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Acid Treated Starch

(Tentative)

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ACID TREATED STARCH
(TENTATIVE)

Prepared at the 82nd JECFA (2016) and published in FAO JECFA Monograph 19 (2016), superseding specifications for Acid treated starch included in the specifications for Modified starches prepared at the 79th JECFA (2014), published in FAO JECFA Monographs 16 (2014). An ADI "not specified" was established at the 26th JECFA (1982).

Information is required on:

- *A suitable method for the Dispersion or Reducing Sugars Distinguishing Test*

SYNONYMS INS No. 1401

DEFINITION Starch is a carbohydrate polymer consisting of a large number of glucose units linked together primarily by alpha 1-4 glucosidic bonds. The starch polymers come in two forms: linear (amylose) and branched through alpha 1-6 glucosidic bonds (amylopectin), with each glucose unit possessing a maximum of three hydroxyls that can undergo chemical substitution.

Acid treated starch is a modified starch. It is obtained by treatment of food starch with hydrochloric acid or ortho-phosphoric acid or sulfuric acid, in accordance with good manufacturing practice. The alteration of the starch is a minor fragmentation.

Acid treated starch may additionally be subjected to bleaching, in accordance with good manufacturing practices.

C.A.S number 65996-63-6
68909-37-5 (Acid treated amylopectin)

DESCRIPTION White or nearly white powder or granules or (if pregelatinized) flakes, or amorphous powder or coarse particles.

FUNCTIONAL USES Thickener, stabilizer, binder, emulsifier

CHARACTERISTICS

IDENTIFICATION

Solubility (Vol. 4) Insoluble in cold water (if not pre-gelatinized); forming typical colloidal solutions with viscous properties in hot water; insoluble in ethanol.

Microscopy Passes test
See description under TESTS

Iodine stain Passes test
See description under TESTS

Copper reduction Passes test

See description under TESTS

Dispersion test or Reducing sugars distinguishing test — *Information required*

PURITY

pH — 4.8-7.0
See description under TESTS

Loss on drying (Vol. 4) — Cereal starch: not more than 15.0%
Potato starch: not more than 21.0%
Other starches: not more than 18.0%
(120°, 4 h, vacuum not exceeding 100 mm Hg)

Sulfur dioxide (Vol. 4) — Not more than 50 mg/kg on the dried basis for modified cereal starches
Not more than 10 mg/kg on the dried basis for other modified starches

Lead (Vol. 4) — Not more than 2 mg/kg on the dried basis

Determine using a method appropriate to the specified level. The selection of sample size and method of sample preparation may be based on principles of methods described in Volume 4 (under “General Methods, Metallic Impurities”).

Manganese (Vol. 4) — Not more than 50 mg/kg on the dried basis

Determine using a method appropriate to the specified level. The selection of sample size and method of sample preparation may be based on principles of methods described in Volume 4 (under “General Methods, Metallic Impurities”).

Carboxyl groups (Vol. 4) — Not more than 0.1% on the dried basis

TESTS

IDENTIFICATION TESTS

Microscopy — Modified starches which have not been pre-gelatinized retain their granular structure and can be identified as starches by microscopic observation. Shape, size and sometimes striations are characteristics of the botanical origin. In polarized light under cross nicol prisms the typical polarization cross will be observed

Iodine stain — Add a few drops of 0.1 N potassium tri-iodide to an aqueous suspension of the sample. These starches stain with iodine in the same way as native starches. The colour can range from dark blue to red

Copper reduction — Place about 2.5 g of the sample previously washed with water, in a boiling flask, add 10 ml of dilute hydrochloric acid (3%) and 70 ml of

water, mix, reflux for about three hours and cool. Add 0.5 ml of the resulting solution to 5 ml of hot alkaline cupric tartrate TS. A copious red precipitate is produced

PURITY TESTS

pH (Vol. 4) — Suspend 20 g of the sample with 80 ml of water, and agitate continuously at a moderate rate for 5 min (In the case of pre-gelatinized starches, 3 g should be suspended in 97 ml of water).