

Product Information

Bilirubin

Product Number **B4126**
Storage Temperature $-20\text{ }^{\circ}\text{C}$

CAS Number: 635-65-4

Product Description

Molecular Formula: $\text{C}_{33}\text{H}_{36}\text{N}_4\text{O}_6$
Molecular Weight: 584.66
Extinction Coefficient:
 $E^{1\%} = 1020$ (453 nm, CHCl_3)
 $E^{\text{mM}} = 60$ (453 nm)

Bilirubin is the principal pigment of bile and constituent of many biliary calculi. As the major end-product of the biological breakdown of heme, bilirubin is the chromophore responsible for coloration in various forms of jaundice. Bilirubin is also found in blood serum, where it exists in four major forms: unconjugated bilirubin, the monoglucuronide, the diglucuronide, and albumin-bound bilirubin.¹

Unconjugated bilirubin is the same as free bilirubin, and conjugated bilirubin (water soluble bilirubin) is the same as direct bilirubin. The α -isomer is unconjugated, the β -isomer is monoconjugated, and the γ -isomer is bisconjugated.

This product consists of 3 different α -isomers. This product is free bilirubin (not counting trace impurities of the β - and γ -isomers, which are not determined).

The three different α isomers of bilirubin have different extinction coefficients.^{2,3}

Isomer III: $E^{\text{mM}} = 65.2$ (455-458 nm)
Isomer IX: $E^{\text{mM}} = 62.6$ (453-455 nm)
Isomer XII: $E^{\text{mM}} = 52.5$ (449-453 nm)

The greenish solution shows a red fluorescence in ultraviolet light.

Precautions and Disclaimer

For R&D use only. Not for drug, household, or other uses.

Preparation Instructions

This product is tested for solubility at 0.1 mg/mL in chloroform. Bilirubin is also soluble in benzene, chlorobenzene, carbon disulfide, acids, alkalis; slightly soluble in alcohol and ether; practically insoluble in water.¹ One publication states preparation of a bilirubin stock solution in chloroform at 1 mg/mL.⁴ Another publication reports preparation of a bilirubin stock solution in 0.1 M NaOH at 13.41 mg/mL.⁵

A 0.002% aqueous solution can be prepared as follows:

- First suspend 1 mg in 1 mL of water.
- Add approximately 1 drop of 2 M NaOH to dissolve the product.
- Bring to a final volume of 50 mL with 200 mM Tris-HCl, pH 8.4.

A separate publication reports preparation of a bilirubin stock solution by a similar method, with distilled water, followed by addition of 2 M NaOH, and then addition of HCl for final pH adjustment.⁶

Storage/Stability

Solutions in chloroform are stable in the dark, but alkaline solutions rapidly oxidize.²

References

1. *The Merck Index*, 11th ed., Entry# 1235.
2. *Data for Biochemical Research*, 3rd ed. (Dawson, R.M.C. et al., eds.). Oxford University Press (New York, NY), pp. 220-221 (1986).
3. McDonagh, A.F., and Assisi, F., *FEBS Lett.*, **18(2)**, 315-317 (1971).
4. Berlec, A., and Štrukelj, B., *J. Vet. Diagn. Invest.*, **26(4)**, 521-526 (2014).
5. Soligard, H.T. et al., *Pediatr. Res.*, **67(6)**, 614-618 (2010).
6. Lakovic, K. et al., *J. Cereb. Blood Flow Metab.*, **34(11)**, 1837-1847 (2014).

ALF,RXR,GCY,AD,MAM 05/20-1