

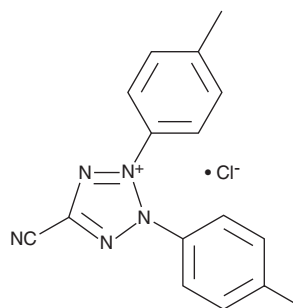
# PRODUCT INFORMATION



## 5-Cyano-2,3-di-(p-tolyl)tetrazolium (chloride)

Item No. 15926

**CAS Registry No.:** 90217-02-0  
**Formal Name:** 5-cyano-2,3-bis(4-methylphenyl)-2H-tetrazolium, monochloride  
**Synonyms:** CTC, Cyanotolyl Tetrazolium Chloride  
**MF:** C<sub>16</sub>H<sub>14</sub>N<sub>5</sub> • Cl  
**FW:** 311.8  
**UV/Vis.:** λ<sub>max</sub>: 299 nm  
**Ex./Em. Max:** 510-560/590 nm  
**Supplied as:** A crystalline solid  
**Storage:** -20°C  
**Stability:** ≥4 years



Information represents the product specifications. Batch specific analytical results are provided on each certificate of analysis.

### Laboratory Procedures

5-Cyano-2,3-di-(p-tolyl)tetrazolium (chloride) (CTC) is supplied as a crystalline solid. A stock solution may be made by dissolving the CTC in the solvent of choice, which should be purged with an inert gas. CTC is soluble in organic solvents such as ethanol, DMSO, and dimethyl formamide. The solubility of CTC in these solvents is approximately 3, 0.25, and 0.1 mg/ml, respectively.

Further dilutions of the stock solution into aqueous buffers or isotonic saline should be made prior to performing biological experiments. Ensure that the residual amount of organic solvent is insignificant, since organic solvents may have physiological effects at low concentrations. Organic solvent-free aqueous solutions of CTC can be prepared by directly dissolving the crystalline solid in aqueous buffers. The solubility of CTC in PBS, pH 7.2, is approximately 1 mg/ml. We do not recommend storing the aqueous solution for more than one day.

### Description

CTC is a redox-sensitive tetrazolium salt used primarily to detect metabolic activity in microorganisms.<sup>1-3</sup> This membrane-permeable indicator is readily taken up by living cells and reduced by respiratory activity to produce a red fluorescent, water-insoluble formazan crystal (absorption maximum at 450 nm).<sup>3,4</sup> While the oxidized salt is nonfluorescent, the reduced formazan can be evaluated using a standard rhodamine filter set (excitation: 510-560 nm; emission > 590 nm), although optimum excitation requires a blue 420 nm excitation filter.<sup>1,2</sup> For flow cytometry, a 480 nm excitation laser combined with detection in the red region is suitable.

### References

- Rodriguez, G.G., Phipps, D., Ishiguro, K., *et al.* Use of a fluorescent redox probe for direct visualization of actively respiring bacteria. *Appl. Environ. Microbiol.* **58(6)**, 1801-1808 (1992).
- Caruso, G., Mancuso, M., and Crisafi, E. Combined fluorescent antibody assay and viability staining for the assessment of the physiological states of *Escherichia coli* in seawaters. *J. Appl. Microbiol.* **95(2)**, 225-233 (2003).
- Sieracki, M.E., Cucci, T.L., and Nicinski, J. Flow cytometric analysis of 5-cyano-2,3-ditolyl tetrazolium chloride activity of marine bacterioplankton in dilution cultures. *Appl. Environ. Microbiol.* **65(6)**, 2409-2417 (1999).
- Bhupathiraju, V.K., Hernandez, M., Landfear, D., *et al.* Application of a tetrazolium dye as an indicator of viability in anaerobic bacteria. *J. Microbiol. Methods* **37(3)**, 231-243 (1999).

#### WARNING

THIS PRODUCT IS FOR RESEARCH ONLY - NOT FOR HUMAN OR VETERINARY DIAGNOSTIC OR THERAPEUTIC USE.

#### SAFETY DATA

This material should be considered hazardous until further information becomes available. Do not ingest, inhale, get in eyes, on skin, or on clothing. Wash thoroughly after handling. Before use, the user must review the complete Safety Data Sheet, which has been sent via email to your institution.

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