Ponceau 4R (E 124)

Catalogue No. ASD-641

1. Identification

Chemical name	Trisodium (8Z)-7-oxo-8-[(4-sulfonatonaphthalen-1-yl)hydrazinylidene]naphthalene-1,3-disulfonate
Synonyms	Ponceau 4R; Acid Red 18; Cochineal Red A; New Coccine; CI Food Red 7; Brilliant Scarlet 3R
C.I. number	16255
E number	E 124
CAS number	2611-82-7
EC number	220-036-2
Molecular formula	$C_{20}H_{11}N_2Na_3O_{10}S_3$
Molecular weight	604.47 g/mol
Dye class	Monoazo, anionic (acid) dye

2. Intended Use

E 124 reference colour, spectrophotometric standard, model azo dye for analytical and environmental research, and teaching reagent.

For laboratory, research, education and quality-control use. Not intended for human or veterinary therapeutic use, diagnosis, or direct consumption. Food-grade (E 124) material. For food-industry supply, contact Ausamics for suitability and regulatory documentation.

3. Mode of Action

The three sulfonate groups make Ponceau 4R strongly anionic and water-soluble. Its naphthylazo-naphthol chromophore absorbs blue-green light at about 505 nm, which gives the red colour.

4. Physical & Chemical Properties

Appearance	Bright red powder
Colour of 1 % aqueous solution	Strawberry red
Absorption maximum (λmax)	approx. 505 nm in water

Solubility	Soluble in water; sparingly soluble in ethanol
Moisture at 110 °C	Max. 2.0 %
Stability	Good stability in normal laboratory conditions; protect from sunlight, heat and moisture

5. Specifications

Parameter	Specification
Pure dye content (E 1 %, 1 cm at 505 nm)	Min. 80.0 %
Appearance	Bright red powder
Hue of 1 % solution	Strawberry red
Loss on drying at 135 °C (as sodium salts)	Max. 20.0 %
Moisture at 110 °C	Max. 2.0 %
Water-insoluble matter	Max. 0.20 %
Subsidiary colouring matters	Max. 1.0 %
Organic compounds other than colouring matters	Max. 0.5 %
Unsulfonated primary aromatic amines (as aniline)	Max. 0.01 %
Ether-extractable matter	Max. 0.2 %
Arsenic (As)	Max. 1 ppm
Lead (Pb)	Max. 1 ppm
Mercury (Hg)	Max. 0.05 ppm
Cadmium (Cd)	Max. 0.1 ppm
Chromium (Cr)	Max. 2 ppm
Copper (Cu)	Max. 30 ppm
Zinc (Zn)	Max. 50 ppm
Heavy metals (as Pb)	Max. 5 ppm

6. Solution Preparation

1. Stock solution (1 % w/v): weigh 1.0 g of Ponceau 4R.

2. Add to about 80 mL of purified water and stir until fully dissolved.
3. Make up to 100 mL with purified water.
4. Store closed at room temperature, away from light. Dilute for use according to your method.

7. Applications

- Food Colour QC: Reference material for E 124 identification, HPLC and spectrophotometric assay of red food colours.
- Spectrophotometry: Stable red dye (λmax ≈ 505 nm) for absorbance calibration and Beer–Lambert teaching.
- Analytical Method Development: Model azo dye for chromatography, electrochemical sensing and dye-removal studies.
- Environmental Research: Test compound in adsorption, photocatalysis and wastewater decolourisation experiments.
- Education: Intense, water-soluble red for chromatography, colour-mixing and diffusion practicals.
- Formulation Development: Red colourant for prototype buffers, gels and visual tracer solutions in research.

8. Storage & Shelf Life

Store at 15–25 °C, dry, tightly closed and protected from sunlight, heat and moisture. Shelf life 36 months from the date of manufacture.

9. Literature / References

5. Commission Regulation (EU) No 231/2012, Annex: E 124 Ponceau 4R, Cochineal Red A. Specifications for food additives.
6. FAO/WHO JECFA (2011). Ponceau 4R: specifications and toxicological evaluation (74th meeting). ADI 0–4 mg/kg body weight.
7. EFSA ANS Panel (2009). Scientific Opinion on the re-evaluation of Ponceau 4R (E 124) as a food additive. EFSA Journal 7(11):1328.
8. Regulation (EC) No 1333/2008 on food additives, Annex V: additional labelling for foods containing E 102, E 104, E 110, E 122, E 124 and E 129.
9. Horobin R.W., Kiernan J.A. (eds) (2002). Conn's Biological Stains, 10th ed. BIOS Scientific Publishers, Oxford.

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