Carmoisine (Azorubine, E 122)

Catalogue No. ASD-637

1. Identification

Chemical name	Disodium 4-hydroxy-3-[(4-sulfonato-1-naphthyl)diazenyl]naphthalene-1-sulfonate
Synonyms	Carmoisine; Azorubine; Acid Red 14; CI Food Red 3; Chromotrope FB; Azorubin S
C.I. number	14720
E number	E 122
CAS number	3567-69-9
EC number	222-657-4
Molecular formula	$C_{20}H_{12}N_2Na_2O_7S_2$
Molecular weight	502.43 g/mol
Dye class	Monoazo, anionic (acid) dye

2. Intended Use

E 122 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 122) material. For food-industry supply, contact Ausamics for suitability and regulatory documentation.

3. Mode of Action

The two sulfonate groups make carmoisine anionic and freely water-soluble. Its naphthylazo-naphthol chromophore absorbs blue-green light at about 516 nm, which gives the red colour.

4. Physical & Chemical Properties

Appearance	Dark red to maroon powder
Colour of 1 % aqueous solution	Crimson red
Absorption maximum (λmax)	approx. 516 nm in water

Solubility	Freely soluble in water; very slightly 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 516 nm)	Min. 85.0 %
Appearance	Dark red powder
Hue of 1 % solution	Crimson red
Loss on drying at 135 °C (as sodium salts)	Max. 15.0 %
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 carmoisine.

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 122 identification, HPLC and spectrophotometric assay of red food colours.
- Spectrophotometry: Stable red dye (λmax ≈ 516 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 122 Azorubine, Carmoisine. Specifications for food additives.
6. FAO/WHO JECFA. Azorubine: Combined Compendium of Food Additive Specifications. ADI 0–4 mg/kg body weight.
7. EFSA ANS Panel (2009). Scientific Opinion on the re-evaluation of Azorubine/Carmoisine (E 122) as a food additive. EFSA Journal 7(11):1332.
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.

Ausamics Pty Ltd provides this document in good faith based on current knowledge. The user is responsible for determining the suitability of this product for their intended application and for ensuring its proper use, handling, and storage. Ausamics Pty Ltd does not warrant the suitability or performance of this product for any specific application unless expressly agreed in writing. To the extent permitted by applicable law, Ausamics Pty Ltd accepts no liability for loss or damage arising from improper use or handling of this product.