(2) Sulfoguaiacol (INN) (potassium guaiacolsulphonate), a fine powder, extensively used in medicine.

(3) Eugenol, obtained from cloves, a colourless liquid with an odour of carnations.

(4) Isoeugenol, obtained synthetically from eugenol. A component of nutmeg oil.

(5) Pyrocatechol monoethyl ether (guaethol), found in Swedish pine-wood oil. Caustic, colourless crystals with an aromatic odour.
(D) ALCOHOL PEROXIDES, ETHER PEROXIDES AND KETONE PEROXIDES

These are compounds of the ROOH, ROOR\textsuperscript{1} and ROOR\textsuperscript{2}OOR\textsuperscript{1} series, in which R, R\textsuperscript{1} and R\textsuperscript{2} are organic radicals and R and R\textsuperscript{1} may be the same or different.

Examples are ethyl hydroperoxide, diethyl peroxide and 1,1-di(tert-butylperoxy)cyclohexane.*

This heading also includes ketone peroxides (whether or not chemically defined), e.g., cyclohexanone peroxide (1-hydroperoxycyclohexyl 1-hydroxycyclohexyl peroxide).

* * *

This heading also covers the halogenated, sulphonated, nitrated or nitrosated derivatives of ethers, ether-alcohols, ether-phenols, ether-alcohol-phenols, alcohol peroxides, ether peroxides or ketone peroxides, and compound derivatives (for example, nitrosulphonated, sulphohalogenated, nitrohalogenated and nitrosulphohalogenated derivatives).
Sub-Chapter VII

CARBOXYLIC ACIDS AND THEIR ANHYDRIDES, HALIDES, PEROXIDES AND PEROXYACIDS AND THEIR HALOGENATED, SULPHONATED, NITRATED OR NITROSATED DERIVATIVES

GENERAL

This sub-Chapter covers the carboxylic acids which contain the characteristic function (–COOH), called the carboxyl group. In theory, the heading also covers the ortho-acids (RC(OH)₃) since these may be regarded as hydrated carboxylic acids (RCOOH + H₂O = RC(OH)₃). In practice, however, these do not exist in the free state, but they do give rise to stable esters (ortho-esters, to be regarded as esters of hydrated carboxylic acids).

Carboxylic acids may contain one or more carboxyl groups (–COOH) (monocarboxylic acids or polycarboxylic acids, respectively).

If the hydroxyl group (–OH) is removed, the residue is an acyl radical which can be represented by the formula (RCO–) where R is an alkyl or aryl radical (methyl, ethyl, phenyl, etc.). Acyl radicals enter into the formulae of anhydrides, halides, peroxides, peroxyacids, esters and salts.

Sulphonic acids, which contain the group (–SO₃H) are quite different from carboxylic acids; they are classified as sulphonated derivatives in various sub-Chapters. This sub-Chapter includes only those which are sulphonated derivatives of the chemicals of this sub-Chapter.

(A) ACID ANHYDRIDES

Acid anhydrides result from the elimination of a molecule of water, either from two molecules of a monobasic acid, or from one molecule of dibasic acid. They are characterised by the group (–C(O)OC(O)–).

(B) ACID HALIDES

The halides (e.g., chlorides and bromides) of acids have the general formula (RCOX, where X is a halogen), i.e., they are represented by acyl radicals combined with chlorine, bromine or other halogens.

(C) ACID PEROXIDES

Acid peroxides, also known as diacyl peroxides, are compounds in which two acyl radicals are linked by two oxygen atoms; their general formula is RC(O)OOC(O)R¹, in which R and R¹ may be the same or different.

(D) PEROXYACIDS

Peroxyacids have the general formula (RC(O)OOH).
(E) ESTERS OF ACIDS

Esters of carboxylic acids are obtained by replacing the hydrogen atom of the carboxyl group (–COOH) by an alkyl or aryl radical. They may be represented by the general formula (RC(O)OR) in which R and R' are alkyl or aryl radicals (methyl, ethyl, phenyl, etc.).

(F) PEROXYESTERS

The general formula of peroxyesters is RC(O)OOR', in which R and R' are organic radicals that may be the same or different.

(G) SALTS OF ACIDS

Salts of carboxylic acids are obtained by replacing the hydrogen atom of the carboxyl group (–COOH) by an inorganic cation, for example, sodium, potassium, ammonium. They may be represented by the formula (RC(O)OM) in which R is an alkyl, aryl or alkaryl radical and M is a metallic or other inorganic cation.

