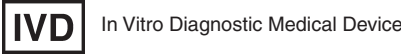


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# Microscopy

## Mayer’s hemalum solution

for microscopy



This “Mayer's hemalum solution - for microscopy” is used for human-medical cell diagnosis and serves the histological and clinico-cytological investigation of sample material of human origin. It is a staining solution that when used together with other in vitro diagnostic products from our portfolio makes target structures (by fixing, embedding, staining, counterstaining, mounting) in histological and clinico-cytological specimen materials, for example histological sections of e.g. the kidney, muscle tissue, heart, or lung, evaluable for diagnostic purposes.

The hematoxylin and eosin (H&E) staining method is the method most frequently used for the staining of histology material. This Mayer's hemalum solution is used in the hematoxylin-eosin (H&E) overview staining procedure, a method routinely used in histology.

### Principle

The hematoxylin and eosin (H&E) staining method is the method most frequently used for the staining of histology material. The staining mechanism is a physico-chemical process.

In the first step, the positively charged nuclear dye (hematoxylin) binds to the negatively charged phosphate groups of the nucleic acid of the cell nucleus. The nuclei will be dyed dark blue to dark violet.

The second step is the counterstaining with negatively charged anionic xanthene dye (eosin Y, eosin B, or erythrosine B). This binds to the positively charged plasma proteins. Cytoplasm and intercellular substances are stained pink to red, while erythrocytes will appear with yellow to orange color.

Two methods can be distinguished. With the progressive method staining is carried out to the desired intensity, followed by the bluing step in tap water to make colour permanent. With the regressive method the material is over-stained and the excess of staining solution is removed by acid rinsing steps, followed by the bluing step to make colour permanent. The structures of nuclei are more differentiated and better visible by the regressive method.

### Sample material

Sections of formalin fixed, paraffin embedded tissue (3 - 4 µm thick paraffin sections) or cryo sections, as well as clinico-cytological material like urine sediment, sputum, smears from fine needle aspiration biopsies (FNAB), rinses, imprints, effusions are used as starting material.

### Reagents

Cat. No. 109249 Mayer's hemalum solution for microscopy				500 ml, 1 l, 2.5 l
<b>Also required:</b>				
Cat. No.	109844	Eosin Y-solution 0.5% aqueous for microscopy	1 l, 2.5 l	
or				
Cat. No.	102439	Eosin Y-solution 0.5%, alcoholic for microscopy	500 ml, 2.5 l	
or				
Cat. No.	117081	Eosin Y solution 1%, alcoholic for microscopy	1 l	
Cat. No.	100063	Acetic acid (glacial) 100% anhydrous for analysis EMSURE® ACS,ISO,Reag. Ph Eur	1 l, 2.5 l	
Cat. No.	100316	Hydrochloric acid 25% for analysis EMSURE®	1 l, 2.5 l	

### Sample prepration

The sampling must be performed by qualified personnel.

All samples must be treated using state-of-the-art technology.

All samples must be clearly labeled.

Suitable instruments must be used for taking samples and their preparation. Follow the manufacturer's instructions for application / use.

Deparaffinize and rehydrate sections in the conventional manner.

### Reagent preparation

The Mayer's hemalum solution used for staining is ready-to-use, dilution of the solution is not necessary and merely produces a deterioration of the staining result and stability.

**It is recommended to filter the solution prior to its use.**

**Eosin Y-solution 0.5 %, aqueous (Cat. No. 109844)**  
**Eosin Y-solution 0.5 %, alcoholic (Cat. No. 102439)**  
**Eosin Y-solution 1 %, alcoholic (Cat. No. 117081)**

For the intensification of the eosin staining, e.g. 1.0 ml of glacial acetic acid needs to be added to 500 ml working solution.

The acidified working solution is sufficient for approx. 750 specimens; it should, however, be renewed after 14 days at the latest.

When using the alcoholic Eosin Y solutions, a shorter alcohol series (starting with ethanol 96 % and a reaction time of just 10 seconds) must be used in the individual staining procedures.

### Hydrochloric acid 0.1 %, aqueous

For preparation of approx. 100 ml solution mix:

Hydrochloric acid 25 %	0.4 ml
Distilled water	100 ml

## H&E staining

### Procedure

#### Regressive staining of paraffin sections

##### Staining in the staining cell

Deparaffinize histological slides in the conventional manner and rehydrate in a descending alcohol series.

The slides should be allowed to drip off well after the individual staining steps, as a measure to avoid any unnecessary cross-contamination of solutions.

The stated times should be adhered to to guarantee an optimal staining result.

Slide with paraffin section	
Distilled water	1 min
Mayer's hemalum solution	3 min
Hydrochloric acid 0.1 %, aqueous	2 sec
Running tap water	3 - 5 min
Eosin Y-solution 0.5 %, aqueous or Eosin Y-solution 0.5 %, alcoholic* or Eosin Y-solution 1 %, alcoholic*	3 min
Running tap water	30 sec
Ethanol 70 %	1 min
Ethanol 70 %	1 min
Ethanol 96 %	1 min
Ethanol 96 %	1 min
Ethanol 100 %	1 min
Ethanol 100 %	1 min
Xylene or Neo-Clear®	5 min
Xylene or Neo-Clear®	5 min
Mount the Neo-Clear®-wet slides with Neo-Mount® or the xylene-wet slides with e.g. Entellan® new and cover glass.	

\* When using the alcoholic Eosin Y solutions, a shorter alcohol series (starting with ethanol 96 % and a reaction time of just 10 seconds) must be used in the individual staining procedures.

