

**84.54 - Converters, ladles, ingot moulds and casting machines, of a kind used in metallurgy or in metal foundries.**

8454.10 - Converters

8454.20 - Ingot moulds and ladles

8454.30 - Casting machines

8454.90 - Parts

**(A) CONVERTERS**

These are used for converting or refining metals (e.g., for converting iron into steel, or smelting copper or nickel mattes, galena, etc.) by subjecting the materials, previously melted or brought to a high temperature in a furnace, to a strong current of oxygen; by this action most of the carbon and dissolved elements such as manganese, silicon and phosphorus are oxidised and eliminated in the form of gas or molten slag. The oxidation increases the temperature of the metal further.

The most common types of converters are pear-shaped or cylindrical vessels consisting of an outer shell of heavy steel plates with an internal lining of refractory material. The oxygen is brought in either by a lance from above (LD-converters (Linz-Donawitz)) or through nozzles in the converter bottom (OBM-converters (Oxygen Bodenblasende Maximilianhütte)). Combinations of the two exist.

Other types include converters with the tuyères incorporated in the sides, rotating cylindrical converters, conical converters (for treating copper matte) with an internal metal grille for supporting the charge.

**(B) LADLES**

These are used to receive the molten metal from a furnace and pour it into converters or moulds; they are simple open containers generally lined with refractory material, usually fitted with devices to facilitate tipping or pouring and in some cases fitted with wheels. They are usually handled mechanically (e.g., by cranes), but the heading also covers foundry-type casting ladles manipulated by hand. Small hand ladles of the type used by tinsmiths, goldsmiths, etc., are **excluded** (heading 73.25 or 73.26).

**(C) INGOT MOULDS**

These may be of various shapes, in one piece or two halves, in which the molten metal is provisionally cast into, e.g., ingots, pigs, slabs.

Other moulds (e.g., for casting articles) are generally classified in **heading 84.80**.

The moulds of this group are of metal, usually iron or steel. Ingot moulds of graphite or other carbon or of ceramic material are, however, **excluded** (headings 68.15 and 69.03, respectively).

**(D) CASTING MACHINES OF A KIND USED IN METALLURGY  
OR IN METAL FOUNDRIES**

This group includes :

- (1) **Machines (generally incorporating a conveyor belt or chain) for the successive filling, cooling and emptying of the moulds.** These sometimes incorporate devices for shaking or tapping the moulds to facilitate the even setting of the molten metal.
- (2) **Machines for casting under pressure.** These consist essentially of two adjustable plates to which are fixed the two halves of the mould. The liquid metal from a reservoir is forced into the mould, either by the direct action of compressed air on the free surface of liquid metal in the reservoir, or by the insertion of a piston into a closed reservoir full of the liquid metal. In some cases these machines incorporate cooling devices, to accelerate solidification of the metal, and arrangements for separating the cast article from the mould. They are mainly used for casting small non-ferrous metal articles.

However, the heading **does not cover** machines for moulding metal powders under pressure, by sintering, (heading 84.62).

- (3) **Centrifugal casting machines** in which the molten metal is led into a cylindrical mould rotating at high speed; the metal is thrown on to the sides of the mould and solidifies in the form of a pipe.
- (4) **Continuous casting machines.** In these, steel is conveyed from the ladle in a distributor which feeds the different casting flow lines. These flow lines include :
  - (a) an ingot mould, without bottom, with its cooling devices;
  - (b) outside the ingot mould a system for atomising water in order to cool the cast metal;
  - (c) a group of conveyor rollers allowing the regular extraction of the solidified metal; and
  - (d) a system of cutting-off machines, followed by an evacuation device.

The moulds to be used with the machines of this group fall usually in heading 68.15, 69.03 or 84.80.

**PARTS**

**Subject** to the general provisions regarding the classification of parts (see the General Explanatory Note to Section XVI), the heading also covers parts of the machines of this heading.