(H) HALOGENATED, SULPHONATED, NITRATED OR NITROSATED DERIVATIVES OF ACIDS

In the halogenated, sulphonated, nitrated or nitrosated derivatives of the compounds described in Parts (A) to (F) above, the oxygen-containing functional groups remain intact, but one or more hydrogens in the radicals R or R' have been replaced, respectively, by halogens, sulpho (–SO₃H), nitro (–NO₂) or nitroso (–NO) groups or by any combination thereof.

29.15 - Saturated acyclic monocarboxylic acids and their anhydrides, halides, peroxides and peroxyacids; their halogenated, sulphonated, nitrated or nitrosated derivatives.

- Formic acid, its salts and esters :
  2915.11 - - Formic acid
  2915.12 - - Salts of formic acid
  2915.13 - - Esters of formic acid
    - Acetic acid and its salts; acetic anhydride :
      2915.21 - - Acetic acid
      2915.24 - - Acetic anhydride
      2915.29 - - Other
    - Esters of acetic acid :
      2915.31 - - Ethyl acetate
      2915.32 - - Vinyl acetate
      2915.33 - - n-Butyl acetate
      2915.36 - - Dinoseb (ISO) acetate
      2915.39 - - Other
29.20 - Esters of other inorganic acids of non-metals (excluding esters of hydrogen halides) and their salts; their halogenated, sulphonated, nitrated or nitrosated derivatives.

- Thiophosphoric esters (phosphorothioates) and their salts; their halogenated, sulphonated, nitrated or nitrosated derivatives:

2920.11 - - Parathion (ISO) and parathion-methyl (ISO) (methyl-parathion)

2920.19 - - Other

2920.90 - Other

This heading covers esters of other inorganic acids of non-metals, that is, acids in which the anion contains only non-metal elements. This heading does not cover:

(a) “Esters” of the hydrogen halides (generally heading 29.03), and

(b) Esters included in later headings of this Chapter (e.g., “esters” of isocyanic acid (isocyanates) (heading 29.29) and “esters” of hydrogen sulphide (generally heading 29.30).

The esters of this heading include:

(A) Thiophosphoric esters (phosphorothioates) and their salts, including sodium O,O-dibutyl- and O,O-ditolyldithiophosphates.

(B) Sulphuric esters and their salts.

Sulphuric esters may be either neutral or acid.

1) Methyl hydrogen sulphate (CH₃OSO₂OH). An oily liquid.

2) Dimethyl sulphate ((CH₃O)₂SO₂). Colourless or slightly yellow liquid with a slight odour of mint; toxic, corrosive, lachrymatory and irritating to the respiratory tracts. Used in organic synthesis.

3) Ethyl hydrogen sulphate (C₂H₅OSO₂OH). Syrupy liquid.

4) Diethyl sulphate ((C₂H₅O)₂SO₂). Liquid with an odour of mint.

(C) Nitrous and nitric esters.

Nitrous esters are liquids with an aromatic odour, e.g., methyl, ethyl, propyl, butyl and pentyl nitrites.

Nitric esters are mobile liquids with an agreeable odour; they decompose when suddenly heated. They include methyl, ethyl, propyl, butyl and pentyl nitrites.

Nitroglycerol, tetranitropentaerythritol (pentrite) and nitroglycerol are classified here if unmixed; when presented in the form of prepared explosives they are excluded (heading 36.02).
(D) **Carbonic or peroxocarbonic esters and their salts.**

Esters of carbonic acid may be acid or neutral.

1. **Diguaiacyl carbonate.** Crystalline light white powder, with a slight odour of guaiacol. Used in medicine and as an intermediate in synthesis of perfumes.

2. **Tetraethyl orthocarbonate** ($\text{C(OC}_2\text{H}_5)_4$).

3. **Diethyl carbonate** ($\text{C(OC}_2\text{H}_5)_2$).

4. **Bis(4-tert-butylcyclohexyl) peroxodicarbonate.**

5. **tert-Butylperoxy 2-ethylhexyl carbonate.**

Ethyl chlorocarbonate (or ethyl chloroformate) is excluded (heading 29.15).

(E) **Silicic acid esters and their salts** (tetraethyl silicate, etc.).