After dehydration (ascending alcohol series) and clarification with xylene or Neo-Clear®, histological samples can be mounted with water-free mounting agents (e.g. DPX new, Entellan® new, Neo-Mount®) and a cover glass and can then be stored.

The use of immersion oil is recommended for the analysis of stained slides with a microscopic magnification >40x.

### Result

Cell nuclei	dark blue to dark violet
Cytoplasm, intercellular substances	pink to red
Erythrocytes	yellow to orange

## Trouble-shooting

### Weak staining of cytoplasm and connective tissue structures

For the intensification of the eosin staining, an acidified working solution (using e.g. glacial acetic acid) should be used.  
The use of a non-acidified solution will result in weakly stained cytoplasm and connective tissue structures, hence it is advisable to follow the specified Reagent preparation protocol to achieve an optimal staining result.  
The acidified working solution is sufficient for approx. 750 specimens; it should, however, be renewed after 14 days at the latest.

## Technical notes

The microscope used should meet the requirements of a medical diagnostic laboratory.  
When using histoprocessor systems or automatic staining systems, please follow the instructions for use supplied by the supplier of the system and software.  
Remove surplus immersion oil before filing.

## Diagnostics

Diagnoses are to be made only by authorized and trained personnel.  
Valid nomenclatures must be used.  
Further tests must be selected and implemented according to recognized methods.  
Suitable controls (e.g. ISOSLIDE® H&E, Cat. No. 1.02755.0001) should be conducted with each application in order to avoid an incorrect result.

## Storage

Store the Mayer's hemalum solution - for microscopy at +15 °C to +25 °C.  
Dye precipitation in the staining solutions might occur with storing temperatures below +15 °C. In that case the bottles should be put into a water bath of approx. 60 °C for 2 - 3 hours. The solutions should be filtered before use.

## Shelf-life

The Mayer's hemalum solution - for microscopy can be used until the stated expiry date.  
After first opening of the bottle, the contents can be used up to the stated expiry date when stored at +15 °C to +25 °C.  
The bottles must be kept tightly closed at all times.

## Capacity

1500 - 2500 stainings / 500 ml

## Additional instructions

### For professional use only.

In order to avoid errors, the application must be carried out by qualified personnel only.  
National guidelines for work safety and quality assurance must be followed.  
Microscopes equipped according to the standard must be used.

## Protection against infection

Effective measures must be taken to protect against infection in line with laboratory guidelines.

## Instructions for disposal

The package must be disposed of in accordance with the current disposal guidelines.  
Used solutions and solutions that are past their shelf-life must be disposed of as special waste in accordance with local guidelines. Information on disposal can be obtained under the Quick Link "Hints for Disposal of Microscopy Products" at [www.microscopy-products.com](http://www.microscopy-products.com). Within the EU the currently applicable REGULATION (EC) No 1272/2008 on classification, labelling and packaging of substances and mixtures, amending and repealing Directives 67/548/EEC and 1999/45/EC, and amending Regulation (EC) No 1907/2006 applies.

## Auxiliary reagents

Cat. No.	100063	Acetic acid (glacial) 100% anhydrous for analysis EMSURE® ACS,ISO,Reag. Ph Eur	1 l, 2.5 l
Cat. No.	100316	Hydrochloric acid 25% for analysis EMSURE®	1 l, 2.5 l
Cat. No.	100579	DPX new 500 ml non-aqueous mounting medium for microscopy	
Cat. No.	100869	Entellan® new for cover slipper for microscopy	500 ml
Cat. No.	100974	Ethanol denatured with about 1 % methyl ethyl ketone for analysis EMSURE®	1 l, 2.5 l
Cat. No.	102439	Eosin Y-solution 0.5%, alcoholic for microscopy	500 ml, 2.5 l
Cat. No.	102755	ISOSLIDE® H&E control slides with reference tissue for the overview staining in histology	25 tests
Cat. No.	104699	Immersion oil for microscopy	100-ml dropping bottle, 100 ml, 500 ml
Cat. No.	107961	Entellan® new rapid mounting medium for microscopy	100 ml, 500 ml, 1 l
Cat. No.	108298	Xylene (isomeric mixture) for histology	4 l
Cat. No.	109016	Neo-Mount® anhydrous mounting medium for microscopy	100-ml dropping bottle, 500 ml
Cat. No.	109843	Neo-Clear® (xylene substitute) for microscopy	5 l
Cat. No.	109844	Eosin Y-solution 0.5% aqueous for microscopy	1 l, 2.5 l
Cat. No.	117081	Eosin Y solution 1%, alcoholic for microscopy	1 l

## Hazard classification

Cat. No. 109249  
Please observe the hazard classification printed on the label and the information given in the safety data sheet.  
The safety data sheet is available on the website and on request.

## Main components of the products

Cat. No.	109249
C.I. 75290	4.4 g/l
Al <sub>2</sub> (SO <sub>4</sub> ) <sub>3</sub> x 18 H <sub>2</sub> O	28 g/l
C <sub>6</sub> H <sub>8</sub> O <sub>7</sub> x H <sub>2</sub> O	1 g/l
1 l =	1.05 kg

## Other IVD products

Cat. No.	102480	Eosin-Phloxine solution, alcoholic for microscopy	500 ml, 1 l
Cat. No.	105174	Hematoxylin solution modified acc. to Gill III for microscopy	500 ml, 1 l, 2.5 l
Cat. No.	105175	Hematoxylin solution modified acc. to Gill II for microscopy	500 ml, 2.5 l
Cat. No.	109033	Schiff's reagent for microscopy	500 ml, 2.5 l



Consult instructions for use



Manufacturer



Catalog number



Batch code



Caution, consult accompanying documents



Use by YYYY-MM-DD



Temperature limitation

Status: 2016-10-20

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