

**EM Stains****Ammonium Molybdate EM**

(Molybdic acid, ammonium salt). M.W. 1235.86  
 $(\text{NH}_4)_6\text{Mo}_7\text{O}_{24}\cdot 4\text{H}_2\text{O}$   
 Negative stain  
 J. Cell Biol. 20, 350 (1964)  
 Muscatello, U., et al, J. Ultrastruct., Res, 52, 2 (1975)

**A013 100g**  
**A013/1 25g**

**Bismuth Metal, granulated**

Used to prepare an EM stain for nucleic acids.  
 Albersheim & Killias, J. Cell Biol., 17, 93 (1963)  
 M.A. Hayat, "Basic Techniques for TEM" p. 184 (1986)

**B009 100g**  
**B010 25g**

**Bromophenol Blue**

(3',3'',5',5''-Tetrabromophenolsulfonphthalein).  
 M.W.669.99  $\text{C}_{19}\text{H}_{10}\text{Br}_4\text{O}_5\text{S}$   
 Used to prepare mercuric bromophenol blue, a protein stain for EM.

**B013 10g**

**Cadmium Iodide**

M.W. 366.21  $\text{CdI}_2$   
 Used for negative staining.

**C001 50g**

**Ferric Chloride EM - hexahydrate**

$\text{FeCl}_3\cdot 6\text{H}_2\text{O}$  M.W. 270.30  
 Used to prepare positive and negative colloidal iron solutions as cell surface stains for EM.  
 Gasic et al., Lab invest., 18, 63 (1968)  
 Blanquet, P.R. and Loiez, A. J. Histochem. Cytochem., 22, 368 (1974)

**F001 100g**

**Indium Trichloride EM – anhydrous**

$\text{InCl}_3$  M.W. 221.18  
 A metal stain for nucleic acids.  
 Watson & Aldridge J. biophys. Biochem. Cytol., 11, 257 (1961)

**I001 10g**

**Lanthanum Nitrate EM**

$\text{La}(\text{NO}_3)_3\cdot 6\text{H}_2\text{O}$  M.W. 433.03 Purity > 99%  
 Used to prepare colloidal lanthanum hydroxide-containing fixatives for the demonstration of intercellular spaces.  
 Revel & Karnovsky, J. Cell Biol., 33, C7 (1967)  
 Goodenough & Revel, J. Cell biol., 45, 272 (1970)  
 Stain Tech. (USA) 50, 171 (1975)  
 J.Ultrastruct., 60, 348: 59, 126 (1966)

**L023 50g**  
**L001 25g**

**Lead Acetate EM**

$\text{Pb}(\text{CH}_3\text{COO})_2\cdot 3\text{H}_2\text{O}$  M.W. 379.33  
 Metal stain for TEM. Used for in-block and thin sections staining.  
 Stain Technology 40, 69 (1965)  
 Kushida, H., J. Electron Micro., 15, 93 (1966)

**L002 250g**  
**L020 100g**  
**L021 25g**

**Lead Citrate**

$\text{Pb}(\text{C}_6\text{H}_5\text{O}_7)_2\cdot 3\text{H}_2\text{O}$  M.W. 1053.82 Purity > 99%  
 For the preparation of a simplified lead stain. The most widely used metal stain for ultra thin sections.  
 Reynolds, E. S., J. Cell biol., 17, 208 (1963)  
 Venable, J.H. and Coggeshall, R., J. Cell Biol., 25, 407 (1965)  
 J. Ultrastruct Res., 52, 120 (1975)

**L003 50g**  
**L018 25g**  
**L036 100g**

**Lead Nitrate EM**

Pb(NO<sub>3</sub>)<sub>2</sub> M.W. 331.20 Purity > 99%  
Metal stain for ultra thin sections.  
J. Histochem., Cytochem., 11, 2, (1963)  
Sato, T., J. Electron Micro., 16, 733 (1976)

