

**PRODUCT INFORMATION**

Date; 12-12-2015

**Chemical name; Dextran, 3-amino-9-[2'-[[4''-(ethylamino)-4''-oxo-butyl]-N-methyl-carbamoyl]phenyl]-6-azanylidene-xanthene-4,5-disulfonic acid, salt**

**Product name; Atto488-dextran**

**CAS number; N/A**

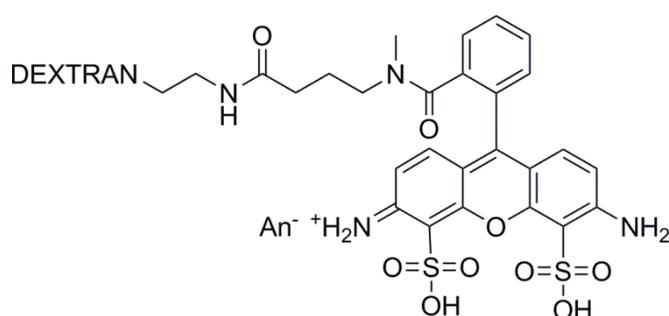
**Abbreviations;**

Weight average molecular weight; Mw  
 Degree of substitution; DS  
 GPC; Gel permeation chromatography

**SYNTHESIS and STRUCTURE**

Atto-dextran are synthesised from well-characterized dextran fractions derived from *Leuconostoc mesenteroides* via the succinimidyl-derivative of Atto488. After purification from non-bound dye, the products are controlled for Mw, solubility, DS, free dye and loss on drying.

The products are designated by the approximate molecular weights of the dextran fractions used. Thus, for example, the product Atto-dextran 4 has a molecular weight of approx. 4000. The actual molecular weight is determined by GPC. This value is supplied with the Certificate of Analysis. The dextran used is from *Leuconostoc mesenteroides* B-512F which is essentially a linear  $\alpha$ -(1-6)-linked glucose chain with however a low percentage (2-5%) of  $\alpha$ -(1-3) branches distributed along the chain. The dextran fractions used are from Mw of 4000 to 150000 and are carefully controlled by GPC, optical rotation, absorbance and other control parameters.



**Fig. 1.** Structural representation of Atto-488-dextran

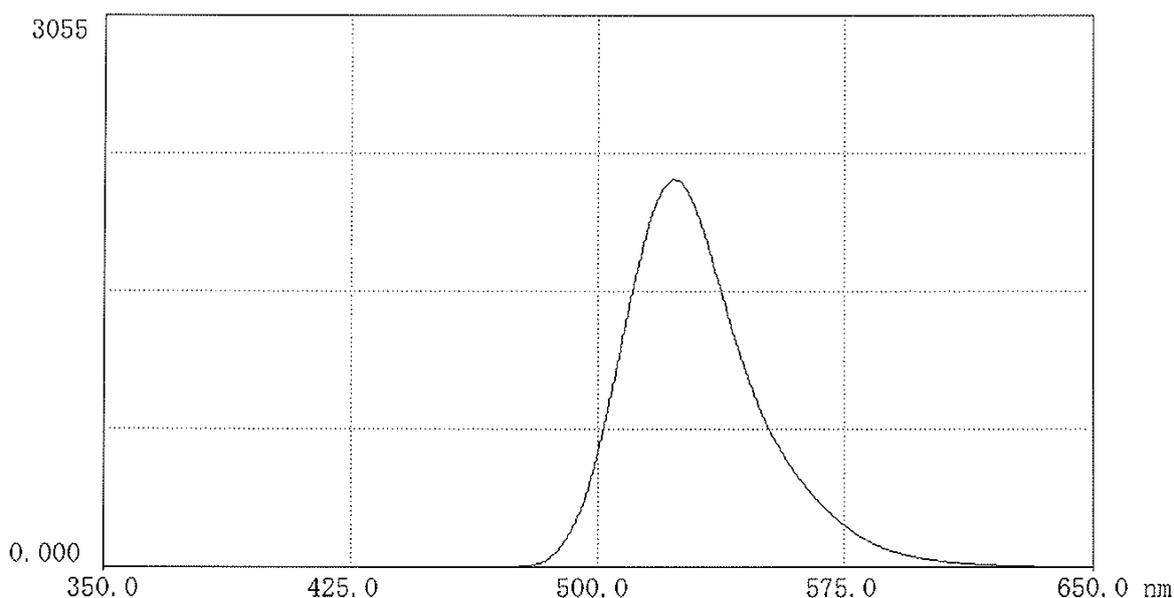
**PHYSICAL PROPERTIES**

Atto-dextran are orange powders which are freely soluble in water or electrolyte solutions. The product has a pronounced amphoteric character by virtue of the presence of both

sulfonate and amino moieties. Atto-dextrans are insoluble in most organic solvents, for example, ethanol, methanol, acetone, chloroform, ethyl acetate etc.

### SPECTRAL PROPERTIES

Atto 488-dextran used has an absorbance maximum at 502 nm (in borate buffer, pH 9.0) and an emission wavelength of 524 nm. The Atto-dye has a somewhat higher quantum yield than fluorescein and displays a better photo-stability. The DS lies between 0.001-0.008.



**Fig. 2** Fluorescence scan of Atto-488-dextran 4 (in borate buffer, pH 9.0). Excitation 502 nm.

### STABILITY

No prospective stability studies on Atto-dextrans have been performed. However the structural properties of the dextran carrier and those of the chemical linkage of the Atto-dye to the dextran chain would suggest good stability of the product. It is recommended that the products are stored in air-tight containers in the dark. Atto-dextran may be stored at ambient temperatures.

### APPLICATIONS

Atto488-dextrans are primarily used for studying permeability and transport in cells and tissues. An added benefit is that measurements of the fluorescence provide quantitative data on the permeability of healthy and diseased tissues. Such studies can be performed in real time by intravital fluorescence microscopy. The technique offers high sensitivity and concentrations down to 1 $\mu$ g/ml can be detected in tissue fluids.

### REFERENCES

New substance. At present, no literature reference to applications is available.

