## Product Information Sheet

# M5781
# Methylene Blue, Trihydrate

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|---|---|
| Synonyms: | Basic Blue 9; Tetramethylthionine chloride; CI# 52015 |
| CAS: | 7220-79-3 |
| Formula: | $C_{16}H_{18}ClN_3S \bullet 3H_2O$ |
| 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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