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TECHNICAL DATA SHEET 119A

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Osmium Tetroxide, 99.95%

Packaging:

All our osmium tetroxide is packaged in pre-scored unlabeled ampoules. Each ampoule of solution is packaged with an ampoule cracker.

Background and Properties:

Although the material dissolves slowly in water; ~7.24% at 25°C solubility, it is 518 times more soluble in CCl₄ (carbon tetrachloride).

- Volatilizes readily at room temperature.
- Vapor pressure is given by $\log p = 10,000/4.57T + 5.49$

A 1% solution of OsO₄ in distilled water is 0.04 mol/L.¹ Aqueous solutions of OsO₄ are hypotonic. To increase osmolality of the final fixing solution, electrolytes or non-electrolytes are used.¹

Preparation of OsO₄ Solutions:

Polysciences' ampoules of OsO₄ are offered in both crystalline and solution form. For those wishing to have aqueous solutions available in fresh uncontaminated form, we suggest our vials containing 4% aqueous OsO₄. This can be reduced to 2% or 1% OsO₄ by adding the 4% solution to an appropriate volume of the desired buffer. A more economic form is our high purity crystalline OsO₄ which can be easily dissolved.

A stock solution of Osmium for buffering is prepared from crystalline as follows: The sealed ampoule and the storage bottle are thoroughly cleaned and rinsed. Gloves should be worn at this step not only for handling purposes, but also to prevent any organic contamination of the ampoule by direct skin contact.

The 2% OsO₄ is made by opening the ampoule containing 1.0 gram OsO₄ and placing the ampoule into 50 ml of glass-distilled water in a clean storage vessel. This solution is stable and keeps at 4°C for many months if kept clean and tightly closed. OsO₄ crystals will dissolve more rapidly using a magnetic stirrer, shaker, or sonicator. Suitable buffer systems can be mixed in any proportion with a stock solution of osmium tetroxide to give the desired concentration of fixative and buffer.

Osmium tetroxide in carbon tetrachloride solution has been used to fix algae. The fixative diffuses from the non-aqueous to the aqueous phase and provides a condition similar to vapor fixation but at a higher concentration of OsO₄.²

Precautions and First Aid:

OsO₄ vapors and solutions stain skin black and are very toxic and damaging to the eyes, skin and respiratory tract. Do not breathe vapors. The effects of contact may be delayed. This material is a strong oxidizer. Wear goggles and gloves when working with OsO₄. Handle material under a hood.

Eyes: Flush with plenty of water for at least 15 minutes. Get prompt medical attention.

Skin: Wash with diluted sodium bisulfite solution, followed by soap and water.

Inhalation: Remove patient to fresh air; if not breathing, give artificial respiration. Get prompt medical attention. Remove contaminated clothing.

Should any of our materials fail to perform to our specifications, we will be pleased to provide replacements or return the purchase price. We solicit your inquiries concerning all needs for life sciences work. The information given in this bulletin is to the best of our knowledge accurate, but no warranty is expressed or implied. It is the user's responsibility to determine the suitability for his own use of the products described herein, and since conditions of use are beyond our control, we disclaim all liability with respect to the use of any material supplied by us. Nothing contained herein shall be construed as a recommendation to use any product or to practice any process in violation of any law or any government regulation.

Ordering Information:

Cat.#	Description	Size
0223A	Osmium tetroxide, crystalline 99%	5x1g
0223B	Osmium tetroxide, crystalline 99%	10x1g
0223C	Osmium tetroxide, crystalline 99%	10x1/2g
0223D	Osmium tetroxide, crystalline 99%	10x1/4g
0972A	Osmium tetroxide, 4% microfiltered solution	20x2ml amp
0972B	Osmium tetroxide, 4% microfiltered solution	5x10ml amp
0972C	Osmium tetroxide, 4% microfiltered solution	20x10ml amp
23310	Osmium tetroxide, 2% microfiltered solution	10x2ml amp
23311	Osmium tetroxide, 2% microfiltered solution	10x5ml amp

To Order:

In The U.S. Call: 1-800-523-2575 • 215-343-6484

In The U.S. FAX: 1-800-343-3291 • 215-343-0214

In Germany Call: (49) 6221-765767

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References:

1. Hayat, M.A., *Fixation for Electron Microscopy*, Academic Press, 148 (1981), available from Polysciences, Inc. (Cat. No. 17459)
2. Hobbs, M.J., *Stain Tech.*, **44**, 217 (1969).

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