**L004**      **500g**  
**L005**      **100g**  
**L019**      **25g**

**Lead Tartrate**

(Tartaric acid Lead (11) salt), C<sub>6</sub>H<sub>4</sub>O<sub>6</sub>Pb, M.W. 355.26

**L006**      **50g**  
**L022**      **25g**

**Methenamine**

(Hexamethylenetetramine). (Hexamine) C<sub>6</sub>H<sub>12</sub>N<sub>4</sub>  
M.W. 140.19

Used in conjunction with silver nitrate for staining  
carbohydrates



**M006**      **100g**  
**M006/1**      **50g**

**Methylamine Tungstate**

An excellent negative stain. Unlike phosphotungstic  
acid it does not damage virus particles and it is  
consequently valuable for staining delicate  
viruses. The material wets grid films and specimens  
very well.

Faberge A.C. and Oliver R.M. (1974) Microscopie 20,  
242 for application to plant viruses.

**M019**      **1g**

**Phosphomolybdic Acid EM**

(dodeca-Molybdophosphoric acid).  
H<sub>3</sub>PO<sub>4</sub>.12MoO<sub>3</sub>.24H<sub>2</sub>O M.W. 2257.62  
Positive and negative stain.

**P010**      **100g**  
**P011**      **25g**

**Phosphotungstic Acid EM**

(Tungstophosphoric acid). H<sub>3</sub>PO<sub>4</sub>.12WO<sub>3</sub>.H<sub>2</sub>O  
M.W. 2880.17

Positive and negative stain

Holt, J. Ultrastruct. Res., 68, 58 (1979)

J. Ultrastruct Res., 45, 183 (1973)

Farragiana, T. and Marinozzi, V. J. Cell Biol., 50, 550  
(1979)

Used as a fixative

Issidorides, M. R., and Kasorchis, T. J.  
Histochem., 73, 21 (1981)

**P012**      **100g**  
**P013**      **25g**

**Potassium Dichromate**

K<sub>2</sub>Cr<sub>2</sub>O<sub>7</sub> M.W. 294.18

Metal stain

**P023**      **500g**

**Platinum Blue TEM Stain**  
**An Alternative to Uranyl Acetate**  
(see also TAAB EM Stain 336)

TOXIC



TAAB Platinum Blue EM Stain can be used as an alter-  
native to Uranyl acetate in thin section post-staining  
whenever UA is not available. Good results can be  
achieved with double staining with Pb in many in-  
stances. Whilst not radioactive and supplied as a solu-  
tion to minimise handling, there are toxicity issues to be  
aware of. Used with dilutions of 25:1 and as high as  
100:1.

Platinum Blue has also been used to stain fibroblast  
cells grown in electrospun polymer scaffolds and im-  
aged using Scanning Electron Microscopy. Good con-  
trast on the cells was achieved compared with samples  
that were gold sputter coated. See:

Yusuf et al, BioTechniques, Vol. 57, No. 3, September  
2014, pp. 137-141

**S473 1ml ampoule**

**Ruthenium Red EM**

Positive staining for EM, see also marker section  
Van Norstrand Reinhold Co., New York (1975) pp  
163-165

Luft, J.H. J. Cell Biol., 23, 54A (1964)

Zacks et al., J. Histochem. Cytochem., 21, 703  
(1973)

Kadar et al., J. Pathol., 108, 275 (1973)

**R003**      **1g**  
**R004**      **100mg**

**TAAB EM Stain 336  
Uranyl Acetate Alternative**

A new, non hazardous, non radioactive stain to replace Uranyl acetate. TAAB EM Stain 336 is a mixture of lanthanum salts, samarium triacetate ( $\text{Sm}(\text{CH}_3\text{COO})_3$ ) and gadolinium triacetate ( $\text{Gd}(\text{CH}_3\text{COO})_3$ ). Dilute the original TAAB EM Stain 336 4x with distilled water.

*Please ask for data sheet*

New versatile staining reagents for biological TEM that substitute for Uranyl acetate Nakakoshi M, Nishioka H and Katayama E, J of Electron Microscopy 60(6), 401-407 (2011).

