



## Determination of the hematocrit value by centrifugation

# Determination of the hematocrit value by centrifugation

The hematocrit value indicates the volumetric proportion of red blood cells in the blood.

Centrifugation is the reference method for the determination of this value. It is used to separate the cellular components of the blood from the fluid ones and to package them tightly together. The reference method is described in DIN 58933-1<sup>1)</sup>. According to it, glass capillaries are centrifuged until the product of the minimum relative centrifugal force (RCF  $\geq 5000$ ) acting on the erythrocytes and the numerical value for the centrifuging time in minutes is at least 100 000.

## Hettich products for the determination of the hematocrit value:

**HAEMATOKRIT 200**  
hematocrit centrifuge  
Cat. No. 1801



**Rotor 24-place**  
Cat. No. 2076  
for standard  
capillaries,  
lid as evaluation  
disk incl.



## Other centrifuges accommodating hematocrit capillaries:

**MIKRO 220** Cat. No. 2200 (in rotor No. 1023)  
**MIKRO 220 R** Cat. No. 2205 (in rotor No. 1023)  
**UNIVERSAL 320** Cat. No. 1401 (in rotor No. 1650)  
**UNIVERSAL 320 R** Cat. No. 1406 (in rotor No. 1650)

## 1. Hematocrit determination with standard capillaries

Cat. No. 2074 and 1072

### a) Filling

When filling the capillary, take care not to wet the opposite end. For hematocrit determination the capillaries are filled to **approx. 75%**.

### b) Sealing

Close the dry end of the capillary with sealing putty. To do this, push the capillary vertically into the sealing putty until its rim touches the sealing putty's plate. Tilt it slightly and pull the capillary out of the putty.

### c) Centrifuging

Place the capillary with its closed end pointing outwards (towards the rim of the rotor) horizontally into the hematocrit rotor. Put the lid on the rotor.

The centrifuging time is calculated as follows:

$$\frac{100,000}{RCF} = \text{time [min]}$$

### Example:

At an RCF of 20,000 the centrifuging time is

$$\frac{100,000}{20,000} = 5 \text{ min}$$

### d) Determining the hematocrit value

Determine the hematocrit value with the evaluation disk, which is also the lid of the rotor.

<sup>1)</sup> DIN 58933-1: Haematology. Procedure for determining the volume fraction of erythrocytes (packed cell volume) in blood. Part 1: Reference method based on centrifugation. Berlin: Beuth Verlag, January 1995.

## 2. Hematocrit determination with self-sealing capillaries

Cat. No. 1071

### a) Filling

Fill the capillary at its free end and let the blood column drop towards the stopper. **The blood must make contact with the stopper!**

### b) Sealing

**Tap the capillary's sealed end three times on the laboratory bench!** This intensifies the contact between the blood and the stopper and furthers the sealing process. **It is to make sure that the stoppers seal tightly!**

c) and d) see section 1

## 3. Information on the different capillaries

Three kinds of capillaries are available. They differ in volume and diameter. For details, please see the table below.

capillary	standard	standard, mylar-coated	self-sealing and mylar-coated
Cat. No.	2074	1072	1071
total volume without stopper (µl)	49.9	73.9	
inner diameter (mm)	0.92	1.12	
total length (mm)	75	75	
contents when 75% filled (µl)	37.4	55.4	

## 4. Cleaning and disinfecting the hematocrit rotor

Not only when capillaries break (see section 5), but also when they leak, rotor and lid must be cleaned. Please proceed as follows:

- Take the holding trays carefully out of the rotor. Immerse the rotor, the lid and the holding trays in cold water, until the blood has completely come off.
- After this, place the objects in an adequate disinfectant. With regard to concentration and exposure follow manufacturers' instructions closely.
- Rinse the objects in cold water and dry them.
- They can be put back into the centrifuge now.

## 5. Cleaning and disinfecting the hematocrit rotor after glass breakage

### Because of the risk of injury, act with caution!

To minimize the risk, we recommend wearing two pairs of gloves. Because of spraying glass splinters, also wear a face mask and goggles!

- Take off the lid carefully.
- Remove larger glass shards using forceps.
- Take out the rotor. Remove affected holding trays or the sealing ring (with older models) slowly and carefully using forceps.

### Note

Do not reuse affected holding trays and sealing rings! It is almost impossible to remove glass splinters completely from these objects, and remaining splinters will bring about further glass breakage.

- Clean and disinfect the remaining parts as described in section 4.

### Note

Hematocrit rotor, lid, holding trays and sealing rings cannot be autoclaved!