**Food Yellow No. 4 Aluminum Lake**

**Definition**  Food Yellow No. 4 Aluminum Lake is prepared by reacting an aluminum salt solution with alkali, making the reaction product absorb Food Yellow No. 4, filtering, drying, and crushing.

**Content**  Food Yellow No. 4 Aluminum Lake contains the equivalent of not less than 10.0% of the trisodium salt of 5-hydroxy-1-(4-sulfophenyl)-4-(4-sulfophenylazo)-3-pyrazolecarboxylic acid (C\(_{18}\)H\(_9\)N\(_4\)Na\(_3\)O\(_9\)S\(_2\)).

**Description**  Food Yellow No. 4 Aluminum Lake occurs as a fine, yellow powder. It is odorless.

**Identification**  (1) To 0.1 g of Food Yellow No. 4 Aluminum Lake, add 5 ml of sulfuric acid, and heat in a water bath for about 5 minutes while shaking occasionally. A yellow color develops. Cool, and add 2 to 3 drops of the supernatant to 5 ml of water. A yellow color develops.

(2) To 0.1 g of Food Yellow No. 4 Aluminum Lake, add 5 ml of diluted sulfuric acid (1:20), stir well, and add ammonium acetate solution (3:2,000) to make 100 ml. If the solution is not clear, centrifuge. Measure 1 to 10 ml of this solution so that the absorbance to be measured will be within a range of 0.2 to 0.7, and add ammonium acetate solution (3:2,000) to make 100 ml. The solution exhibits absorption maximum at a wavelength of 426 - 430 nm.

(3) To 0.1 g of Food Yellow No. 4 Aluminum Lake, add 10 ml of diluted hydrochloric acid (1:4), heat in a water bath until most of it dissolves, add 0.5 g of active carbon, shake well, and filter. Neutralize the colorless filtrate with sodium hydroxide solution (1:10). The solution responds to all tests for Aluminum Salt as described in the Qualitative Tests.

**Purity**  (1) **Hydrochloric acid- and ammonia-insoluble substances**  Not more than 0.5% (Coloring Matter Aluminum Lake Tests).

(2) **Heavy metals**  Not more than 20 \(\mu\)g/g as Pb (Coloring Matter Aluminum Lake Tests, Heavy Metals (3)).

(3) **Barium**  Not more than 500 \(\mu\)g/g as Ba (Coloring Matter Aluminum Lake Tests).

(4) **Arsenic**  Not more than 4.0 \(\mu\)g/g as As\(_{2}\)O\(_3\) (Coloring Matter Aluminum Lake Tests).
(5) **Other coloring matter lakes**  (Coloring Matter Aluminum Lake Tests, Other Coloring Matter Lakes (1)).

**Loss on Drying**  Not more than 30.0% (135°C, 6 hours).

**Assay**  Weigh accurately Food Yellow No. 4 Aluminum Lake so that the volume of consumed 0.1 mol/l titanium trichloride solution will be about 20 ml, and proceed as directed under Assay (3) in the Coloring Matter Aluminum Lake Tests.

1 ml of 0.1 mol/l titanium trichloride solution = 13.359 mg of C₁₆H₉N₄Na₃O₉S₂