COEI-1-COLPOI Fish glue (Isinglass)

1. Objective, Origin and Scope of Application

Fish glue is made from the swim bladder, gills and ears of certain fish, notably sturgeon.

It is produced in the form of colorless or slightly yellowish transparent sheets or, most frequently, in ribbons which have the appearance of dry parchment, or in vermiculated or powder form.

Fish glue expands in cold water and becomes opaque. It dissolves in hot water acidified with tartaric acid, leaving at most 3 pp 100 of residue composed of membranes. With 30-50 parts of hot water and after cooling, it forms a colorless, translucent jelly.

After partial hydrolysis, fish glue is often found in ready-to-use colloidal solution form stabilized by SO_2. In this case, it should be stored cool in a closed container.

Fish glue is used to clarify white and rose wines.

2. Labelling

The label should indicate product concentration, even when used in mixtures, as well as its safety and storage conditions. The expiration date and the SO_2 content should be indicated on the label.

3. Tests

3.1. A hot water solution should be odorless and have no disagreeable taste. Reaction should be neutral or slightly alkaline. It precipitates with tannin.

Fish glue pH ranges between 3.5 and 4 when tartaric acid has been used to facilitate dissolution.

3.2. Fish glue processed with a potassium hydroxide solution (R) should remain transparent and, after several hours, yield a colorless liquid which will produce a light, frothy precipitate over time. Under the same conditions, the gelatin becomes opaque and difficult to make soluble. It produces an abundant, white precipitate.

3.3. Test for albuminoid substances. Aqueous solutions should not form a precipitate when iron (III) sulfate solution (R) is added.

3.4. Desiccation Loss

3.4.1. *Fish Glue in Solid Form*

In a silica dish with cover and measuring 70 mm in diameter, place 2g fish glue. Oven dry at 100-105° for six hours. Allow to cool in the uncovered dish in a desiccator. Weigh. Let p be the quantity of dry residue. Weight loss should not exceed 18 pp 100.

3.4.2. *Fish Glue in a Liquid State*

In a silica dish 70 mm in diamater place approximately 10 g fish glue colloidal solution, weight this amount with precision in the uncovered dish, dry in a water bath at 100° C for 4 hours and complete the drying process in the oven at 100-105° C for 3 hours. Allow to cool in the uncovered dish in the drying apparatus. Weigh the dry residue produced. Let p be the quantity added to 100 g colloidal solution. The dry residue should reach a minimum level of 1 pp 100.

All of the limiting values set forth above are stipulated for the dry product.

3.5. Ash

Burn the dry residue in test 3.4 by gradually heating to 600° in a muffle furnace after dusting the fish glue with 0.1 to 0.3 g paraffin without ash, in order to prevent the mass of material from overflowing. Ash content should be less than 2 pp 100.

3.6. Preparation of Test Solution

After eighing, dissolve the ash in 2 ml conventrated hydrochloric acid (R) and 10 ml water. Heat to stimulate dissolution and add distilled water until a volume equal to 25 times the weight of the dry fish glue is obtained. 1 ml of this solution contains the mineral substances derived from 0.04 g dry fish glue.

3.7. Total Nitrogen

Refer to the technique described in the Annex.

Total nitrogen content should be greater than 14 pp 100.

3.8. Iron

1 ml concentrated hydrochloric acid (R), one drop potassium permangante in concentration of 1 pp 100 (R) and 2 ml potassium thiocyanate in a concentration of 5 pp 100 (R) are added to 10 ml of the test solution prepared according to Par. 3.6).

If a red coloring appears, it must be less intense that that of a control prepared from 4.2 ml of iron (III) solution in a concentration of 0.010 g per liter, 5.8 ml water, and the same quantities of concentrated hydrochloric acid (R) and of potassium thiocyanate in a concentration of 5 pp 100.

Iron content should be less than 100 mg/kg.

The quantitative analysis of iron can also be implemented by atomic absorption

spectometry, using the technique reported in the Compendium.

3.9. Arsenic

Using the method described in the Annex, determine the arsenic content in the test solution prepared according to Par. 3.6. Arseniccontent should be less than 3 mg/kg..

3.10. Lead

Using the method described in the Compendium, determine the lead content in the test solution prepared according to Par. 3.6. (Lead content should be less than 5 mg/kg).

3.11. Mercury

Using the method described in the annex, quantify the mercury content in the test solution prepared according to Par. 3.6. (Mercury content should be less than 1 mg/kg).

4. Storage

Fish glue should be stored in hermetic flasks. An expiration date should be specified.

Store colloidal solutions at temperatures of less than 10 °C to avoid rapid hydrolysis of the product during storage.