Chapter 74

Copper and articles thereof

Note.

1.- In this Chapter the following expressions have the meanings hereby assigned to them :

(a) **Refined copper**

Metal containing at least 99.85 % by weight of copper; or

Metal containing at least 97.5 % by weight of copper, provided that the content by weight of any other element does not exceed the limit specified in the following table :

TABLE - Other elements

Element		Limiting content % by weight
Ag	Silver	0.25
As	Arsenic	0.5
Cd	Cadmium	1.3
Cr	Chromium	1.4
Mg	Magnesium	0.8
Pb	Lead	1.5
S	Sulphur	0.7
Sn	Tin	0.8
Te	Tellurium	0.8
Zn	Zinc	1
Zr	Zirconium	0.3
Other elements*, each		0.3

* Other elements are, for example, Al, Be, Co, Fe, Mn, Ni, Si.

(b) **Copper alloys**

Metallic substances other than unrefined copper in which copper predominates by weight over each of the other elements, provided that :

(i) the content by weight of at least one of the other elements is greater than the limit specified in the foregoing table; or

(ii) the total content by weight of such other elements exceeds 2.5 %.

(c) **Master alloys**

Alloys containing with other elements more than 10 % by weight of copper, not usefully malleable and commonly used as an additive in the manufacture of other alloys or as de-oxidants, de-sulphurising agents or for similar uses in the metallurgy of non-ferrous metals. However, copper phosphide (phosphor copper) containing more than 15 % by weight of phosphorus falls in heading 28.53.

(d) **Bars and rods**

Rolled, extruded, drawn or forged products, not in coils, which have a uniform solid cross-section along their whole length in the shape of circles, ovals, rectangles (including squares), equilateral triangles or regular convex polygons (including "flattened circles" and "modified rectangles", of which two opposite sides are convex arcs, the other two sides being straight, of equal length and parallel). Products with a rectangular (including square), triangular or polygonal cross-section may have corners rounded along their whole length. The thickness of such products which have a rectangular (including "modified rectangular") cross-section exceeds one-tenth of the width. The expression also covers cast or sintered products, of the same forms and dimensions, which have been subsequently worked after production (otherwise than by simple trimming or de-scaling), provided that they have not thereby assumed the character of articles or products of other headings.

Wire-bars and billets with their ends tapered or otherwise worked simply to facilitate their entry into machines for converting them into, for example, drawing stock (wire-rod) or tubes, are however to be taken to be unwrought copper of heading 74.03.

(e) **Profiles**

Rolled, extruded, drawn, forged or formed products, coiled or not, of a uniform cross-section along their whole length, which do not conform to any of the definitions of bars, rods, wire, plates, sheets, strip, foil, tubes or pipes. The expression also covers cast or sintered products, of the same forms, which have been subsequently worked after production (otherwise than by simple trimming or de-scaling), provided that they have not thereby assumed the character of articles or products of other headings.

(f) **Wire**

Rolled, extruded or drawn products, in coils, which have a uniform solid cross-section along their whole length in the shape of circles, ovals, rectangles (including squares), equilateral triangles or regular convex polygons (including "flattened circles" and "modified rectangles", of which two opposite sides are convex arcs, the other two sides being straight, of equal length and parallel). Products with a rectangular (including square), triangular or polygonal cross-section may have corners rounded along their whole length. The thickness of such products which have a rectangular (including "modified rectangular") cross-section exceeds one-tenth of the width.

(g) **Plates, sheets, strip and foil**

Flat-surfaced products (other than the unwrought products of heading 74.03), coiled or not, of solid rectangular (other than square) cross-section with or without rounded corners (including "modified rectangles" of which two opposite sides are convex arcs, the other two sides being straight, of equal length and parallel) of a uniform thickness, which are :

- of rectangular (including square) shape with a thickness not exceeding one-tenth of the width,
- of a shape other than rectangular or square, of any size, provided that they do not assume the character of articles or products of other headings.

Headings 74.09 and 74.10 apply, *inter alia*, to plates, sheets, strip and foil with patterns (for example, grooves, ribs, chequers, tears, buttons, lozenges) and to such products which have been perforated, corrugated, polished or coated, provided that they do not thereby assume the character of articles or products of other headings.

(h) **Tubes and pipes**

Hollow products, coiled or not, which have a uniform cross-section with only one enclosed void along their whole length in the shape of circles, ovals, rectangles (including squares), equilateral triangles or regular convex polygons, and which have a uniform wall thickness. Products with a rectangular (including square), equilateral triangular or regular convex polygonal cross-section, which may have corners rounded along their whole length, are also to be taken to be tubes and pipes provided the inner and outer cross-sections are concentric and have the same form and orientation. Tubes and pipes of the foregoing cross-sections may be polished, coated, bent, threaded, drilled, waisted, expanded, cone-shaped or fitted with flanges, collars or rings.

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Subheading Note.

1.- In this Chapter the following expressions have the meanings hereby assigned to them :

(a) **Copper-zinc base alloys (brasses)**

Alloys of copper and zinc, with or without other elements. When other elements are present :

- zinc predominates by weight over each of such other elements;
- any nickel content by weight is less than 5 % (see copper-nickel-zinc alloys (nickel silvers)); and
- any tin content by weight is less than 3 % (see copper-tin alloys (bronzes)).