This heading does not cover alcoholates or esters of acid-function metal hydroxides, e.g., titanium tetra-$n$-butoxide (also known as tetrabutyl titanate) (heading 29.05).
29.34 - Nucleic acids and their salts, whether or not chemically defined; other heterocyclic compounds.

2934.10 - Compounds containing an unfused thiazole ring (whether or not hydrogenated) in the structure

2934.20 - Compounds containing in the structure a benzothiazole ring-system (whether or not hydrogenated), not further fused

2934.30 - Compounds containing in the structure a phenothiazine ring-system (whether or not hydrogenated), not further fused

- Other :

2934.91 - Aminorex (INN), brotizolam (INN), clotiazepam (INN), cloxazolam (INN), dextromoramide (INN), haloxazolam (INN), ketazolam (INN), mesocarb (INN), oxazolam (INN), pemoline (INN), phenmetrazine (INN), phendimetrazine (INN), and sufentanil (INN); salts thereof

2934.99 - Other

This heading includes nucleic acids and their salts. These are complex compounds which, when combined with proteins, form the nucleo-proteins found in the nuclei of animal and vegetable cells. They are combinations of phosphoric acids with sugar and pyrimidine or purine compounds. Generally in the form of white powders, soluble in water.

The acids, or more often their salts (e.g., sodium and copper nucleates), are used as tonics and stimulants for the nervous system and solvents for uric acid.

The heterocyclic compounds covered by this heading are:

(A) Compounds containing an unfused thiazole ring (whether or not hydrogenated) in the structure.

The term “thiazole” includes both 1,3-thiazole and 1,2-thiazole (isothiazole).

(B) Compounds containing a benzothiazole ring-system (whether or not hydrogenated), not further fused.

The term “benzothiazole” includes both 1,3-benzothiazole and 1,2-benzothiazole (benzisothiazole).

This part includes, inter alia:

(1) Mercaptobenzothiazole. White-yellowish fine powder. Used as an accelerator in the rubber industry.

(2) Dibenzothiazolyl disulphide. Used as an accelerator in the rubber industry.

(3) Ipsapirone (INN) (2-[4-(4-pyrimidin-2-ylpiperazin-1-yl)butyl]-1,2-benzothiazol-3(2H)-one 1,1-dioxide). Used as an anxiolytic.

(4) Dehydrothiotoluidine (4-(6-methyl-1,3-benzothiazol-2-yl)aniline).
(C) Compounds containing a phenothiazine ring-system (whether or not hydrogenated), not further fused.

This part includes, inter alia:

**Phenothiazine** (thiodiphenylamine). Sparkling yellowish flakes or grey-green powder; used for the preparation of dyes, etc.

(D) Other heterocyclic compounds.

This part includes, inter alia:

1. **Sultones**. These may be considered as internal esters of hydroxysulphonic acids. They include the sulphonephthaleins, for example:

   (a) **Phenol red** (phenolsulphonephthalein). Used in medicine and as an indicator in analysis.

   (b) **Thymol blue** (thymolsulphonephthalein). Used as a reagent.

   (c) **1,3-Propanesultone**.

2. **Sultams**. These may be considered as internal amides of aminosulphonic acids. They include naphthosultam-2,4-disulphonic acid, obtained from periacid, and which is used for the manufacture of SS acid (8-amino-1-naphthol-5,7-disulphonic acid or 1-amino-8-naphthol-2,4-disulphonic acid).

3. **Thiophen**. Found in coal and lignite tars. Also obtained synthetically. A mobile, colourless liquid with a benzene-like odour.

4. **Furazolidone** (INN) (3-(5-nitrofurfurylideneamino) oxazolidin-2-one).

5. **Adenosine tri- or pyrophosphoric acid**.

6. **3-Methyl-6,7-methylenedioxy-1-(3,4-methylenedioxybenzyl)isoquinoline hydrochloride**.

7. **3-Methyl-6,7-methylenedioxy-1-(3,4-methylenedioxyphenyl)isoquinoline**.

This heading **excludes** mercury nucleates answering to a description in heading 28.52, and cyclic polymers of thioaldehydes (heading 29.30).

