

PROCEDURE:

Preparing Osmium Tetroxide (OsO₄) from Crystalline Form

Are you looking for an easy SOP for preparing osmium tetroxide (OsO₄) from crystalline form? Then look no further! Osmium tetroxide is a rare chemical used as a fixative and a staining agent for biological samples examined under electron microscopes. Osmium tetroxide is typically colorless or pale yellow, though it can also be a white crystalline solid.

Remember to follow all safety requirements when handling OsO₄.

1. Determine the final concentration, vehicle and volume of Os solution desired.

NOTE: When making Os from a crystal, the entire crystal must be used at the same time.

2. Determine the mass of OsO₄ crystal in the sealed ampoule. They are typically offered in weights of 1, 2, or 4 grams.

3. Using an appropriate size storage container, with a tight sealing top, rinse thoroughly to ensure cleanliness.

4. Measure and add volume of vehicle to the clean storage container.

5. Wearing gloves, eye protection, and in the fume hood, remove ampoule from container and wipe clean using a lint free cloth.

NOTE: Paper particles react and reduce OsO₄, making it ineffective.

6. Using an ampoule breaker, snap off the pre-scored top and drop both pieces into the storage container. Use a pipette to ensure that the liquid fills the ampoule.

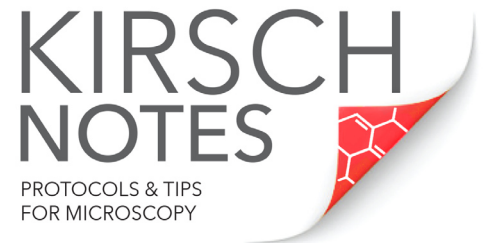
7. Secure the lid, wrap well with parafilm, and store in air tight box in the fume hood for four (4) hours.

NOTE: Step 7 takes at least 24 hours to dissolve into solution.

NOTE: To decrease dissolving time, try one of the following methods:

A. Place the container in a sonicator, in the fume hood.

B. Rotate the ampoule under hot water to melt the crystal. When the crystal melts, remove from the hot water and continue turning the ampoule while a thin coating forms on the inside, then proceed from **step 6** above.



EMS Catalog supplies used

OsO₄, Crystalline

1g	Cat. No. 19110 (10 x 1g)
2g	Cat. No. 19112 (5 x 2g)
4g	Cat. No. 19114 (5 x 4g)

Ampoule Breakers

Cat. No. **60600, 60605-04, 60607**

Parafilms

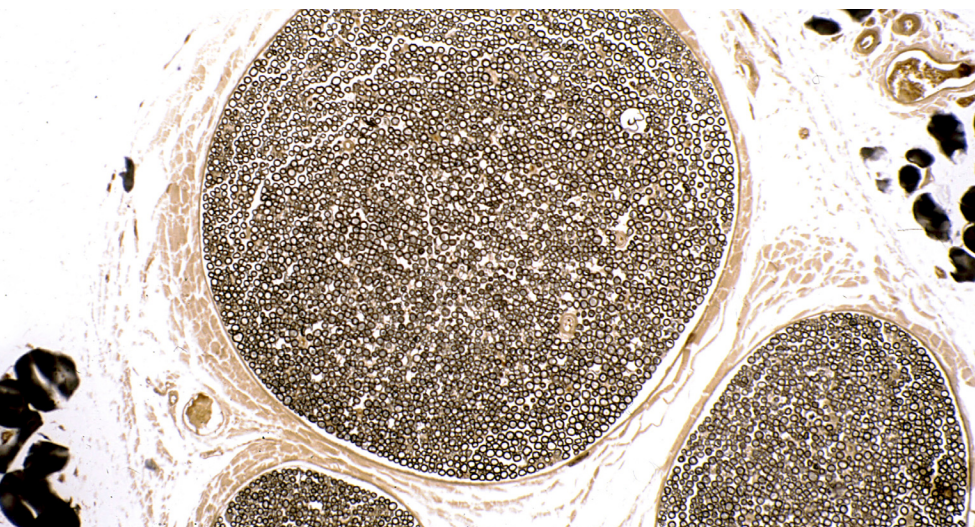
Cat. No. **70990, 70991, 70994-01** series

Examples of Common Dilutions

1 gram into 25 ml = 4%
2 grams into 50 ml = 4%
1 gram into 50 ml = 2%
2 grams into 100 ml = 2%

Cross section of a nerve fascicle fixed in osmium tetroxide. Each small black circle inside the fascicle corresponds to a myelinated nerve fiber.

Image credit: Jose Luis Calvo.



Electron Microscopy Sciences | 1560 Industry Road | Hatfield, PA 19440
P: 215-412-8400 | F: 215-412-8450 | info@emsdiasum.com

© 2018 Electron Microscopy Sciences

