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## Safety Precautions

For analyzing hazardous or potential infectious materials:

- Take necessary precautions
- Handle with care
- Dispose in an appropriate way

Long exposure to solvents will cause the slide to warp. Xylene and toluene based mounting media should be avoided. Glycerol, gelatin, and other aqueous-based media are recommended.

## Safety Symbols

The safety symbols on the C-Chip (4channel) are intended to inform you of potential danger or a particular caution. Before use, please read and consult the guide for the symbols and their meanings.

**LOT** Batch code (Lot Number) Use by CE marking

Do not reuse **IVD** *In vitro* diagnostic medical device

Consult instructions for use Manufacturer

**US Corporation** US Corporation **European Corporation** European Corporation

**EC REP** Authorized representative in the European Community

**UK Representative** Authorized representative in United Kingdom

**NOTE:** The C-Chip (4channel) is for **single use only**. **Do not reuse**. It should be used immediately after unsealing. The warranty on the C-Chip (4channel) included in the conditions of supply is valid for 24 months from the date of manufacturing. The **expiration date** is indicated on the front side of outer box.

Disposable Hemocytometer

Neubauer Improved

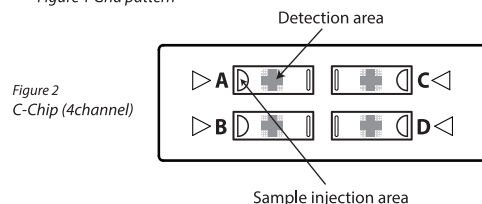
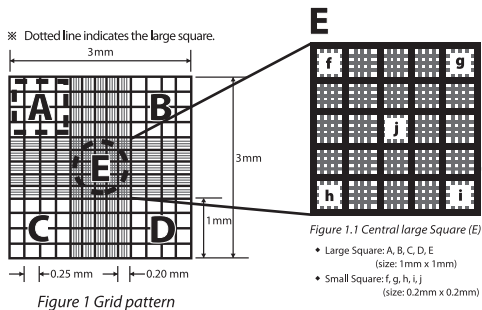


## Introduction

The C-Chip (4channel) is a disposable plastic hemocytometer used for manual cell counting. It consists of surface-patterned four enclosed chambers with four ports for sample injection (Fig. 2).

The grid pattern is identical to Neubauer Improved. It consists of 9 large squares, each measuring 1 x 1 mm, with a depth of 0.1 mm. Each large square has a total volume of 0.1 mm<sup>3</sup> or 10<sup>-4</sup> cm<sup>3</sup> (Fig. 1).

The central large square is subdivided into 25 smaller squares with triple lines, each measuring 0.2 mm x 0.2 mm. Four large squares at each corner are divided into 16 smaller squares, each measuring 0.25 mm x 0.25 mm.



## Counting with C-Chip (4channel)

### A. General Methods

1. Mix the samples well.
2. Load 10 μL of sample into the sample injection area in Fig. 2, so that it fills the chamber by capillary action.
3. Count the cells under the microscope.

$$\text{Cells per mL} = \frac{\text{Total cells in 5 small squares}}{5} \times 25 \times 200 \text{ (dilution factor)} \times 10^4 \text{ (volume factor)}$$

### B. Mammalian cell counting

1. Treat the cell samples with trypsin-EDTA.
2. Carefully remove the supernatant with a pipette tip without disturbing the pellet.
3. Add an appropriate volume of growth media or PBS to dilute to a final concentration of 5 x 10<sup>3</sup> cells/mL to 5 x 10<sup>6</sup> cells/mL.
4. Thoroughly re-suspend the cell pellet with a pipette.
5. Check visually if there are any cell clumps or agglomerates.
6. Load 10 μL of sample into the sample injection area in Fig. 2.
7. Count the cells within each of 5 large squares (A, B, C, D, and E).

$$\text{Cells per mL} = \frac{\text{Total cells in 5 large squares}}{5} \times \text{dilution factor} \times 10^4 \text{ (volume factor)}$$