*  *

Certain substances of this heading, which are regarded as narcotic drugs or as psychotropics substances under international instruments, are indicated in the list appearing at the end of Chapter 29.
<table>
<thead>
<tr>
<th>Annex</th>
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<th>Resorcinol</th>
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<tr>
<td>VI-2907-3</td>
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<td>Bisphenol A</td>
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<tr>
<td>29.09</td>
<td></td>
<td>Ethers, ether-alcohols, ether-phenols, ether-alcohol-phenols, alcohol peroxides, ether peroxides, ketone peroxides (whether or not chemically defined), and their halogenated, sulphonated, nitrated or nitrosated derivatives</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(C)</td>
<td>ETHER-PHENOLS AND ETHER-ALCOHOL-PHENOLS</td>
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<td>Guaiacol</td>
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<td></td>
<td>(D)</td>
<td>ALCOHOL PEROXIDES, ETHER PEROXIDES AND KETONE PEROXIDES</td>
<td></td>
</tr>
</tbody>
</table>
| VI-2909-4 | Ketone peroxides  
(Cyclohexanone peroxide) |  
\[
\begin{align*}
\text{HO} & \quad \text{OO} \\
\text{OH} & 
\end{align*}
\]

| Ether peroxides  
1,1-di(tert-butylperoxy)cyclohexane |  
\[
\begin{align*}
\text{CH}_3 & \quad \text{O} \quad \text{O} \\
\text{O} & \quad \text{O} \quad \text{O} \\
\text{C} & \quad \text{CH}_3 \\
\text{CH}_3 & 
\end{align*}
\]

| 29.10 | Epoxides, epoxyalcohols,  
epoxyphenols and epoxyethers, with  
a three-membered ring, and their  
halogenated, sulphonated, nitrated  
or nitrosated derivatives |

| VI-2910-1 | (1) Oxirane |  
\[
\begin{align*}
\text{O} & \\
\text{H}_2\text{C} & \quad \text{CH}_2 
\end{align*}
\]

| 29.11 | Acetals and hemiacetals, whether or  
not with other oxygen function, and  
their halogenated, sulphonated,  
nitrated or nitrosated derivatives |

| VI-2911-1 | (A) ACETALS AND HEMIACETALS |  
\[
\begin{align*}
\text{R} & \quad \text{C} \quad \text{O} \quad \text{R}_1 \\
\text{R} & \quad \text{C} \quad \text{O} \quad \text{R}_1 \\
\text{R} & \quad \text{C} \quad \text{O} \quad \text{R}_2 \\
\text{R} & \quad \text{C} \quad \text{H} 
\end{align*}
\]

| 29.12 | Aldehydes, whether or not with  
other oxygen function; cyclic  
polymers of aldehydes;  
paraformaldehyde |

| VI-2912-2 | (A) ALDEHYDES |  
\[
\begin{align*}
\text{R} & \quad \text{C} \quad \text{H} 
\end{align*}
\]
### 29.30 Organo-sulphur compounds

Compounds with C-S bond

<table>
<thead>
<tr>
<th>(VI-2930-2) (General)</th>
<th>(C)</th>
<th>(p)</th>
<th>Benzothiazole</th>
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#### 29.30 (A) DITHIOCARBONATES (XANTHATES)

CS(OR)(SR')  R'=Metal

<table>
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<th>(VI-2930-3) (A)</th>
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<td></td>
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<td>C₂H₅O—CS₂Na</td>
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#### 29.30 (B) THIOCARBAMATES, DITHIOCARBAMATES AND THIURAM SULPHIDES

<table>
<thead>
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<th>(VI-2930-4) (C)</th>
<th>(2)</th>
<th>Dithiocarbamates</th>
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<tr>
<td></td>
<td></td>
<td>N—C—SM</td>
</tr>
</tbody>
</table>

#### 29.30 (C) SULPHIDES (OR THIOETHERS)

R.S.R₁
| (D) | Methionine | CH$_3$SCH$_2$CH$_2$CHCOOH  
| (D) | THIOAMIDES | S  
| (VI-2930-4) (29.30) (D) (2) | Thiocarbanilide |  
| 29.31 | Other organo-inorganic compounds |  
| VI-2931-1 (3) | Organo-silicon compounds | Compounds with C-Si bond  
| | Hexamethyldisiloxane |  
| 29.32 | Heterocyclic compounds with oxygen hetero-atom(s) only |  
| VI-2932-1 (A) | Compounds containing an unfused furan ring (whether or not hydrogenated) in the structure | (See structure of furan against page VI-2930-1 for Sub-Chapter X (A) (1) (a))  
| (2) | 2-Furaldehyde |  

VI-29-Annex-32
30.02 - Human blood; animal blood prepared for therapeutic, prophylactic or diagnostic uses; antisera, other blood fractions and immunological products, whether or not modified or obtained by means of biotechnological processes; vaccines, toxins, cultures of micro-organisms (excluding yeasts) and similar products.

