Product Name	Carmoisine (Azorubine, Food Red 3, E122)
Catalogue Number	ASD-637
CAS Number	3567-69-9
C.I. Name / Number	Acid Red 14 / CI 14720
E Number / EINECS	E122 / 222-657-4
Dye Class	Monoazo dye
HS / AHECC Code	3204.19.00 — Synthetic organic colouring matter
Manufacturer	AuSaMicS Pty Ltd, Thomastown VIC 3074, Australia

1. Product Description

Carmoisine (Azorubine, E122, Acid Red 14) is a food-grade synthetic monoazo colourant widely used in regulated food, beverage, pharmaceutical, cosmetic, and laboratory applications where permitted by applicable legislation. Supplied as a dark red to maroon powder, it produces a clear, bright red solution in water with high colour strength and excellent stability under typical processing and formulation conditions.

2. Chemical Identity

Parameter	Value
Molecular Formula	C20H12N2Na2O7S2
Molecular Weight	502.43 g/mol
IUPAC Name	Disodium (4E)-3-oxo-4-[(4-sulfonato-1-naphthyl)hydrazinylidene]naphthalene-2,7-disulfonate
Synonyms	Azorubine, Food Red 3, Chromotrope FB, Azorubin S, Brillantcarmoisin O
Absorption Maximum (lambda-max)	~516 nm (aqueous solution)

3. Physicochemical Specifications

Property	Specification
Appearance	Dark red to maroon powder
Solubility	Freely soluble in water; very slightly soluble in ethanol
Solution Colour	Bright red
Odour	Odourless
pH Stability Range	Stable from approximately pH 3–9
Melting Point	>300°C (decomposes)
Storage Temperature	15–25°C, dry, away from direct light
Shelf Life	Up to 3 years under recommended conditions

4. Quality Parameters

Parameter	Specification	Analytical Method
Total Dye Content	>= 86–87%	Spectrophotometric
Loss on Drying (135°C)	<= 13%	Gravimetric (LOD)
Water Insoluble Matter	<= 0.09%	Gravimetric filtration
Ether Extracts	<= 0.2%	Solvent extraction
Subsidiary Dyes	<= 0.17%	TLC / HPLC
Dye Intermediates	<= 0.16%	HPLC
Unsulfonated Aromatic Amines	<= 0.01%	GC / HPLC
Heavy Metals (as Pb)	<= 40 ppm	ICP-OES
Lead (Pb)	<= 1.3 ppm	ICP-OES
Arsenic (As)	<= 1 ppm	ICP-OES

5. Mode of Action

Carmoisine is an anionic monoazo dye. Its chromophoric system — based on the azo linkage (N=N) conjugated with the naphthalene ring systems — absorbs visible radiation at approximately 516 nm, producing bright red coloration in aqueous solution. The two disodium sulfonate groups (SO3Na) provide high water solubility and anionic character, enabling electrostatic interaction with cationic substrates and proteins. Lightfastness is moderate — final products should be protected from prolonged UV exposure. The dye distributes uniformly in aqueous food matrices and is stable under typical thermal processing conditions (up to approximately 100°C at neutral pH).

6. Typical Applications

Sector	Application
Food & Beverage	Beverages, confectionery, bakery products, dairy formulations, sauces, processed foods — in accordance with FSANZ and Codex MPLs
Pharmaceutical	Colouring of capsule shells, syrups, oral liquids, and topical formulations
Cosmetics	Creams, personal care products, colour cosmetics where E122 is permitted
Laboratory	Culture media colourant, visual tracers, formulation studies, QC reference standards, biological staining

7. Literature References

1. European Food Safety Authority (EFSA). (2009). Scientific Opinion on the re-evaluation of Carmoisine (E 122) as a food additive. EFSA Journal, 7(11), 1332. doi:10.2903/j.efsa.2009.1332
2. Food Standards Australia New Zealand (FSANZ). Food Additives — Carmoisine (E122). FSANZ Food Standards Code, Standard 1.3.1.
3. Griffiths, J. (1984). Colour and constitution of organic molecules. In Developments in the Chemistry and Technology of Organic Dyes. Blackwell Scientific, Oxford.
4. Gupta, S.S., et al. (2012). Analytical methods for determination of synthetic food colours. Food Chemistry, 132(3), 1143–1150.

Carmoisine is not approved for food use in the United States. This product is supplied for food, pharmaceutical, cosmetic, and laboratory use where permitted. AuSaMicS Pty Ltd accepts no liability for misuse outside its intended application.