



# Natt-Herricks-TIC® 1:200 (plus)

## Prefilled Single Test for Microscopic Counting of RBCs and WBCs in Blood of Avian, Reptile and Fish species.

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Product information for quantitative visual microscopic counting of erythrocytes and leukocytes in blood of avian, reptile and fish species [1, 2].

The information presented here applies exclusively to the reagent manufactured by us and cannot be extended to reagents from other manufacturers.

### Principle

Microscopic counting of erythrocytes (RBCs) and leukocytes (WBCs) in a hemocytometer (Neubauer, Neubauer "improved"). Vials are filled with 995 µL Natt-Herricks Staining Solution. 5 µL blood are used as sample (dilution 1:200).

### Reagents

#### Risks and Safety

Please observe the necessary precautions for use of laboratory reagents and body fluids. Applications should be performed by expert personnel only. Follow the national and laboratory internal guidelines for work safety and infection control. Wear suitable protective clothing and disposable gloves while handling.

It is important to ensure effective protection against infection according to laboratory guidelines. Use a capillary holder for volume capillaries.



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For additional safety information please refer to the information on the label and the corresponding Safety Data Sheet (SDS).

Download by QR-Code or link: [www.sds-id.com/100121-6](http://www.sds-id.com/100121-6)

#### Contents / Main Components

004025-...	<b>Cont.</b>	NaCl 3,88 g/L, Na <sub>2</sub> SO <sub>4</sub> 2,5 g/L, Phosphate buffer, Formalin 37 % 7,5 mL/L, C.I. 42535 0,1 g/L.
<b>004025-6100</b>	<b>KIT</b>	<b>Natt-Herricks-TIC 1:200 plus • Single test with capillaries</b>
004025-4995	1.	100×995 µL Natt-Herricks-TIC 1:200 Packed in styrofoam racks.
ETE005	2.	100× 5 µL End-to-end volume capillaries
KFK	3.	100× Chamber filling capillaries
<b>004025-6010</b>	<b>SET</b>	<b>Natt-Herricks TIC 1:200 • Small package w/o capillaries</b>
004025-4995		10× 995 µL Natt-Herricks-TIC 1:200 Packed in aluminium foil sachet.

#### Replacement pack optional

<b>TIC-CP05</b>	<b>SET</b>	<b>TIC 5 µl Capillary Pack</b>
ETE005	1.	100× 5 µL End-to-end volume capillaries
KFK	2.	100× Chamber filling capillaries

Do not use other capillaries that are not intended for this TIC test kit. Different coatings may result in incorrect results.

#### Additional required or recommended materials and equipment

009101-0100 *	100 ml	Sodium citrate solution 0.11 mol/l (anticoagulant) *
099920-0001 *		Capillary Holder *
CC-NEUI *		Counting Chamber Neubauer "improved" *
		Microscope for laboratory use

\* Available from Bioanalytic GmbH.

### Specimen

Li-Heparin-, K<sub>2</sub>- or K<sub>3</sub>-EDTA blood or capillary blood. Process samples as soon as possible. EDTA can cause hemolysis in blood from turtles and some reptiles.

If sodium citrate solution 0.11 mol/L in a dilution of 9:10 (=9+1) is used as anticoagulant (e.g. for fish), the dilution must be taken into account in the calculation.

### Reference Ranges

For species-specific reference ranges, please refer to the relevant literature.

### Procedure

No reliable information is available on the shelf life of the samples prepared as follows. This is also highly probable depending on the species.

It is therefore recommended to keep the time as short as possible.

The storage temperature of the sample dilutions should be +15 ... +20 °C.

#### Using capillary pipettes

Fill a 5 µL end-to-end volume capillary bubble-free with blood from end to end. We recommend using a capillary holder for this (see: Additionally Required or Recommended Materials). Discard the first drop of capillary blood. Remove blood adhering to the outside with a lint-free tissue without sucking blood from the capillary. Place filled volume capillary into the opened vial, close and shake vigorously until all blood is flushed from the capillary. Leave capillary in the vial. Incubate for 2...5 minutes at room temperature (18...25 °C).

Shake the vial once more before loading the counting chamber. Fill the chamber filling capillary about a quarter to half its length by capillary action and seal the upper end with your finger (wear gloves). Touch the tilted capillary (narrow angle) against the edge of the cover slip and load the counting chamber. If required, allow the cells to sediment for max. 3 minutes in a humid chamber. Count RBCs and WBCs.