3002.10 - Antisera, other blood fractions and immunological products, whether or not modified or obtained by means of biotechnological processes

3002.20 - Vaccines for human medicine

3002.30 - Vaccines for veterinary medicine

3002.90 - Other

This heading covers:

(A) **Human blood** (e.g., human blood in sealed ampoules).

(B) **Animal blood prepared for therapeutic, prophylactic or diagnostic uses.**

Animal blood not prepared for such uses falls in heading 05.11.

(C) **Antisera, other blood fractions and immunological products, whether or not modified or obtained by means of biotechnological processes.**

These products include:

(1) **Antisera and other blood fractions, whether or not modified or obtained by means of biotechnological processes.**

Sera are the fluid fractions separated from blood after clotting.

The heading covers, *inter alia*, the following products derived from blood (including vascular endothelial cells) : “normal” sera, human normal immunoglobulin, blood fractions and truncated variants (parts) thereof with enzymatic properties/activity, plasma, thrombin, fibrinogen, fibrin and other blood coagulation factors, thrombomodulin, blood globulins, serum globulins, and haemoglobin. This group also includes modified thrombomodulins and modified haemoglobins obtained by means of biotechnological processes, e.g., sothrombomodulin alfa (INN) and thrombomodulin alfa (INN), as well as cross-linked haemoglobins such as hemoglobin crosfumaril (INN), hemoglobin glutamer (INN) and hemoglobin raffimer (INN).

The heading further includes blood albumin (e.g., human albumin obtained by fractionating the plasma of whole human blood), prepared for therapeutic or prophylactic uses.

Antisera are obtained from the blood of humans or of animals which are immune or have been immunised against diseases or ailments, whether these are caused by pathogenic bacteria and viruses, toxins or allergic phenomena, etc. Antisera are used against diphtheria, dysentery, gangrene, meningitis, pneumonia, tetanus, staphylococcal or streptococcal infections, snake bite, vegetable poisoning, allergic diseases, etc. Antisera are also used for diagnostic purposes, including in vitro tests. Specific immunoglobulins are purified preparations of antisera.

The heading **does not cover** blood albumin not prepared for therapeutic or prophylactic uses (**heading 35.02**) or globulins (other than blood globulins and serum globulins) (**heading 35.04**). The heading also **excludes** medicaments which are not separated from the blood but which in some countries are described as “sera” or “artificial sera”; they include isotonic solutions based on sodium chloride or other chemicals and suspensions of pollen which are used against allergic diseases.
(2) **Immunological products, whether or not modified or obtained by means of biotechnological processes.**

Products used for diagnostic or therapeutic purposes and for immunological tests are to be regarded as falling within this product group. They can be defined as follows:

(a) **Monoclonal antibodies (MAB)** – specific immunoglobulins from selected and cloned hybridoma cells cultured in a culture medium or ascites.

(b) **Antibody fragments** – active parts of an antibody protein obtained by means of e. g., specific enzymatic splitting. This group includes inter alia single-chain (scFv) antibodies.

(c) **Antibody conjugates and antibody fragment conjugates** – conjugates which contain at least one antibody or an antibody fragment. The simplest types are a combination of the following:

- (i) antibody – antibody;
- (ii) antibody fragment – antibody fragment;
- (iii) antibody - antibody fragment;
- (iv) antibody – other substance;
- (v) antibody fragment – other substance.

Conjugates of types (iv) and (v) include, for example, enzymes (e.g., alkaline phosphatase, peroxidase or betagalactosidase) or dyes (fluorescin) covalently bound to the protein structure, which are used for straightforward detection reactions.

This heading also covers interleukins, interferons (IFN), chemokines and certain tumor necrosis factors (TNF), growth factors (GF), hematopoietins and colony stimulating factors (CSF).

(D) **Vaccines, toxins, cultures of micro-organisms (excluding yeasts) and similar products.**

These products include:

(1) **Vaccines.**

The most typical vaccines are prophylactic preparations of microbial origin containing either viruses or bacteria suspended in saline solutions, oil (lipovaccines) or other media. These preparations have usually been treated to reduce their toxicity without destroying their immunizing properties.

