COEI-1-DLTART D,L-Tartaric acid

D,L-2,3-dihydroxybutanedioic acid

Racemic Acid

Acidum tartaricum

COOH - CHOH - CHOH - COOH

$C_4H_6O_6$= 150.1

1. Objective, Origin and Scope of Application

This product is used to eliminate excess calcium from wines and musts under certain conditions. The calcium racemate that is produced yields particularly insoluble salts. Its use is subject to certain regulations.

2. Labelling

The label should cite the purity percentage and storage requirements.

It should also clearly indicate that the product is a racemic mixture of the two isomers D and L of tartaric acid, so as to avoid suggesting that the product is the L-tartaric acid occurring naturally in grapes.

3. Properties

Colorless, transparent extremely solid crystals having a distinctly acidic taste. Instantaneous melting point is 206 °C[1].

4. Solubility

Water at 20 °C	245 g/l
Water at 100 °C	1428 g/l
Alcohol, 95% by vol.	26 g/l

Ethyl ether	14.9 g/l

5. Identifying Characteristics

5.1. Verify total solubility in water. A 1% solution exhibits an acidic reaction with respect to methyl orange (R). This solution has no rotatory power.

5.2. Add 2 ml of 25% calcium acetate solution (R) to 5 ml of 1% (m/v) solution. An abundant white crystalline precipitate should form instantaneously. Under these conditions, L(+) tartaric acid (dextrorotatory tartaric acid) yields no precipitate.

5.3. Add 2 ml 5% potassium acetate solution (R) to 5 ml of 10% (m/v) solution. A crystalline precipitate will form.

6. Tests

6.1. Foreign Substances

D,L tartaric acid should be soluble without residue in 10 times its weight of water.

6.2. Sulfur Ash

As analyzed in 2.0 g D,L tartaric acid, the sulfur ash content should not be greater than 0.2 pp 100.

6.3. Preparing the Solution for Tests

Dissolve 10 g D,L-tartaric acid in water and fill to 100 ml with the same solvent.

6.4. Citric Acid

Add 5 ml of water and 2 ml mercury (II) sulfate solution (R) to 5 ml of the solution prepared for tests under Paragraph 6.3. Bring to a boil and add several drops potassium permanganate solution (concentration: 2 pp 100) (R). No white precipitate should form.

6.5. Chlorides

Add 14.5 ml of water, 5 ml of dilute nitric acid (R) and 0.5 ml of 5 pp 100 silver nitrate solution (R) to 0.5 ml of the solution prepared for tests under Paragraph 6.3. The solution should meet the chloride limit test described in the Annex. (Chloride content expressed as hydrochloric acid should be less than 1 g/kg).

6.6. Iron

Add 1 ml of concentrated hydrochloric acid (R) and 2 ml of 5 pp 100 potassium thiocyanate solution (R) to 10 ml of the solution prepared for tests under paragraph 6.3. The resulting red coloration should be less intense than that observed in a control prepared using 1 ml of an iron (III) salt solution in a concentration of 0.010 g of iron per liter, 9 ml of water and the same quantities of the same reagents. (Iron content should be less than 10 mg/kg).

Iron content may also be determined by atomic absorption spetrometry in accordance with the method described in the Compendium.

6.7. Lead

Use the method described in the Compendium to analyze the test solution (6.3). (Content to be less than 2 mg/kg.)

6.8. Mercury

Using the technique described in the Annex, determine the proportion of mercury in the test solution (6.3). (Mercury content should be less than 1 mg/kg).

6.9. Arsenic

Using the technique described in the Annex, determine the proportion of arsenic in the test solution (6.3). (Arsenic content should be less than 3 mg/kg).

6.10. Sulfates

Add 18 ml of water, 1 ml hydrochloric acid diluted to 10 pp 100 (R) and 2 ml of 10 pp 100 barium chloride solution (R) to 1 ml of the solution prepared for tests under Paragraph 6.3. The solution should meet the sulfate limit test described in the Annex. (Concentration of sulfate expressed as sulfuric acid should be less than 1 g/kg).

6.11. Oxalate

Using the technique described in the Annex, determine the proportion of oxalate in the test solution (6.3). (Oxalate content expressed as oxalic acid should be less than 100 mg/kg after dessiccation).

7. Quantitative Analaysis

Dissolve a precisely-weighed sample p of approximately 1 g D,L-tartaric acid in 10 ml of water. Titrate with 1M sodium hydroxide solution in the presence of phenolphthalein (R). Let n be the number of milliliters used.

1 ml of 1M sodium hydroxide solution corresponds to 0.075 g D,L-tartaric acid.

Content, in percent, of D,L-tartaric acid of the product tested: 7.5 n.

Products used in wine-making must contain a minimum of 99 pp 100 D,L-tartaric acid (dry product).

8. Storage

D,L-tartaric acid should be stored in hermetically sealed containers.

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[1] Due to a printing error the value of the melting point has been corrected