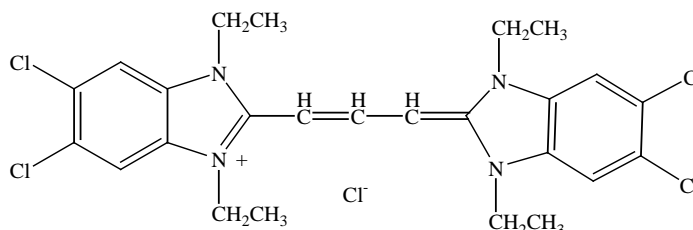


## PRODUCT AND SAFETY DATA SHEET

**PRODUCT NAME:** **JC-1, chloride salt** (full chemical name: 5,5',6,6'-tetrachloro-1,1',3,3'-tetraethylbenzimidazolylcarbocyanine Chloride)

**CATALOG NUMBER:** **70011**

**MOLECULAR INFORMATION:**  $C_{25}H_{27}Cl_5N_4$   
Mwt: 561.5

**PROPERTIES:**

**Color & Form** Red solid  
**Purity**  $\geq 99\%$  by HPLC  
**Solubility** Soluble in DMSO (1mg ~ 5mg/mL in DMSO)  
 $\lambda_{ex}/\lambda_{em}$  See "Applications" below  
**Extinction Coefficient ( $\epsilon$ )** 190,000  $M^{-1}cm^{-1}$  (505 nm; in MeOH)

**STORAGE & HANDLING:**

Store at 4°C. Protect from light, especially when in solution.

**APPLICATION:**

JC-1 is a mitochondrial dye that stains mitochondria in living cells in a membrane potential-dependent fashion. JC-1 monomer is in equilibrium with so-called J-aggregates, which are favored at higher dye concentration or higher mitochondrial membrane potential. The monomer JC-1 has green fluorescence ( $\lambda_{em} = 527$  nm), while the J-aggregates have red fluorescence ( $\lambda_{em} = 590$  nm). Therefore, it has been possible to use fluorescence ratioing technique to study mitochondrial membrane potentials. JC-1 is particularly useful for apoptosis studies. In apoptotic cells, the dye stays in the cytoplasm and fluoresces green. It has also been applied in **high throughput drug screening** applications.  $\epsilon$  (MeOH) = 190,000.

Biotium offers JC-1 in both chloride salt (**70011**) and iodide salt (**70014**) forms. Both forms have identical spectral properties. The iodide form has been used in most of the publication. However, some researchers may prefer the chloride form since  $Cl^-$  is the most prevalent anion in biological systems.

Ref: 1) Smiley, S.T., et al. *Proc. Natl. Acad. Sci.* **88**, 3671(1991); 2) Reers, M., et al. *Biochemistry* **30**, 4480(1991).

**References on use for apoptosis studies:** 1) "Use of Flow Cytometry techniques in Studying Mechanisms of Apoptosis in Leukemic Cells", A.M. Gorman, et al. *Cytometry* **29**, 97(1977); 2) "JC-1, but Not DiOC6(3) or Rhodamine 123, is a Reliable Fluorescent Probe to Assess Changes in Intact Cells: Implications for Studies on Mitochondrial Functionality during Apoptosis." S. Salvioi, et al. *FEBS Lett.* **411**, 77(1997); 3) "Functional Assay of Multidrug Resistant Cells Using JC-1, a Carbocyanine Fluorescent Probe." J.M. Kuhnle, et al. *Leukemia*, **11**, 1147(1997).

**TOXICITY:**

Unknown

**FIRST AID:**

Potentially harmful. Avoid prolonged or repeated exposure. Avoid getting in eyes, on skin, or on clothing. Wash thoroughly after handling. If eye or skin contact occurs, wash affected areas with plenty of water for 15 minutes and seek medical advice. In case of inhaling or swallowing, move individual to fresh air and seek medical advice immediately.

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