Other vaccines include recombinant vaccines, peptide vaccines and carbohydrate vaccines. These vaccines generally contain an antigen, a recognised part of an antigen or a gene coding for a recognised part of an antigen (peptides, recombinants or conjugates of protein and others). The “recognised part of an antigen” is the part of an antigen which triggers the immunological response in the organism. Many of these vaccines target a specific virus or bacterium. These vaccines are used for prophylactic or therapeutic purposes.

The heading also covers mixtures consisting of vaccines or toxoids (such as Diphtheria, Tetanus and Pertussis (DPT) vaccine).

(2) **Toxins** (poisons), toxoids, crypto-toxins and anti-toxins.
(3) **Cultures of micro-organisms (excluding yeasts).** These include ferments such as lactic ferments used in the preparation of milk derivatives (kephir, yogurt, lactic acid) and acetic ferments for making vinegar; moulds for the manufacture of penicillin and other antibiotics; and cultures of micro-organisms for technical purposes (e.g., for aiding plant growth).

Milk or whey containing small quantities of lactic ferments is classifiable in Chapter 4.

(4) **Virus, human, animal and vegetable and anti-virus.**

(5) **Bacteriophage.**

The heading also includes diagnostic reagents of microbial origin, **other than** those provided for in Note 4 (d) to this Chapter - see heading 30.06. It **does not cover** enzymes (rennet, amylase, etc.) even if of microbial origin (streptokinase, streptodornase, etc.) (heading 35.07) **nor dead** single-cell micro-organisms (other than vaccines) (heading 21.02).

(E) **Diagnostic kits.**

Diagnostic kits are classified here when the essential character of the kit is given by any of the products of this heading. Common reactions occurring in the use of such kits include agglutination, precipitation, neutralization, binding of complement, haemagglutination, enzyme-linked immunosorbent assay (ELISA), etc. The essential character is given by that single component which governs to the greatest extent the specificity of the test procedure.

The products of this heading remain classified here whether or not in measured doses or put up for retail sale and whether in bulk or in small packings.
30.03

30.03 - Medicaments (excluding goods of heading 30.02, 30.05 or 30.06) consisting of two or more constituents which have been mixed together for therapeutic or prophylactic uses, not put up in measured doses or in forms or packings for retail sale.

- 3003.10 - Containing penicillins or derivatives thereof, with a penicillanic acid structure, or streptomycins or their derivatives

- 3003.20 - Containing other antibiotics
  - Containing hormones or other products of heading 29.37 but not containing antibiotics:

- 3003.31 - - Containing insulin

- 3003.39 - - Other

- 3003.40 - Containing alkaloids or derivatives thereof but not containing hormones or other products of heading 29.37 or antibiotics

- 3003.90 - Other

This heading covers medicinal preparations for use in the internal or external treatment or prevention of human or animal ailments. These preparations are obtained by mixing together two or more substances. However, if put up in measured doses or in forms or packings for retail sale, they fall in heading 30.04.

The heading includes:

1. Mixed medicinal preparations such as those listed in an official pharmacopoeia, proprietary medicines, etc., including those in the form of gargles, eye drops, ointments, liniments, injections, counter-irritant and other preparations not falling in heading 30.02, 30.05 or 30.06.

   However, this should not be taken to mean that preparations listed in an official pharmacopoeia, proprietary medicines, etc. are always classified in heading 30.03. For example, anti-acne preparations which are designed primarily to cleanse the skin and which do not contain sufficiently high levels of active ingredients to be regarded as having a primary therapeutic or prophylactic effect against acne are to be classified in heading 33.04.

2. Preparations containing a single pharmaceutical substance together with an excipient, sweetening agent, agglomerating agent, support, etc.

3. Nutritional preparations for intravenous administration only, i.e., by injection or drip into a vein.
39.07 - Polyacetals, other polyethers and epoxide resins, in primary forms; polycarbonates, alkyl resins, polyallyl esters and other polyesters, in primary forms.

