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Product Information

Xanthine
BioUltra

Catalog Number **X4002**

CAS RN 69-89-6
Synonyms: 2,6-Dihydroxypurine
Molecular Formula: $C_5H_4N_4O_2$
Molecular Weight: 152.1
pK_a:[1] 7.7, 11.9
λ_{max}:[1] 277 nm (pH = 10)
Extinction Coefficient:[1] E_{mM} = 9.3 (pH = 10)

Product Description

Xanthine is a catabolic product of purine nucleotide metabolism, produced from several different precursors in the purine metabolic pathway, such as:

- Deamination of guanine by guanine deaminase
- Conversion of hypoxanthine by xanthine oxidoreductase

Xanthine oxidase converts xanthine to uric acid.

Natural sources of xanthine or its derivatives include animal organs, yeast, potatoes, coffee beans, and tea.[2] Xanthine and xanthine oxidase are used to generate superoxide radicals used to measure the activity of superoxide dismutase.[3]

Various publications have cited use of this product in different systems, including:

- Yeast culture[4]
- Human cell line culture[5]
- Recombinant viruses cloned as bacterial artificial chromosomes in *E. coli*[6]

Trace elemental analyses have been performed on the BioUltra xanthine. The Certificate of Analysis (CofA) provides lot-specific results. BioUltra xanthine is for applications which require tight control of elemental content.

Precautions and Disclaimer

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

Preparation Instructions

Xanthine is soluble in sodium hydroxide solutions and in acidic solutions. It is soluble in 1 M NaOH (50 mg/mL), with sonication for less than 5 minutes, yielding a clear solution. It is slightly soluble in water (1 g/14.5 L, 16 °C) and in ethanol.

Storage/Stability

The decomposition of solutions of xanthine in either 0.5 M H_2SO_4 or in 10 M NaOH is <10% after one hour at 100 °C.[7] Stock solutions of at least 10 mM xanthine in NaOH can be stored at 2-8 °C for one week.[8]

References

1. *Specifications and Criteria for Biochemical Compounds*, Third Edition. National Academy of Sciences (Washington, DC), p. 182 (1972).
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5. Pillay, N. *et al*., *Cancer Cell*, **35(3)**, 519-533 e8 (2019).
6. Borst, E.-M. *et al.*, *Methods Mol. Biol.*, **256**, 221-239 (2004).
7. *Data for Biochemical Research*, 3rd ed. (Dawson, R.M.C. *et al*., eds.). Oxford University Press (Oxford, UK), pp. 94-95 (1986).
8. Heinz, F., and Reckel, S., in *Methods Of Enzymatic Analysis*, Vol. III, 3rd ed. (Bergmeyer, H.U., ed.). Verlag-Chemie (Weinheim, Germany), pp. 210-216 (1983).

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