(b) **Copper-tin base alloys (bronzes)**

Alloys of copper and tin, with or without other elements. When other elements are present, tin predominates by weight over each of such other elements, except that when the tin content is 3 % or more the zinc content by weight may exceed that of tin but must be less than 10 %.

(c) **Copper-nickel-zinc base alloys (nickel silvers)**

Alloys of copper, nickel and zinc, with or without other elements. The nickel content is 5 % or more by weight (see copper-zinc alloys (brasses)).

(d) **Copper-nickel base alloys**

Alloys of copper and nickel, with or without other elements but in any case containing by weight not more than 1 % of zinc. When other elements are present, nickel predominates by weight over each of such other elements.

GENERAL

This Chapter covers copper and its alloys, and certain articles thereof.

Copper is extracted from various ores (see Explanatory Note to heading 26.03) and is also worked up from the metal in its native state, or recovered from waste and scrap.

Copper is recovered from its sulphide ores by a dry extraction process in which the powdered and concentrated ore is roasted where necessary to drive off excess sulphur and smelted in a furnace to produce **copper matte** or regulus.

In some cases the concentrated ore is smelted in an air or oxygen flash smelting furnace ("flash smelting") without prior roasting.

The matte is treated in a converter to eliminate most of the iron and sulphur and produce "blister copper" (so-called because it has a rough and blistery surface). The blister copper is refined in a reverberatory furnace to produce fire-refined copper and, where required, may be further refined by electrolysis.

For oxide ores and also for certain other ores and residues a wet process (leaching) is used (see Explanatory Note to heading 74.01).

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Copper is very ductile and malleable; it is, after silver, the best conductor of heat and electricity. It is used in the pure state, particularly in the form of wire for electrical use, or in the form of coils or plates as a refrigerating element, but for general purposes it is mainly used in the form of alloys.

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Under the provisions of Note 5 to Section XV (see the General Explanatory Note to that Section), the **copper-base metal alloys** which may be classified with copper include :

(1) Copper-zinc base alloys (**brasses**) (see Subheading Note 1 (a)) in variable proportions of copper and zinc, e.g., common brass, used for many purposes; gilding metal (tombac) used particularly in the manufacture of imitation jewellery and fancy goods.

Copper-zinc alloys containing small quantities of other elements form special brasses, with characteristic properties. Special brasses include high-tensile brass (often known as manganese bronze), used in shipbuilding, as well as leaded brasses, iron brass, aluminium brass and silicon brass.

(2) Copper-tin base alloys (**bronzes**) (see Subheading Note 1 (b)), and sometimes containing other elements which confer special properties. The bronzes include coinage bronze; hard-bronze for gearing, bearings or other machinery parts; bell-metal; statuary bronze; leaded bronze used for bearings; phosphor bronze (or de-oxidised bronze) used in the manufacture of springs and woven wire gauze for filters, screens, etc.

(3) Copper-nickel-zinc base alloys (**nickel silvers**) (see Subheading Note 1 (c)) having a good corrosion resistance and strength. They are used mainly in telecommunications equipment (in the telephone industry *inter alia*); other uses include use in equipment for instrument parts, taps and high quality plumbing hardware, slide fasteners, various applications in the electrical field such as clamps, springs, connectors, receptacles, etc., ornamental and architectural metalwork and chemical and food processing equipment. Certain grades of these alloys are also used in the manufacture of tableware, etc.

(4) Copper-nickel base alloys (**cupro-nickels**) (see Subheading Note 1 (d)), which often contain small amounts of aluminium or iron. They represent a family of alloys featuring resistance to the corrosive effects of sea water and, therefore, find wide use in a variety of marine or shipbuilding applications, particularly for condensers or piping, and in the manufacture of coins or electrical resistors.

(5) **Aluminium bronze** composed essentially of copper with aluminium and employed in engineering where high strength properties, corrosion resistance and hardness are important factors.

(6) **Beryllium copper** (sometimes known as beryllium bronze) composed essentially of copper with beryllium and, because of its hardness, high strength and resistance to corrosion, used for springs of many types, as moulds for plastics, as resistance welding electrodes, and for non-sparking tools.

(7) **Copper-silicon** consisting essentially of copper and silicon and having high strength and resistance to corrosion. It is used, e.g., for the manufacture of storage tanks, bolts and fasteners.

(8) **Chromium copper** mainly used for resistance welding electrodes.

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This Chapter covers :

(A) Mattes and other intermediate products of copper metallurgy and unwrought copper and waste and scrap (headings 74.01 to 74.05).

(B) Copper powders and flakes (heading 74.06).

(C) Products generally obtained by rolling, extruding, drawing or forging the copper of heading 74.03 (headings 74.07 to 74.10).

(D) Various articles specified in headings 74.11 to 74.18 and other articles falling in heading 74.19 which covers all other copper articles other than those covered by Note 1 to Section XV or those included in **Chapter 82** or **83**, or more specifically covered elsewhere in the Nomenclature.

The products and articles of copper are frequently subjected to various treatments to improve the properties or appearance of the metal, etc. These treatments are generally those referred to in the General Explanatory Note to Chapter 72, and do not affect the classification of the goods.

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The classification of **composite goods**, particularly made up articles, is explained in the General Explanatory Note to Section XV.