

Product Information Sheet

M5781

Methylene Blue, Trihydrate

Synonyms: Basic Blue 9; Tetramethylthionine chloride; CI# 52015
 CAS: 7220-79-3
 Formula: $C_{16}H_{18}ClN_3S \cdot 3H_2O$
 Mol. Weight: 373.9

Properties

Form: Powder/Crystals
 Appearance: Dark Green
 Solubility: Soluble in Water
 Application: Biological Stain
 Storage Temp: Room Temperature
 Typical Working Concentration: Varies with Application, should be determined by end user

Application Notes

Methylene blue is a cationic dye with a maximum absorption of approximately 670 nm (Canens 1988). It has an array of uses and has been applied in biological sciences as a stain since the early 1900s. Often, methylene blue is used in solution as a redox indicator by changing from a blue solution to colorless when in the presence of a reducing agent (Prasetyo & Mufakhir 2011). It can also be substituted for crystal violet in the Gram staining method.

It has also been used as a nuclear stain, or for differentiating pectin compounds. In plants, the protoplast and lignified walls will stain a bright blue and the pectin compounds will stain a violet blue. In diatoms and other simple organisms, Stevens (1916) suggests a 0.001% solution for staining the nuclei.

Seeds can be stained using a 1% methylene blue solution to determine the anatomy of the seed (Orozco-Segovia *et al.* 2007).

References

- Cenens J and R. A. Schoonheydt (1988). Visible spectroscopy of methylene blue on hectorite, laponite b, and barasym in aqueous suspension. *Clay and Clay Minerals* 36 (3): 214-224.
- Orozco-Segovia A, Márquez-Guzmán J, Sánchez-Coronado ME, Gamboa de Buen A, Baskin JM, Baskin CC (2007) Seed cha *Opuntia tomentosa* (Cactaceae, Opuntioideae). *Annals of Botany* 99: 581–592.
- Prasetyo E, FR Mufakhir (2011) Redox titration of iron using methylene blue as indicator and its application in ore analysis. *Asian Transactions on Basic & Applied Sciences* 1(5).
- Stevens, WC (1916) Plant anatomy from the standpoint of the development and functions of the tissues, and handbook of microtechnic. P. Blakiston's Son & Co. Philadelphia, PA.

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