#### Using a automatic micropipette

Only appropriately trained laboratory staff should use this method!

Proceed as outlined above, but use an automatic micropipette instead capillaries to add 5 µL sample to the vial. Flush pipette tip sufficiently. Use a 10...25 µL automatic micropipette to load the counting chamber.

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## Examination / Calculation

### **Erythrocytes (RBCs)**

For microscopic counting, use phase-contrast optics or bright field (lowered condenser) at 400× magnification (40× objective).

Neubauer "improved" counting chamber:

Count the RBCs in 5 group squares (each contains 16 smallest squares). Go through the group squares diagonally from one corner to the other. In the border squares, count cells up to the center line.

$$\begin{array}{l} \text{Total Cells count} \times \text{Dilution/Counting volume} = \text{Cells} / \mu\text{L} \\ \text{Total RBC count} \times 200 / 0,02 = \text{RBCs} / \mu\text{L Blood.} \\ \text{Total RBC count} \times 10'000 = \text{RBCs} / \text{Blood.} \end{array}$$

$$\text{If citrate blood 9:10 was used:} \quad \text{Result} / 0,9$$

Counting chamber Neubauer or Thoma:

Count the RBCs in 5 group squares (each contains 16 smallest squares). Use the four group squares in the corners and one in the center.

Calculation see above.

### **Leukocytes (WBCs)**

For microscopic counting, use phase-contrast optics or bright field (lowered condenser) at 100× magnification (10× objective).

Neubauer or Neubauer improved Counting chamber:

Count the WBCs in the entire grid (9 large squares, 1 mm<sup>2</sup> each). If you use the Neubauer „improved“ chamber, count cells up to the center line.

$$\begin{array}{l} \text{Total Cells Count} \times \text{Dilution/Counting volume} = \text{Cells} / \mu\text{L} \\ \text{Total WBC count} \times 200 / 0,9 = \text{WBCs} / \mu\text{L Blood.} \\ \text{Total WBC count} \times 222 = \text{WBCs} / \mu\text{L Blood.} \end{array}$$

$$\text{If citrate blood 9:10 was used:} \quad \text{Result} / 0,9$$

Rough calculation:

$$(\text{Total WBC count} + 10\%) \times 200 \quad \sim \text{WBCs} / \mu\text{L Blood.}$$

$$\text{If citrate blood 9:10 was used:} \quad \text{Result} / 0,9$$

## Notes

This product information exclusively relates to the product described in this leaflet. In particular, this product information cannot be applied to similar reagents from other manufacturers.

Periodically check for updates of this product information on our website.

### **Instruction for Use**

For professional use only.

To avoid errors, the use of qualified personnel is carried out. National guidelines for work safety and quality assurance must be followed.

The used equipment must comply with the state of technology and the laboratory requirements.

All samples and used tubes/vials must be marked clearly identifiable to exclude any confusion.

### **Support/Information service**

For methodological and technical support, please contact us by E-Mail at [support@bioanalytic.de](mailto:support@bioanalytic.de) or by fax (German, English).

Periodically check for updates of this product information on our website.

### **Waste Management**

Please observe your national laws and regulations.

Used and expired solutions must be disposed of in accordance with your local regulations.

Inside the EU, national regulations apply that are based on the current, amended version of Council directive 67/548/EEG on the approximation of the laws, regulations and administrative provisions relating to the classification, packaging and labelling of dangerous substances.

Decontaminated packaging can be disposed of as household waste or recycled, unless otherwise specified.

## Literature & Footnotes

Legends for the graphic symbols and tags used follow relevant norms or are available on our internet pages.

- [1] Natt, M.P. and C.A. Herrick, 1952. A new blood diluent for counting the erythrocytes and leucocytes of the chicken. Poul. Sci., 31: 735-738.
- [2] Campbell, Terry, W.: Avian Hematology and Cytology, 2<sup>nd</sup> ed. Iowa State University Press, Ames, IA 1995, Page 3...5.
- [3] Lea Carisch, Martina Stirn, Jean Michel Hatt, Karin Federer, Regina Hofmann-Lehmann and Barbara Riond: White blood cell count in birds: evaluation of a commercially available method.