COEI-1-METACI Metatartric acid

Ditartaric acid

Acidum ditartaricum

SIN N°. 353

1. Objective, origin and scope of application

The name metatartaric acid applies to the product obtained by dehydrating L-tartaric acid at a temperature of 150-170 °C under atmospheric pressure or under a reduced pressure.

This product can retard tartaric precipitation in the bottle.

Its effectiveness in preventing tartaric precipitation is directly related to the rate of esterification

The quantity in which it is used in wines is restricted.

The primary constituents of the product are the ditartaric monoester and diester in variable proportions based on the combination of two molecules of tartaric acid with water loss, mixed with variable quantities of non-esterified tartaric acid, pyruvic acid and small quantities of poorly known polyester acids.

This product exists in crystalline masses or in powder form with a white or greater or lesser yellowish color. It has a faint odor of toast or caramel and is very deliquescent.

It is highly soluble in water and alcohol and rapidly hydrolyzed in aqueous solution at 100 °C, but much more slowly at cold temperatures.

2. Labelling

The label should indicate the esterification rate and safety and storage conditions, as well as the optimal expiration date.

3. Determination

3.1. Place a sample of 1-10 mg of this substance in a test tube with 2 ml of concentrated sulfuric acid (R) and 2 drops of sulforesorcinic reagent (R). When heated to 150 °C, an intense violet coloration appears.

3.2. Place 2.50 ml of 10 pp 100 (m/v) tartaric acid in 20 alcohol by volume in a 100 ml cylindrical flask. Add 10 mg of metatartaric acid (0.5 ml of 2% solution), 40 ml of water and 1 ml of 25 pp 100 calcium acetate solution (R). Stir. A weak, amorphous precipitate remaining in suspension will appear for certain samples having a high ester number when they contain a small quantity of poorly known polyesters. No crystallized precipitate should form within 24 hours, whereas a mixture of the same reagents without metatartaric acid yields a crystallized precipitate within several minutes.

4. Tests

4.1. Appearance

A 10 pp 100 aqueous solution of metatartaric acid should be clear and almost colorless or slightly amber in color.

4.2. Preparation of the Test Solution

Prepare a metatartaric acid solution in a concentration of 20 g/l in water.

4.3. Quantitative Analysis

Place 50 ml of very recently prepared 2 pp 100 solution (1 g of metatartaric acid) in a 250 ml conical flask. Add 3 drops of bromothymol blue solution (R) in a concentration of 4 g/l and 1 M sodium hydroxide solution until the indicator turns bluish-green. Let n be the number of ml used.

Add 20 ml of 1M sodium hydroxide. Insert the stopper and let sit for 2 hours at ambient temperature. Titrate the excess alkaline solution using 0.5M sulfuric acid. Let n' be the number of millimeters used: 1 ml of 1M sodium hydroxide corresponds to 0.075 g of tartaric acid.

Content (pp 100 of total free and esterified acid) of the tested product:

$$7.5(n + 20 - n')$$

Ester content pp 100 of total acid functions:

$$100(20 - n')/(n + 20 - n')$$

The wine-making product must contain at least 105 pp 100 total tartaric acid after hydrolysis and 32 pp 100 esterified acid.

4.4. Heavy Metals

Using the thioacetamide technique described in the annex, determine heavy metals content in the test solution prepared in accordance with Par. 4.2 (when expressed for lead, the heavy metals content must be lower then 10 mg/kg).

4.5. Lead

Using the technique described in the Compendium, quantify the proportion of lead in the test solution (Par. 4.2). (Lead content should be less than 5 mg/kg).

4.6. Mercury

Using the technique described in the annex, determine the proportion of mercury in the test solution prepared in accordance with Par. 4.2 (content must be lower then 1 mg/kg).

4.7. Arsenic

Using the technique described in the annex, determine arsenic content in the test solution prepared in accordance with Par. 4.2 (content must be lower then 3 mg/kg).

5. Storage

Metatartaric acid should be stored in hermetically sealed containers away from air and moisture.