 FORMALDEHYDE NB 4%

Fixative for use in histology
INSTRUCTIONS FOR USE

Introduction
An impeccable sample fixation is a prerequisite for a correct histological diagnosis. Tissue samples must be immersed in an optimally chosen fixative immediately after sampling, because a timely fixation will prevent autolysis, putrefaction and other unwanted cellular changes. Although there are hundreds of histological fixatives and at least tens of formaldehyde-based fixatives, neutral buffered formaldehyde solutions with a concentration range from 4% to 10% are the most commonly used fixatives, primarily because of their simple and universal application. Tissue fixation using a buffered formaldehyde solution results in forming cross-links, i.e., it forms methylene bridges between proteins, that is, it results in keeping tissue components in their in vivo relation. If fixed properly, the tissue sample can withstand additional histological tissue processing and staining. The NB 4% formaldehyde solution is 10% buffered formalin, which is the most commonly used fixative. It is suitable for fixing biotic materials, smaller tissue samples and long-term fixated samples storing. It is a colorless solution with a characteristic odor, ready for applying. Phosphate buffer with optimal molarity secures a constant pH range between 6.8 and 7.2 at 25 °C, and with additional methyl alcohol formation of formaldehyde polymers is prevented. It is a primary tissue fixative. Tissue samples can be fixated and/or stored for a longer period of time without severe hardening of tissue or formalin pigment forming in tissues, which then leads to process of removing the so-called acid hematin. It is suitable for usage in all automated devices for tissue processing, as well as for manual histological techniques. It is conveniently packaged in 1 liter bottles, 3, 5, 10 and 20 liter canisters.

Product description
• FORMALDEHYDE NB 4% - neutral buffered 4% stabilized formaldehyde solution, pH 7.0. Suitable for fixating smaller tissue samples and biopsy samples. Synonyms: neutral buffered formalin 10%, NBF 10%  
  Note: Formaldehyde NB 4% (Neutral Buffered) is a formaldehyde solution stabilized with methyl alcohol and buffered with phosphate buffer 7.0 ± 0.2. BioGnost's NB formaldehyde solutions are produced in accordance with all the EU regulations regarding in vitro diagnostic devices norms and must bear the CE marking.

Fixating guidelines
If the tissue was not properly stored or stabilized during the fixation process, or if an unsuitable fixative was used, all the subsequent procedures in tissue processing and diagnostics will be of mediocre quality or useless. If the fixative is of inferior quality, pH value over its physiological bounds, or the volume ratios between tissue and active substance in the fixative are not suitable, improper fixation can occur as well tissue processing and diagnostics will be of mediocre quality or useless. If the fixative is of inferior quality, pH value over its physiological bounds, or the volume ratios between tissue and active substance in the fixative are not suitable, improper fixation can occur as well.

Fixation time can vary from a few hours to a few weeks. That depends on the type of tissue and sample thickness, fixation temperature, tissue and fixative volume ratio, as well as the concentration of formaldehyde in the fixative.

Selection of concentration of formaldehyde and fixation time must be determined in accordance with the norms of histotechnology and professional experience. In case of fixation of a larger tissue sample or an organ, fixation can last up to 24 hours or even more. The process can be shortened by fixating the sample in an incubator or a microwave oven.

If the tissue has not been dimensioned for processing prior to fixation, after the fixation it should be processed down to thickness of 3-5 mm. The first solution to come into contact with the tissue should be 70% alcohol solution in order to avoid the subsidence of phosphate salts used to neutralize the formaldehyde solution. Fixation can be conducted using formalin fixatives containing buffers soluble in alcohol.
Preparing the sample and diagnostics

Use only appropriate instruments for collecting and preparing the samples. Process the samples with modern technology and mark them clearly. Follow the manufacturer's instructions for use. In order to avoid mistakes, the covering or mounting and staining procedure as well as diagnostics should only be conducted by authorized and qualified personnel. Use only microscope according to standards of the medical diagnostic laboratory. In order to avoid an erroneous result, a positive and negative check is advised before application.

Safety at work and environmental protection

Handle the product in accordance with safety at work and environmental protection guidelines. Used medical products and out of date products should be taken care of as a special waste in accordance with national guidelines. Chemicals used in this procedure could pose danger to human health. Tested tissue specimens are potentially infectious. Necessary safety measures for protecting human health should be taken in accordance with good laboratory practice. Act in accordance with signs and warnings notices printed on the product's label, as well as in BioGnost's material safety data sheet.

Storing, stability and expiry date

Keep Formaldehyde NB 4% in a tightly sealed original packaging at temperature between 15°C to 25°C. Do not freeze and avoid exposing to direct sunlight. Date of manufacture and expiry date are printed on the product's label.

References