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Product Information

Sodium orthovanadate

Catalog Number **S6508**
Store at Room Temperature

CAS RN 13721-39-6
Synonyms: sodium vanadate, sodium vanadium oxide

Product Description

Molecular formula: Na_3VO_4
Formula weight: 183.91

Vanadate inhibits a number of enzymes, most likely by acting as a phosphate analogue.[1,2] Enzymes inhibited include:

ATPases[1]

alkaline and acid phosphatases[3]

protein-phosphotyrosine phosphatases[4]

At the concentration required for maximum inhibition, vanadate may have effects that limit its application in cell culture.[1]

Precautions and Disclaimer

This product is for R&D use only, not for drug, household, or other uses. Please consult the Material Safety Data Sheet for information regarding hazards and safe handling practices.

Preparation Instructions

Vanadium is a transition metal, which exists in aqueous solutions in the 4+ and 5+ oxidation states, resulting in vanadyl and vanadate ionic species, respectively. Vanadyl, metavanadate, orthovanadate, and decavanadate will be interconverted depending on the concentration, pH, and redox potential of the solution.

Sodium orthovanadate stock solutions (1 mM or higher, as desired) may be prepared in water adjusted to pH ~10. To ensure the presence of vanadate monomers, boil the solution until translucent and readjust the pH to 10. The precise concentration of a dilute aqueous solution (pH 10.5) may be determined using the molar extinction coefficient (ε^M = 3,550 at 260 nm). Orange color observed before boiling is due to decavanadate. At pH 10, decavanadate will slowly depolymerize over several hours to the colorless monovanadate; however, the process is accelerated by boiling.[4]

Storage/Stability

Store the product at room temperature.

Prepared stock solutions may be stored in flint glass at room temperature for several months. Solutions can also be divided into aliquots, stored in plastic, and frozen.

References

1. Gordon, P.B., and Seglen, P.O., in Proteolytic Enzymes: A Practical Approach, Beynon, R.J., and Bond, J.S., eds., IRL Press, (Oxford, UK: 1989) p. 207.
2. Seargeant, L.E., and Stinson, R.A., Biochem. J., **181**, 247-250 (1979).
3. Cox, R.P. et al., Biochem. J., **105**,155-161 (1967).
4. Gordon, J.A., Methods in Enzymology, **201**, 477 (1991).

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