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Product Information

AURAMINE O

Product Number **85,653-3**

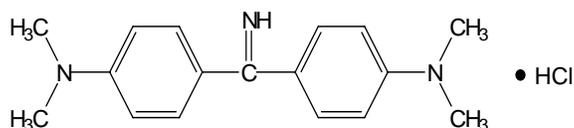
Store at Room Temperature

Replacement for Product Number **A 1396**

CAS #: 2465-27-2

Synonyms:¹ C.I. 41000; Basic Yellow 2; Canary yellow; Pyoktaninum aureum; 4,4'-(imidocarbonyl)bis(N,N-dimethylaniline)monohydrochloride

Product Description



Appearance: Yellow powder with orange-brown cast

Molecular formula: $C_{17}H_{21}N_3 \cdot HCl$

Molecular weight: 303.8

spectral data: $\lambda_{exc} = 438 \text{ nm}$ (water);

$\lambda_{em} = 505 \text{ nm}$.² The absorbance spectrum has two peaks: 432 nm and 370 nm in water.³

Auramine O usually contains dextrin or other diluents that are added to standardize dye content. A9655 has been approved by the BSC (Biological Stain Commission).

Used alone, Auramine O colors many materials a golden yellow. In combination with other dyes, it creates or enhances blues or reds.³ The quantum yield of this fluorescent dye depends on solvent viscosity; in 95% ethanol or 60% sucrose it is 87 and 10 times higher, respectively, than in water.²

Several procedures using auramine O as a fluorochrome are reported:⁵

- used with rhodamine B, causing acid-fast organisms to fluoresce.

- used with acridine orange, showing acid-fast organisms and fungi, mycobacteria. (Auramine O is reportedly specific for mycolic acid)
- used as a Schiff reagent, causing DNA in nuclei to fluoresce yellow-green.
- used with safranin O chloride to stain spores in bacterial cultures.

A solution of Auramine O in 0.1 M sodium phosphate buffer has no detectable fluorescence. However, the dye forms a complex with horse liver alcohol dehydrogenase; in the presence of very low concentrations of the enzyme, an intense fluorescence at 523 nm is observed (excitation at approx. 440-450 nm). It did not form similar complexes with sixteen other proteins tested.⁶

This product has been synthesized by heating 4,4'-bis(dimethylamino)benzophenone with ammonium chloride. It readily converts to the precursor, with the release of ammonia, when it is subjected to acid or water hydrolysis ($\sim 60 \text{ }^\circ\text{C}$).³

Preparation Instructions

Sigma tests solubility in ethanol with heating. At 1 mg/mL, a clear bright yellow solution is obtained. At 10 mg/mL, it does not dissolve entirely in ethanol, even with heating and sonication.⁴ Variation in dye content will affect solubility in water or ethanol. This product is reported to be soluble in water at 10 mg/mL.³

Solutions are expected to be stable several months at 2-8 °C (light-protected)^{5a}, but fresh dye solutions are recommended, since stored solutions show a rapid quenching on exposure to ultraviolet light.^{5b}

Storage/Stability

When stored at room temperature, this product has a shelf-life of four years.

References

1. *H.J. Conn's Biological Stains*, 9th ed. (Williams and Wilkins, 1977), R.D. Lillie, ed., p. 238-239.

2. *Methods in Enzymology*, 32, 230 (1974), "Fluorescent Probes".
3. Green, Floyd J., *Sigma-Aldrich Handbook of Stains Dyes and Indicators*, p. 103-104.
4. Sigma quality control.
5. *Staining Procedures*, 4th ed. (Williams and Wilkins, 1981) G. Clark, ed., a) p. 382-384; b) p. 391; 51-52, 59-61.
6. Conrad, R.H. et al., *Biochem.*, 9, 1540-1546 (1970).

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