- 3907.10 - Polyacetals
- 3907.20 - Other polyethers
- 3907.30 - Epoxide resins
- 3907.40 - Polycarbonates
- 3907.50 - Alkyd resins
- 3907.60 - Poly(ethylene terephthalate)
- 3907.70 - Poly(lactic acid)
- 3907.91 - Unsaturated
- 3907.99 - Other

This heading covers:

1. **Polyacetals.** Polymers obtained from an aldehyde, normally formaldehyde, and characterised by the presence of acetalfunctions in the polymer chain. They are not to be confused with the polyvinyl acetals of heading 39.05, in which the acetal-functions are substituents on the polymer chain. This family of plastics includes acetal copolymers and is regarded as engineering plastics, being used for ring bearings, cams, automobile instrument housings, doorknobs, pump and air impellers, shoe heels, mechanical toys, plumbing fittings, etc.

2. **Other polyethers.** Polymers obtained from epoxides, glycols or similar materials and characterised by the presence of ether-functions in the polymer chain. They are not to be confused with the polyvinyl ethers of heading 39.05, in which the ether-functions are substituents on the polymer chain. The most important members of this group are poly(oxyethylene) (polyethylene glycol), polyoxypropylene and polyphenylene oxide (PPO) (more correctly named poly(dimethylphenylene-oxide)). These products have a variety of uses, PPO being used, like the polyacetals, as engineering plastics, polyoxypropylene as an intermediate for polyurethane foam.

This heading also covers pegylated (polyethylene glycol (or PEGs) polymers) derivatives of products of Chapter 29 (Sub-Chapters I to X and headings 29.40 and 29.42).

Pegylated products whose non-pegylated forms are classified either in Chapter 29 (headings 29.36 to 29.39 and 29.41) or in Chapter 30 are excluded and in general remain classified in the same heading as their non-pegylated forms.

3. **Epoxide resins.** Polymers made, for example, by condensing epichlorohydrin (1-chloro-2,3-epoxypropane) with bisphenol A (4,4'-isopropylidenediphenol), novolak (phenolic) resins or other polyhydroxy compounds or by epoxidising unsaturated polymers. Whatever the basic structure of the polymer, these resins are characterised by the presence of reactive epoxide groups which allow them to be readily cross-linked at the time of use, e.g. by the addition of an amino compound, an organic acid or anhydride, a boron trifluoride complex or an organic polymer.
Epoxide resins range from low viscosity liquids to high melting solids; they are used as surface-coatings, as adhesives, as moulding or casting resins, etc.

Epoxidised animal or vegetable oils are classified in heading 15.18.

(4) **Polycarbonates.** Polymers obtained, for example, by condensing bisphenol A with phosgene (carbonyl chloride) or diphenyl carbonate and characterised by the presence of carbonic ester-functions in the polymer chain. These have a number of industrial applications, particularly in moulded articles and as glazing.

(5) **Polyesters.** These polymers are characterised by the presence of carboxylic ester functions in the polymer chain and are obtained, for example, by condensation of a polyhydric alcohol and a polybasic acid. They are thus distinguished from polyvinyl esters of heading 39.05 and polyacrylic esters of heading 39.06, in which the ester groups are substituents on the polymer chain. Polyesters include:

(a) **Alkyd resins.** Polycondensation products of polyfunctional alcohols and polyfunctional acids or their anhydrides, one of which at least must be partly or wholly tri- or higher functional, modified with other substances such as fatty acids or animal or vegetable oils, monofunctional acids or alcohols, rosin. They do not include oil-free alkyds (see Item (e) below). These resins are used mainly as coatings and in high grade varnishes and are supplied usually in viscous form or solution.

(b) **Polyallyl esters.** A special class of unsaturated polyesters (for the term “unsaturated” see Item (e) below) derived from esters of allyl alcohol with dibasic acids, for example, diallyl phthalate. They are used as laminating adhesives, coatings, varnishes and in applications requiring microwave transparency.

(c) **Poly(ethylene terephthalate) (PET).** Polymer generally formed by the esterification of terephthalic acid with ethylene glycol or obtained from the reaction of dimethyl terephthalate with ethylene glycol. Apart from its very important use in textiles, it finds application, for example, in packaging films, recording tapes, soft-drink bottles.

(d) **Poly(lactic acid), also known as polylactide.** It is usually produced from lactic acid obtained synthetically or by fermentation (this method uses raw materials consisting predominantly of hexoses or compounds which can be easily split into hexoses, e.g., sugars, molasses, sugar beet juice, sulphite liquors, whey or starches). The lactic acid is converted to a cyclic lactide dimer, the ring structure of which is opened during the final polymerisation step. Its applications include textile fibres, packaging materials and materials for medical use.