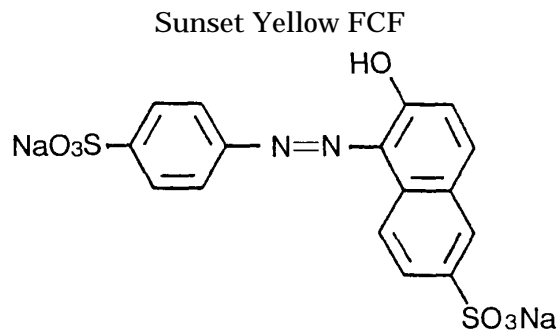


Food Yellow No. 5



$C_{16}H_{10}N_2Na_2O_7S_2$

Mol. Wt. 452.38

disodium salt of 6-hydroxy-5-(4-sulfophenylazo)-2-naphthalenesulfonic acid [2783-94-0]

Definition Food Yellow No. 5 is obtained by coupling diazotized 4-aminobenzene sulfonic acid with 6-hydroxy-2-naphthalenesulfonic acid, salting out, and refining. It consists principally of the disodium salt of 6-hydroxy-5-(4-sulfophenylazo)-2-naphthalene sulfonic acid ($C_{16}H_{10}N_2Na_2O_7S_2$).

Content Food Yellow No. 5 contains not less than 85.0% of the disodium salt of 6-hydroxy-5-(4-sulfophenylazo)-2-naphthalenesulfonic acid.

Description Food Yellow No. 5 occurs the equivalent of as orange-red powder or granules. It is odorless.

Identification (1) Food Yellow No. 5 solution (1 : 1,000) is orange in color.

(2) A solution of Food Yellow No. 5 in sulfuric acid (1 : 100) is orange-red in color. Add 2 to 3 drops of this solution to 5 ml of water. An orange-yellow color develops.

(3) Dissolve 0.1 g of Food Yellow No. 5 in 100 ml of ammonium acetate solution (3 : 2,000). To 1 ml of this solution, add ammonium acetate solution (3 : 2,000) to make 100 ml. The solution exhibits absorption maximum at a wavelength of 480 - 484 nm.

Purity (1) Water-insoluble substances Not more than 0.20% (Coloring Matter Tests).

(2) Chloride and sulfate Not more than 5.0% as total amount (Coloring Matter Tests).

(3) Heavy metals Not more than 20 $\mu\text{g/g}$ as Pb (Coloring Matter Tests, Heavy Metals (5)).

(4) Arsenic Not more than 4.0 $\mu\text{g/g}$ as As_2O_3 (Coloring Matter Tests).

(5) Subsidiary colors Not more than 5% as the total of:

sulfanilic acid azo G salt color,
sulfanilic acid azo R salt color,
sulfanilic acid azo -naphthol color, and
aniline azo Schaeffer's salt color,

provided that colors other than sulfanilic acid azo R salt color is not more than 2%.

Test Solution Weigh accurately about 100 mg of Food Yellow No. 5, dissolve in ammonium acetate solution (1.54 1,000, pH 8.0) to make exactly 100 ml.

Standard Solution Weigh 10.0 mg each of sulfanilic acid azo G salt color, sulfanilic acid azo R salt color, sulfanilic acid azo -naphthol color, and aniline azo Schaeffer's salt color, dried previously in a vacuumed desiccator for 24 hours, dissolve in ammonium acetate solution (1.54 1,000, pH 8.0) to make exactly 100 ml. Use each solution as the standard stock solution. Proceed as directed under the Coloring Matter Tests (Subsidiary Colors).

Procedure Determine the amount of each color in the test solution as directed under the Coloring Matter Tests (Subsidiary Colors) and calculate the total amount.

Operating Conditions

Detector: Detector for absorbances in the visible region (determination wavelength 482 nm).

Mobile phase: A. Ammonium acetate solution (1.54 1,000), B. Acetonitrile

Concentration gradient: Change linearly the ratio of A : B from 100 : 0 to 60 : 40 for 50 minutes.

(6) Unreacted raw materials and products of side reactions Not more than 0.5% as the total of:

4-aminobenzenesulfonic acid,
disodium salt of 7-hydroxy-1,3-naphthalenedisulfonic acid,
disodium salt of 3-hydroxy-2,7-naphthalenedisulfonic acid,
monosodium salt of 6-hydroxy-2-naphthalenesulfonic acid,
disodium salt of 6,6'-oxybis(2-naphthalenesulfonic acid), and
disodium salt of 4,4'-(diazamino)-dibenzenesulfonic acid.

Test Solution Weigh accurately about 100 mg of Food Yellow No. 5, dissolve in ammonium acetate solution (1.54 1,000, pH 8.0) to make exactly 100 ml.

Standard Solution Weigh 10.0 mg each of 4-aminobenzenesulfonic acid, disodium salt of 7-hydroxy-1,3-naphthalenedisulfonic acid, disodium salt of 3-hydroxy-2,7-naphthalenedisulfonic acid, monosodium salt of 6-hydroxy-2-naphthalenesulfonic acid, disodium salt of 6,6'-oxybis(2-naphthalenesulfonic acid), and disodium salt of 4,4'-(diazamino)-dibenzenesulfonic acid, dried previously in a vacuumed desiccator for

24 hours, and dissolve in ammonium acetate solution (1.54 1,000, pH 8.0). Proceed as directed under the Coloring Matter Tests (Unreacted raw materials and products of side reactions).

Procedure Determine the amount of each substance in the test solution as directed under the Coloring Matter Tests (Unreacted raw materials and products of side reactions) and calculate the total amount.

Operating Conditions

Determination wavelength:

4-Aminobenzenesulfonic acid 232 nm,

Disodium salt of 7-hydroxy-1,3-naphthalenedisulfonic acid 232 nm,

Disodium salt of 3-hydroxy-2,7-naphthalenedisulfonic acid 232 nm,

Monosodium salt of 6-hydroxy-2-naphthalenesulfonic acid 232 nm,

Disodium salt of 6,6'-oxybis(2-naphthalenesulfonic acid) 232 nm, and

Disodium salt of 4,4'-(diazamino)-dibenzenesulfonic acid 358 nm.

Mobile phase: A. Ammonium acetate solution (1.54 1,000), B. Acetonitrile.

Concentration gradient: Change linearly the ratio of A : B from 100 : 0 to 60 : 40 for 50 minutes.

(7) Unulfonated primary aromatic amines Not more than 0.01% as aniline (Coloring Matter Tests).

Loss on Drying Not more than 10.0% (135° C, 6 hours).

Assay Weigh accurately about 1.3 g of Food Yellow No. 5, and dissolve in water to make exactly 250 ml. Measure exactly 50 ml of this solution, use as the test solution, and proceed as directed under Titanium Trichloride Method (i) in the Assay in the Coloring Matter Tests.

1 ml of 0.1 mol/l titanium trichloride solution = 11.309 mg of $C_{16}H_{10}N_2Na_2O_7S_2$