PONCEAU 4R

Prepared at the 74th JECFA (2011) and published in FAO JECFA Monographs 11 (2011), superseding specifications prepared at the 28th JECFA (1984), published in the Combined Compendium of Food Additive Specifications, FAO JECFA Monographs 1 (2005). An ADI of 0-4 mg/kg bw was established at the 27th JECFA (1983) and maintained at the 74th JECFA (2011).

SYNONYMS CI Food Red 7; Cochineal Red A; New Coccine; Brilliant Scarlet; CI (1975) No. 16255; INS No. 124

DEFINITION Ponceau 4R consists essentially of trisodium 2-hydroxy-1-(4-sulfonato-1-naphthylazo)-6,8-naphthalenedisulfonate, and subsidiary colouring matters together with sodium chloride and/or sodium sulfate as the principal uncoloured components.

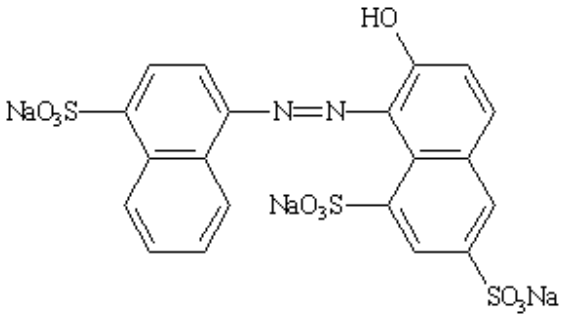
May be converted to the corresponding aluminium lake, in which case only the *General Specifications for Aluminium Lakes of Colouring Matters* apply.

Chemical names Trisodium 2-hydroxy-1-(4-sulfonato-1-naphthylazo)-6,8-naphthalenedisulfonate

C.A.S. number 2611-82-7

Chemical formula $C_{20}H_{11}N_2Na_3O_{10}S_3$

Structural formula



Formula weight 604.48

Assay Not less than 80% total colouring matters

DESCRIPTION Reddish powder or granules

FUNCTIONAL USES Colour

CHARACTERISTICS

IDENTIFICATION

Solubility (Vol. 4)	Soluble in water; sparingly soluble in ethanol
Spectrophotometry	Maximum wave length: Between 505 and 510 nm Determine the UV-visible absorption spectrum of the sample solution dissolved in 0.02 mol/l ammonium acetate.
PURITY	
Loss on drying (Vol. 4)	Not more than 20% at 135° together with chloride and sulfate calculated as sodium salts Determine using Loss on Drying under “GENERAL METHODS”, Chloride as Sodium Chloride and Sulfate as Sodium Sulfate under “SPECIFIC METHODS, Food Colours” in Volume 4.
Water-insoluble matter (Vol. 4)	Not more than 0.2%
Subsidiary colouring matters	Not more than 1% See description under TESTS
Organic compounds other than colouring matters (Vol. 4)	Not more than 0.5% of sum of 4-amino-1-naphthalenesulfonic acid, 7-hydroxy-1,3-naphthalenedisulfonic acid, 3-hydroxy-2,7-naphthalenesulfonic acid, 6-hydroxy-2-naphthalenesulfonic acid, and 7-hydroxy-1,3,6-naphthalenetrisulfonic acid. (See Volume 4 under “SPECIFIC METHODS, Food Colours”) Proceed as directed under *Determination by High Performance Liquid Chromatography* using the conditions of Subsidiary colouring matters except detector wavelength (238 nm).
Unsulfonated primary aromatic amines (Vol. 4)	Not more than 0.01% calculated as aniline (See Volume 4 under “SPECIFIC METHODS, Food Colours”)
Ether-extractable matter (Vol. 4)	Not more than 0.2% (See Volume 4 under “SPECIFIC METHODS, Food Colours, Method II”) Use 2 g of sample for the test.
Lead (Vol. 4)	Not more than 2 mg/kg Determine using an AAS/ICP-AES technique appropriate to the specified level. The selection of sample size and method of sample preparation may be based on the principles of the method described in Volume 4 (under “General Methods, Metallic Impurities”).

TESTS

PURITY TESTS

Subsidiary colouring matters	Determine by HPLC using the following conditions: Chromatography conditions

- HPLC system with a UV/VIS detector or a diode array detector
- Detector wavelength: 510 nm
- Column: C18 on silica gel (250 x 4.6 mm, 5 µm)
- Mobile phase: solvent A: 0.02 mol/l ammonium acetate and solvent B: acetonitrile:water (7:3 v/v)
- Gradient elution: A:B 100:0 v/v to A:B 40:60 v/v (0-30 min); hold at A:B 40:60 v/v (30-35 min).
- Column temperature: 40°
- Flow rate: 1.0 ml/min

Procedure

Accurately weigh 10 mg of the sample into a 100-ml volumetric flask. Dissolve and make to volume with 0.02 mol/l ammonium acetate. Filter through a 0.45 µm membrane filter. Inject 20 µl of the sample solution into HPLC.

Calculation

Calculate the percentage of subsidiary colouring matters from;

$$\text{Subsidiary colouring matters } (\%) = \left(\frac{A_{total} - A_{main}}{A_{total}} \right) \times D \times 100$$

where

D is the total colouring matters content of sample (%);

A_{total} is the sum of the area of all the peaks in the chromatogram between 2 and 40 min; and

A_{main} is the area of main peak.

METHOD OF ASSAY Proceed as directed under *Colouring Matters Content by Titration with Titanous Chloride* in Volume 4 (under "Specific Methods, Food Colours), using the following:

Weight of sample: 0.7-0.8 g
Buffer: 10 g sodium citrate
Weight (D) of colouring matters equivalent to 1.00 ml of 0.1 N $TiCl_3$: 0.01511 g