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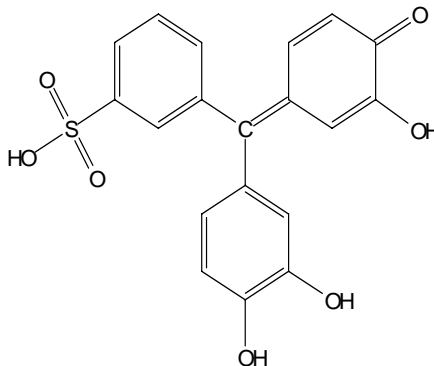
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Product Information

PYROCATECHOL VIOLET

Product No. **P 7884**

Replacement for Product Code 10,173-7



CAS NUMBER: 115-41-3

SYNONYMS: Catechol violet; 3,3',4'-trihydroxyfuchson-2"-sulfonic acid; catechol sulfonephthalein; PV

PHYSICAL DESCRIPTION:

Appearance: Green to brown powder

Molecular formula: $C_{19}H_{14}O_7S$

Molecular weight: 386.38

$E^{mM}(565nm) = 27.2$ (Conc. HCl)¹

$pK_a = 1, 7.82, 9.76, 11.7^4$

STORAGE / STABILITY AS SUPPLIED:

The product is stable at room temperature at least 5 years if kept dry.

SOLUBILITY / STABILITY OF SOLUTIONS:

Pyrocatechol violet is soluble in water as high as 60 mg/mL, in ethylene glycol monomethyl ether at 60 mg/mL or in ethanol at 8 mg/mL.² Sigma routinely tests solubility at 10 mg/mL in water (occasionally with heating) to obtain a red to brown solution.¹

SOLUBILITY / STABILITY OF SOLUTIONS: (continued)

The color of the solution is significantly pH-dependent: at pH <0, the solution is red; in the range 2-8, the solution is yellow; around pH 8, the solution is violet, and in base, it is red-violet.⁴ Solutions are stable at room temperature for months at near neutral or acid pH. However strongly alkaline solutions are very unstable and lose color quickly, probably due to oxidation.^{4,5}

GENERAL USAGE:

Pyrocatechol violet (PV) is a sulfone phthalein dye made from condensing two moles of pyrocatechol with one mole of o-sulfobenzoic acid anhydride. PV has indicator properties and forms complexes with metal ions, making it useful as a chelometric reagent.² As it chelates metals, a generally blue to blue-violet complex forms. Cationic surfactants, such as cetylammmonium bromide (CTAB, Sigma product number H5882) significantly shift the absorbance maximum to higher wave lengths due to the formation of a higher ligand-to-metal ratio. Negatively charged chelates can be extracted into an immiscible solvent as an ion-pair.⁴

In a spectrophotometric assay for tin (sensitive to 1 to 10 µg Sn) the absorbance maximum for PV alone was 450 nm, shifting to 550 nm for the tin(IV)-PV complex, and to 660 nm with CTAB as sensitizer.³

In EDTA titrations, PV has been used as an endpoint indicator for a number of metals; specific conditions have been reported in table form.^{4,5}

REFERENCES:

1. Sigma quality control.
2. Green, F.J., *Sigma-Aldrich Handbook of Stains, Dyes and Indicators*, p. 596.
3. Corbin, H.B., *Analytical Chem.*, 45, 534-537 (1973). Rapid and selective pyrocatechol violet method for tin.
4. *CRC Handbook of Analytical Reagents*, 4. Cheng, K.L. Ueno, K. and Imamura, T., eds., (1982) p. 35-43.
5. Scharzenbach, G., *Complexometric Titrations* (Methuen & Co., NY, 1957), pp. 42-45, 74-76, 93-94.

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