PATENT BLUE V

Prepared at the 31st JECFA (1987), published in FNP 38 (1988) and in FNP 52 (1992). Metals and arsenic specifications revised at the 59th JECFA (2002). No ADI was allocated at the 26th JECFA (1982)

SYNONYMS CI Food Blue 5, Patent Blue 5; CI (1975) No. 42051; INS No. 131

DEFINITION Consists essentially of the calcium or sodium salt of 2-[(4-diethylaminophenyl)(4-diethylimino-2,5-cyclo-hexadien-1-ylidene)methyl]-4-hydroxy-1,5-benzenedisulfonate and subsidiary colouring matters together with water, sodium chloride and/or sodium sulfate and/or calcium chloride and/or calcium sulfate as the principal uncoloured components.

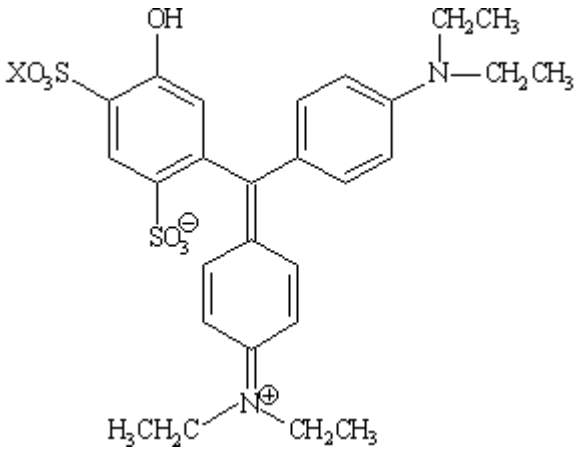
May be converted to the corresponding aluminium lake in which case only the *General Specifications for Aluminium Lakes of Colouring Matters* apply.

Chemical names Calcium or sodium salt of 2-[(4-diethylaminophenyl)(4-diethylimino-2,5-cyclohexadien-1-ylidene)methyl]-4-hydroxy-1,5-benzene-disulfonate; calcium or sodium salt of [4-[alpha-(4-diethyl-aminophenyl)-5-hydroxy-2,4-disulfonato-phenylmethylidene]-2,5-cyclo-hexadien-1-ylidene] diethylammonium hydroxide inner salt (alternative name).

C.A.S. number 3536-49-0

Chemical formula Calcium salt: $C_{27}H_{31}N_2O_7S_2{}^1/_2Ca$
Sodium salt: $C_{27}H_{31}N_2O_7S_2Na$

Structural formula



where
X = ½Ca for the calcium salt
X = Na for the sodium salt

Formula weight Calcium salt: 579.72
Sodium salt: 582.67

Assay Not less than 85% total colouring matter

DESCRIPTION Blue powder or granules

FUNCTIONAL USES

Colour

CHARACTERISTICS

IDENTIFICATION

Solubility (Vol. 4)	Soluble in water; slightly soluble in ethanol
Identification of colouring matters (Vol. 4)	Passes test

PURITY

Loss on drying at 135º (Vol. 4)	Not more than 15% together with chloride and sulfate calculated as sodium salts
Water insoluble matter (Vol. 4)	Not more than 0.5%
Lead (Vol. 4)	Not more than 2 mg/kg Determine using an atomic absorption 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, “Instrumental Methods.”
Chromium (Vol. 4)	Not more than 50 mg/kg
Subsidiary colouring matters (Vol. 4)	Not more than 2% Use the following conditions: Developing solvent: No. 2 Height of ascent of solvent front: approximately 17 cm
Organic compounds other than colouring matters	Not more than 0.5% of sum of 3-Hydroxybenzaldehyde, 3-Hydroxybenzoic acid, 3-Hydroxy-4-sulfonato benzoic acid and N,N-Diethylaminobenzene sulfonic acids See description under TESTS
Leuco base (Vol. 4)	Not more than 4%
Unsulfonated primary aromatic amines (Vol. 4)	Not more than 0.01% calculated as aniline
Ether extractable matter (Vol. 4)	Not more than 0.2%

TESTS

PURITY TESTS

Organic compounds other than colouring matters (Vol. 4)	Proceed as directed under *HPLC* using the following conditions: Instrument: High Performance Liquid Chromatograph fitted with a gradient elution accessory

Detector: A UV HPLC detector recording absorbances at 254 nm
Column: 250 x 4 mm (Kartusche). Li Chrosorb RP 18, 7 µm
Solvent:
(a) Acetate buffer pH 4.6: water (10% w/v) - the acetate buffer is prepared from 1 M sodium hydroxide, 1 M acetic acid and water (5:10:35)
(b) Acetonitrile

Gradient

Min	*% (a)*	*% (b)*	*Flow rate (ml/min)*
0	85	15	1
12	85	15	1
25	20	80	2
28	20	80	2
40	85	15	1

METHOD OF ASSAY

Proceed as directed under *Total Content by Titration with Titanous Chloride* (see Volume 4), using the following:

Weight of sample: 1.3-1.4 g
Buffer: 15 g sodium hydrogen tartrate
Weight (D) of colouring matters equivalent to 1.00 ml of 0.1 N $TiCl_3$: 28.98 mg of the calcium salt, 29.13 mg of sodium salt.