

35.05 - Dextrins and other modified starches (for example, pregelatinised or esterified starches); glues based on starches, or on dextrins or other modified starches

3505.10 - Dextrins and other modified starches

3505.20 - Glues

This heading covers :

(A) **Dextrins and other modified starches**, i.e., products obtained by the transformation of starches through the action of heat, chemicals (e.g., acids, alkalis) or diastase, and starch modified, e.g., by oxidation, esterification or etherification. Cross-linked starches (e.g., distarch phosphate) are an important group of modified starches.

(1) **Dextrins**, obtained :

- either by the degradation of starch by hydrolysis with acids or enzymes, the resulting product being termed maltodextrin. However products of this kind are classified here as dextrins only if their reducing sugar content, expressed as dextrose on the dry substance, does not exceed 10%;
- or by roasting starch, with or without small quantities of chemical reagents. If no reagents are used, the resulting product is known as roasted starch.

Dextrins are white, yellowish or brown powders, depending on manufacturing process and the kind of starch used. They are soluble in water (suitably heated, if necessary) but not in alcohol.

(2) **Soluble starch (amylogen)** : an intermediate product obtained in the transformation of starches into dextrins, prepared by boiling starch in water, or by keeping starch for a long while in contact with cold dilute acid. The heading also includes soluble starches containing very small quantities of kaolin, mainly used for adding to cellulose pulp during the manufacture of paper.

(3) **Pregelatinised or “swelling” starch**, obtained by moistening starch with water and heat-treating it to obtain a more or less gelatinous mass, which is then dried and ground to a powder. This product can also be obtained by extrusion, followed by grinding to a powder. It is used in paper manufacture, in the textile industry, in metallurgy (for the preparation of foundry core binders), in the food industries and for animal feed, etc.

(4) **Etherified or esterified starches** (starches modified by etherification or esterification). Etherified starches include those containing hydroxyethyl, hydroxypropyl or carboxymethyl groups. Esterified starches include starch acetates used principally in the textile or paper industries, and starch nitrates (nitrostarch) used in the manufacture of explosives.

(5) **Other modified starches**, for example :

(i) **Dialdehyde starch**, and

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- (ii) **Starch treated with formaldehyde or epichlorohydrin**, used, for example, as surgical glove powder.

In general, modified starches of this heading may be distinguished from unmodified starches of Chapter 11 on the basis of changes in their properties, for example, solution and gel clarity, tendency to gel or to crystallise, water binding capacity, freeze-thaw stability, gelatinisation temperature or peak viscosity.

(B) Glues based on starches, or on dextrins or other modified starches.

- (1) **Dextrin glues** consisting of dextrin in aqueous solution or mixed with other substances (e.g., magnesium chloride).
- (2) **Starch glues**, obtained by treating starch with an alkali (e.g., sodium hydroxide).
- (3) **Glues** consisting of untreated starch, borax and water-soluble cellulose derivatives or consisting of untreated starch, borax and starch ethers.

The above-mentioned products are usually in the form of white, yellow or brownish amorphous powders or gum-like masses, hence the application of the names "British gum" and "starch gum" to certain of these products. They are mainly used as glues, in the colour industry, in the textile or paper industries, and in metallurgy.

The heading **does not cover** :

- (a) Starches, not prepared (**heading 11.08**).
- (b) Starch degradation products with a reducing sugar content, expressed as dextrose on the dry substance, exceeding 10% (**heading 17.02**).
- (c) Glues put up for retail sale, not exceeding a net weight of 1 kg (**heading 35.06**).
- (d) Prepared glazings and dressings (based on starches or dextrins) of a kind used in the paper, textile, leather or like industries (**heading 38.09**).