85.45 - Carbon electrodes, carbon brushes, lamp carbons, battery carbons and other articles of graphite or other carbon, with or without metal, of a kind used for electrical purposes.

- Electrodes :

8545.11 - - Of a kind used for furnaces

8545.19 - - Other

8545.20 - Brushes

8545.90 - Other

This heading covers all articles of graphite or other carbon which are recognisable by their shape, dimensions or otherwise, as being for electrical purposes, whether or not they contain metal.

In general, these articles are obtained by the extrusion or by the moulding (usually under pressure) and heat-treatment of a composition which, in addition to its basic constituent (natural carbon, carbon black, gas carbon, coke, natural or artificial graphite, etc.) and the necessary binders (pitch, tar, etc.), may also contain other substances such as metallic powders.

In some cases the articles of this heading may be coated electrolytically or by spraying (e.g., with copper) to increase their conductivity and decrease their rate of wear. They remain classified here even if fitted with eyelets, terminals or other means of connection.

The heading includes :

(A) **Carbon electrodes for furnaces**.

These are generally in the form of cylinders or rods, and are sometimes threaded or tapped at the ends to enable them to be screwed into position.

(B) **Carbon welding electrodes**.

These are generally in the form of rods.

(C) **Carbon electrodes for electrolysis**.

These may be in the form of plates, bars (including bars of triangular cross-section), cylinders, etc. They are designed to be mounted or suspended in electrolysis baths, and may be furnished with fittings for this purpose such as hooks or rings. Certain types may be pierced with holes or grooved to facilitate the removal of gases formed on them during use.

(D) **Carbon brushes**.

These are used as sliding contacts for generators, motors, etc., as current-collectors for electric locomotives, etc. Though some may be made by direct moulding, the large majority are cut from the "carbon" blocks or plates described in Explanatory Note to heading 38.01. They are all made very accurately to size and the faces are carefully machined to tolerances of a few hundredths of a millimetre. They can therefore be indentified by their sizes, shapes, and highly-finished surfaces; in many cases, they may also be wholly or partly metal-coated or be fitted with connectors (brackets, cables, terminals, springs, etc.).

Such carbon brushes may be of any of the grades described in Explanatory Note to heading 38.01, or may contain silver.

This heading **does not**, however, **include** metal brushes coated with an external lubricating layer of graphite (**heading 85.35** or **85.36**). Brush holders (whether or not complete with their brushes) are classified as parts of machines (e.g., **heading 85.03**).

(E) **Arc-lamp or other lamp carbons**.

Arc-lamp carbons are usually in the form of rods or pencils; they sometimes have a core of special composition to improve arc stability and to provide high intensity light output, or to give the flame a special colour. The heading also covers carbon filaments for electrical resistance lamps.

(F) **Battery carbons**.

According to the type of battery for which they are intended, these may be in the form of rods, plates, tubes, etc.

(G) **Carbon parts of microphones**.

These may consist of discs or other identifiable parts.

(H) **Other articles** of graphite or other carbon, such as :

(1) Connecting pieces (nipples) for joining together furnace carbons.

(2) Anodes, grids and screens for rectifying valves.

(3) Heating resistors, in the form of rods, bars, etc., for various types of heating apparatus.

(4) Resistance discs and plates for automatic voltage regulators.

(5) Other contacts or electrodes of carbon.

The heading also **excludes** :

(a) Graphite or other carbon in the form of powders or granules (**Chapter 38**).

(b) Carbon resistors (**heading 85.33**).