**S472 25ml Concentrate**

**Silver Nitrate EM**

$\text{AgNO}_3$  M.W. 169.89 Store away from light  
Swift, J. A. J.R. Microsc. Soc., 88, 449 (1968)  
Rambourg, A. J. Histochem. Cytochem., 15, 409 (1967)  
Ribi, W.A., Stain Technol., 51, 13 (1976)

**S004 25g**

**Sodium Silicotungstate EM**

Negative stain.  
Valentine & Pereira, J. Molec. Biol., 13, 13 (1965)  
Wilcox, Ginsberg & Anderson, J. Exp. Med., 118, 307 (1963)

**S019 100g**  
**S020 25g**

**Sodium Tungstate EM**

$\text{Na}_2\text{WO}_4 \cdot 2\text{H}_2\text{O}$  M.W. 329.86 Assay: > 99%  
Negative stain  
Stockert, J.C. Biol. Cellul., 29, 211 (1977)  
Takeuchi, I.K. J. Electron Micro., 30, 150 (1981)

**S023 50g**

**Thiocarbohydrazide EM**

$(\text{NH}_2\text{NH})_2\text{CS}$  M.W. 106.15 Purity >99%  
Used in techniques for demonstration of polysaccharides, and for the staining of membranes.  
Seligman et al., J. Cell Biol., 30, 424 (1966)  
Seligman et al., J. Histochem. Cytochem., 13, 629 (1965)  
Thiery, J.P. J. Microscopie., 6, 987 (1967)  
Lo, H.K. et al., J. Histochem. Cytochem., 35, 393 (1987)

**T009 1g**

**Thiosemicarbazide EM**

$\text{NH}_2\text{CSNHNH}_2$  M.W. 91.14 Purity >98%  
References see Thiocarbohydrazide

**T010 25g**

**Uranyl Acetate EM Powder**

Produced from depleted uranium Activity <.078Gbg  
 $\text{UO}_2(\text{OCOCH}_3)_2 \cdot 2\text{H}_2\text{O}$  M.W. 424.15

A universal EM stain for thin sections, en-block staining and negative staining. Stain Technology 49, 305 (1974)  
J. Ultrastruct. Res., 61, 21 (1977)

**U001 50g**  
**U006 500g**  
**U007 25g**  
**U008 10g**

**Uranyl Acetate EM Solution**

A solution of Uranyl Acetate EM Powder in distilled water suitable for negative staining of virus, particles etc, en-bloc staining and for positive staining of sections.

**U001/S/1/10** Uranyl acetate 1% 10ml  
**U001/S/1/25** Uranyl acetate 1% 25ml  
**U002/S/2/10** Uranyl acetate 2% 10ml  
**U002/S/2/25** Uranyl acetate 2% 25ml

**Uranyl Zinc Acetate**

Used as a Laboratory reagent in the determination of sodium concentrations in solutions

**U013** Uranyl zinc acetate 5gm

**Uranyl Magnesium Acetate**

M.W. 502.13 A clean-working uranyl stain  
Frasca & Parks, J. Cell. Biol., 25, 157 (1965)

**U003 50g**  
**U011 10g**

**Uranyl Nitrate EM**

M.W. 502.13 Used as a negative stain. Valentine & Home in the Interpretation of Ultrastruct. Academic Press, New York p263, (1962)

In tissue samples it stabilises nucleic acid and cell membrane. Solutions are more stable than uranyl acetate and react primarily with negatively charged groups in the absence of phosphate ions. Also used in the manufacture of generator protactinium.

**U004 25g**  
**U004/P 1g** (for Protactinium Generator)

**Vanadyl Sulphate**

(Vanadium (IV) oxide sulphate).  $\text{VOSO}_4 \cdot 5\text{H}_2\text{O}$   
M.W. 253.08

Used with ammonium molybdate for the preparation of vanadomolybdate stain.

Callahan & Homer, J. Cell Biol., 20, 350 (1964)

**V001 25g**