

# MAY-GRUENWALD

CE IVD *In vitro* diagnostic medical device

Classified acc. to Regulation (EU) 2017/746 - Class A device

## Polychromatic Romanowsky powder dye for blood smears and bone marrow staining

### INSTRUCTIONS FOR USE

<b>BASIC UDI number</b>	385889212HPC30707PDYETD		
<b>EMDN code</b>	W01030707		
<b>REF</b>	<b>Catalog number</b>	<b>Mass</b>	<b>UDI-DI number</b>
MG-P-25		25 g	03858888820947
MG-P-50		50 g	03858888820954



#### Intended use and test principle

Histology, cytology and other related scientific disciplines study the microscopic anatomy of tissues and cells. In order to achieve a good tissue and cellular structure visualization, the samples need to be stained in a correct manner. May-Gruenwald powder dye belongs to the group of Romanowsky dyes. It is comprised of eosin (an acid dye which stains the cytoplasm red to orange) and methylene and its oxidation products (basic dye which stains nuclei blue to purple). It is used for staining smears of peripheral blood and bone marrow and cytological samples (aspirates and swabs). It is often combined with Giemsa stain into May-Gruenwald – Giemsa (MGG) staining method because it enables precise differentiation of cellular structures.

#### Product description

- **MAY-GRUENWALD** – Polychromatic Romanowsky powder dye for preparation of staining solutions for use in u hematology and cytology

#### Additional reagents and materials that can be used in this method

- VitroGnost slides and coverslips for use in histopathology and cytology
- BioGnost's immersion oils, such as Immersion oil, Cedarwood oil, Immersion oils types A and C, FF, 37 or Tropical Grade
- BioGnost's Buffer tablets of pH value 6.8 or 7.2
- Fixatives such as BioGnost's Histanol M
- Methanol (CH<sub>3</sub>OH)

#### Preparation of staining solutions

##### May-Gruenwald solution:

- Dissolve 0.25 g May-Gruenwald powder dye in 100 mL of methanol while heating in a water bath to 60 °C. Always close the container/bottle/vial containing methanol and the dye to prevent evaporation
- Stir for 1 hour, leave to set for 10 minutes, and then filter.

##### Diluted May-Gruenwald solution

- Dilute 30 ml of Giemsa powder dye solution with 150 mL of distilled/demineralized water and 20 mL of buffer solution

##### Buffer solution, pH 6.8

- Dissolve 1 buffer tablet pH 6.8 in 1 liter of distilled/demineralized water while stirring

During the staining process it is possible to use pH 6.8 or pH 7.2 buffer solution or a combination of pH 6.8 and 7.2 buffer solutions. The results of the staining procedure may vary in a shift toward the red or blue color spectrum.

#### NOTE

Apply the reagent so that it completely covers the smear.

#### An example of histological or cytological sample staining procedure

##### A1) May-Gruenwald staining procedure for hematological smears and cytological samples by immersion

1.	Air dry (fix) the blood smear or cytological sample	
2.	Immerse the fixed sample into May-Gruenwald solution	3 min
3.	Immerse the sample into diluted May-Gruenwald solution	6 min
4.	Rinse with buffer solution, pH 6.8 through 2 exchanges	2 exchanges, 1 min each
5.	Air dry the slide	

##### A2) May-Grünwald staining procedure for hematological smears and cytological samples on a staining rack

1.	Air dry (fix) the blood smear or cytological sample	
2.	Apply 1 mL of May-Gruenwald solution on the slide	3 min
3.	Without pouring out May-Gruenwald solution, add 1 mL of buffer solution, pH 6.8 on the slide and mix gently. Let it react	6 min
4.	Rinse with buffer solution, pH 6.8	
5.	Air dry the slide	

#### Result (using buffer solution of pH 6.8)

Nuclei – pink – purple  
 Lymphocyte plasma – blue  
 Monocyte plasma – grey – blue  
 Neutrophil granules – light purple  
 Eosinophil granules – red to red – brown  
 Basophil granules – dark purple to black  
 Thrombocytes – purple  
 Erythrocytes – red

## Note

The described procedure is just one of possible staining protocols. Depending on personal requests and standard laboratory operating procedures, sample processing and staining can be carried out according to other protocols.

## Limitations

This product is intended for professional laboratory use for diagnostic purposes only. Deviations in the preparation of the staining solution and/or in the staining protocol may cause differences in the staining results described in these Instructions for Use.

## Sample preparation and diagnostics

Use only appropriate instruments for collecting and preparing the samples. Process the samples using modern technology and mark them clearly. Be sure to follow the manufacturer's handling instructions. To avoid errors, preparation of the staining solution, staining and diagnosis can only be carried out by qualified personnel. Use a microscope equipped according to medical diagnostic laboratory standards. To avoid an incorrect staining result, it is advised to use a positive and negative control.

If a serious incident occurs during use of this product or as a result of its use, please report it to the manufacturer or authorized representative and competent authority.

## Safety at work and environmental protection

Handle the product in accordance with occupational health and environmental protection guidelines. Used and expired solutions must be disposed of as special waste following national guidelines. Reagents used in this procedure can pose a danger to human health. The examined tissue samples are potentially infectious, and it is necessary to take the measures needed to protect human health in accordance with the guidelines of good laboratory practice. It is mandatory to read and act according to the information and warning signs printed on the product label and in the Safety Data Sheet, which is available on request.

## Storage, stability, and shelf life

Upon receipt, store the product in a dry place and well-closed original packaging at a temperature of +15 °C to +25 °C. Do not freeze or expose to direct sunlight. After first opening, the product can be used until the specified expiry date, if stored properly. The expiration date is printed on the product label.

## References

1. Conn, J. (1977): *Biological Stains*, 9<sup>th</sup> ed. Baltimore: Williams and Wilkens Co.
2. Carson, F. L. (2007): *Histotechnology*, 2<sup>nd</sup> ed. Singapore
3. Romanowsky, D.L. (1891), St. Petersburg Med. Wshr. 16, pp. 297-302, 307-315.
4. Lillie, R.O. (1969): *Biological Stains*, 8th Edition, Williams & Wilkins Co., Baltimore, MD, pp. 350-357.

Warnings and precautions regarding the materials contained in the product:	
	<p>H302 Harmful if swallowed. H319 Causes serious eye irritation.</p> <p>P280 Wear protective gloves/protective clothing/eye protection/face protection. P301 + P312 IF SWALLOWED: call POISON CENTER/doctor if you feel unwell P308 + P313 IF exposed or concerned: get medical advice/attention. P305 + P351 + P338 IF IN EYES: carefully rinse with water for several minutes. Remove contact lenses if present and easy to do. Continue rinsing.</p>

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 Manufacturer	 Batch code	 Consult Instructions for use	 European conformity
 Date of manufacture	 Catalogue number	 Caution	 Unique device Identifier
 Use-by date	 Temperature limit	 <i>In vitro</i> diagnostic medical device	

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Version	Description / reason for change	Date
2	Revised acc. to Regulation (EU) 2017/746 - IVDR	27.02.2026.