COEI-1-LTARAC L(+) Tartaric acid

L-2,3-dihydroxybutanedioic acid

Dextrorotatory tartaric acid

Acidum tartaricum

COOH - CHOH - CHOH - COOH

$C_4H_4O_6$= 150.1

SIN NO. 334

1. **Objective, Origin and Scope of Application**

This is a natural acid extracted from grapes. It is used to acidify musts and wines under conditions stipulated by regulation.

2. **Labelling**

The label should indicate in a clear manner that the product is L-tartaric acid, sometimes written L(+)tartaric acid, since its rotatory power is positive. It must also indicate the purity percentage (greater than 99.5%) and storage requirements.

3. **Properties**

Very solid colorless, transparent crystals which have a distinctly acidic flavor and containing no water of crystallization.
Melting point is 170 °C.

4. **Solubility**

Water at 20 °C	highly soluble
Alcohol, 95% by vol.	379 g/l

Glycerol	Soluble
Ethyl ether	very slightly soluble

5. Rotary power

In an aqueous solution of 20 g per 100 ml

$[\alpha]_D^{20^\circ C}$ *is between* $+ 11.5$ *and* $+ 13.5^\circ$

Specific rotatory power varies greatly with temperature and pH.

6. Identifying Characteristics

6.1. Verify total solubility in water. A 1% solution exhibits an acidic reaction in the presence of methyl orange (R)

6.2. Place 2 ml of concentrated sulfuric acid (R), 2 drops of sulforesorcinic reagent (R) and a very small crystal of tartaric acid (1-5 mg) in a test tube. Heat to 150 °C. An intense violet coloration should appear.

6.3. Add 2 ml of 5 pp 100 potassium acetate solution (R) to 5 ml of 10 pp 100 solution (m/v). A crystallized precipitate should form immediately.

6.4. Place 5 ml chloroform or dichloromethane in a test tube. Add 100-200 mg tartaric acid. Shake. Crystals should gather at the bottom of the tube. Under these conditions, citric acid crystals will collect at the liquid surface.

7. Tests

7.1. Foreign Matter

Tartaric acid should be soluble without residue in its weight of water and in 4 times its weight of alcohol at 95% by volume.

7.2. Sulfur Ash

As explained in the annex, use a precisely-weighed sample of approximately 2 g to determine sulfur ash concentration in the tartaric acid. This sulfuric ash concentration must not be greater than 1 g/kg.

7.3. Preparing the Solution for Tests

Dissolve 10 g of tartaric acid in a quantity of water sufficient to produce 100 ml of solution.

7.4. Chlorides

Add 14.5 ml of water, 5 ml of nitric acid diluted to 10 pp 100 (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

7.3. After 15 minutes of sitting in the dark, there should be no clouding; or else, any clouding that does appear should be less intense than that observed in a control prepared as indicated in the annex. (Chloride content expressed in terms of hydrochloric acid should be less than 1 g/kg).

7.5. Sulfates

Add 18 ml of water, 1 ml of 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 7.3. After 15 minutes of sitting in the dark, there should be no clouding,;or else, any clouding that does appear should be less intense than that observed in a control prepared as indicated in the annex. (Sulfate content expressed in terms of sulfuric acid should be less than 1 g/kg).

7.6. Citric Acid

Add 5 ml of water and 2 ml of mercury (II) sulfate solution (R) to 5 ml of the solution prepared for tests under paragraph 7.3. Bring to a boil and add several drops of 2 pp 100 potassium permanganate solution (R). No white precipitate should form.

7.7. Oxalic Acid and Barium (test)

Neutralize 5 ml of test solution prepared under Paragraph 7.3 by adding ammonium hydroxide. Add 2 drops of acetic acid (R) and 5 ml of a saturate calcium sulfate solution (R).The solution should remain clear. (Opalescence may appear by virtue of the precipitation of calcium oxalate or barium sulfate.)

7.8. Oxalic Acid (quantitative analysis)

If the test conducted under 7.7 is positive, perform quantitative analysis of the oxalic acid.

Using the method described in the annex, determine oxalic acid content in the test solution (6.3). (Content expressed for oxalic acid should be less than 100 mg/kg after dessiccation).

7.9. 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 7.3. The resulting red coloration should be less intense than that observed in a control prepared using 1 ml of an iron (III) salt solution having 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).

It is also possible to determine iron content by atomic absorption spectrometry, using the technique detailed in the Compendium.

7.10. Lead

Using the technique in the Appendix, determine the lead content in the test solution (7.3). (Lead content should be less than 5 mg/kg).

7.11. Mercury

Using the technique described in the Annex, determine the proportion of mercury in the test solution (7.3). (Mercury content should be less than 1 mg/kg).

7.12. Arsenic

Using the technique described in the Annex, determine the proportion of arsenic in the test solution (7.3). (Arsenic content should be less than 3 mg/kg).

8. Quantitative Analysis

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

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

Content in percent of L-tartaric acid of the product assayed :

- 7.5 n.

The product used for wine-making must contain at least 99.5 pp 100 L-tartaric acid (dry product).

9. Storage

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