POWDERED CELLULOSE

$(C_{12}H_{20}O_{10})_n$
INS No.: 460 (ii)
CAS No.: 9004-34-6
OIV-OENO 681-2022

1. Object, origin and scope of application

Powdered cellulose is cellulose of food-grade quality. Cellulose is a linear glucose homopolymer composed of glucopyranose units linked by □-1,4-glycosidic bonds; its degree of polymerisation (DP) is dependent on the origin of the cellulosic material.

Powdered cellulose is a non-modified, purified cellulose, obtained by the mechanical disintegration of alpha-cellulose procured in pulp form from fibrous plant material.

Powdered cellulose plays a "support" role in clarified fermentation media; it allows for improved "degassing" of carbon dioxide at the start of alcoholic fermentation and thus shortens the latency phase. It increases the fermentability of must.

2. Labelling

The following should be mentioned on the label:

- the identification of the cellulose and its use in food,
- the concentration of the product, including in the case of a mixture,
- safety and storage conditions
- the batch no.,
- the expiry date.

3. Characteristics

Powdered cellulose comes in the form of flakes or very fine fibres, and is whitish in colour, odourless and flavourless.

4. Test limits and methods

4.1 Identification

Place approx. 10 mg powdered cellulose on a watch glass and disperse into 2 mL iodinated zinc chloride solution (R). The solution will turn a blue-purple colour.

4.2 Solubility

Powdered cellulose is insoluble in water, ethanol, ether and diluted acids, and slightly soluble in sodium hydroxide solution.

4.3 Purity

The powdered cellulose content should not be less than 92%.

4.4 Size of fine particles

The size of fine particles should not be less than 5 µm; the number of particles smaller than 5µm should not exceed 10%.

4.5 pH

Mix approx. 10 g dry cellulose in 90 mL water free of carbon dioxide for 60 min. Centrifuge.□The pH of the supernatant liquid should be between 5.0 and 7.5.

4.6 Water-soluble substances

Mix around 6 g of sample, dried beforehand, with 90 mL water that has recently been boiled then cooled. Leave to rest for 10 min. Filter using a membrane with porosity of 3 µm, throw away the first 10 mL of filtrate and pass the filtrate through the same filter a second time if necessary to obtain a clear filtrate. Evaporate a 15-mL portion of filtrate to dryness in a tared evaporating dish over a water bath, and dry to 105 °C for 1 h. Weigh the dish containing the dry residue. Less than 15 mg of residue should be obtained.

4.7 Detection of starch

Add 90 mL demineralised water (R) to 10 g powdered cellulose and boil for 5 min. Filter while hot with a 25-µm membrane filter. Cool and add 0.1 mL 0.05 M iodine solution to the filtrate. No blue colouration should appear. With very fine grains, a light blue colour may be observed after the addition of the iodine solution but will disappear after 30 minutes.

4.8 Loss on drying

Place 1 g powdered cellulose in a tared dish in an oven at 100-105 °C for 3 hours. The loss on drying should not exceed 7.0%.

4.9 Ashes

Incinerate the residue obtained in point 4.8 at 800 ± 25 °C for 4 hours.□The weight of the ashes should not be greater than 0.3%.

All of the limits set below relate to dry products.

5. Preparation of the test solution

After weighing, dissolve the ashes in 2 mL concentrated hydrochloric acid (R) and 10 mL water (R). Heat to activate dissolution and make up to 50 mL with water.

5.1 Iron

Determine the iron content of the solution prepared for testing purposes (5) by atomic absorption spectrophotometry according to the method described in Chapter II.□The iron content should be less than or equal to 10 mg/kg.

5.2 Lead

Determine the lead content of the solution prepared for testing purposes (5) according to the method described in Chapter II.□The lead content should be less than 2 mg/kg.

5.3 Mercury

Determine the mercury content of the solution prepared for testing purposes (5) according to the method described in Chapter II.□The mercury content should be less than 1 mg/kg.

5.4 Cadmium

Determine the cadmium content of the solution prepared for testing purposes (5) according to the method described in Chapter II.□The cadmium content should be less than 1 mg/kg.

5.5 Arsenic

Determine the arsenic content of the solution prepared for testing purposes (5) according to the method described in Chapter II.□The arsenic content should be less than 1 mg/kg.

6. Storage

Powdered cellulose should be stored in a well-ventilated place in airtight packaging, away from any volatile substances that it could adsorb.