

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 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

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(NO₃)₂ 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), C₆H₄O₆Pb, M.W. 355.26

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

Methenamine

(Hexamethylenetetramine). (Hexamine) C₆H₁₂N₄
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).
H₃PO₄.12MoO₃.24H₂O M.W. 2257.62
Positive and negative stain.

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

Phosphotungstic Acid EM

(Tungstophosphoric acid). H₃PO₄.12WO₃.H₂O
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

K₂Cr₂O₇ M.W. 294.18

Metal stain

P023 **500g**

Platinum Blue TEM Stain**An Alternative to Uranyl Acetate**

(see also TAAB EM Stain 336)



TOXIC



CORROSIVE

TAAB Platinum Blue EM Stain can be used as an alternative 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 instances. Whilst not radioactive and supplied as a solution 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 imaged using Scanning Electron Microscopy. Good contrast 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

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