### C. Erythrocyte counting (1:200 dilution)

1. Dilute blood using accepted laboratory methods.
2. Load 10 μL of diluted sample into the sample injection area in Fig. 2.
3. Count total erythrocytes in 5 small squares (f, g, h, i, j) of the large center square (E) (Fig. 1).

$$\text{RBCs per mL} = \frac{\text{Total cells in 5 small squares}}{5} \times 25 \times 200 \text{ (dilution factor)} \times 10^4 \text{ (volume factor)}$$

(total number of small squares in square 'E')

### D. Leukocyte counting (1:20 dilution)

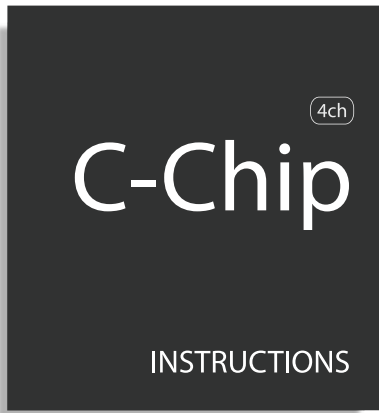
1. Dilute blood using accepted laboratory methods.
2. Load 10 μL of diluted sample into the sample injection area in Fig. 2.
3. Count total leukocytes in 4 large squares (A, B, C, D) of each corner (Fig. 1).

$$\text{WBCs per mL} = \frac{\text{Total cells in 4 large squares}}{4} \times 20 \text{ (dilution factor)} \times 10^4 \text{ (volume factor)}$$

## Trouble shooting

In case of poor visibility results,

- Carefully load samples into the C-Chip(4channel) in order to prevent the introduction of **air bubbles**.
- Observe after removing the dust from samples.
- Adjust the focus of the microscope.
- Do not rub or touch the pattern.



Grid pattern of Bürker-Türk

### DHC-B04

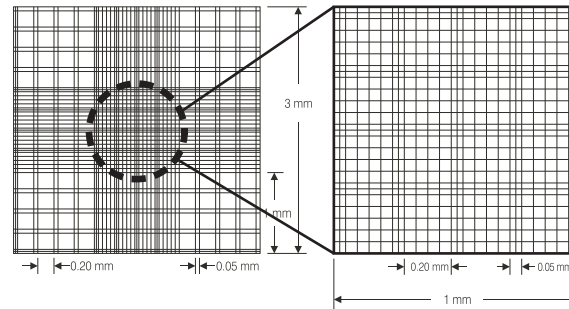
The C-Chip (DHC-B04) grid pattern is identical to Bürker-Türk. It consists of 9 large squares, each measuring 1 x 1 mm, with a depth of 0.1 mm. Each large square has a total volume of 0.1 mm<sup>3</sup> or 10<sup>-4</sup> cm<sup>3</sup>.

Each of the nine large squares is divided into 16 smaller squares, each measuring 0.2 mm x 0.2 mm. Notably, within the central large square, these 16 smaller squares are further divided into 16 mini squares, each measuring 0.05 mm x 0.05 mm (equivalent to 0.0025 mm<sup>2</sup>).

Loading volume = 10µL

Cells per mL =  
average count per large square x dilution factor x 10<sup>4</sup> (Volume factor)

※ Dotted line indicates the large square.



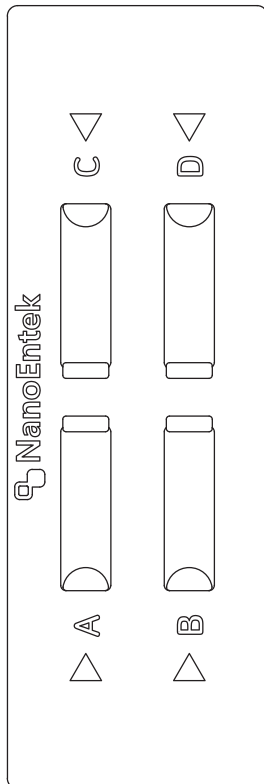
Grid pattern of DHC-B04

Grid pattern of Bürker-Türk

### DHC-B04

Grid pattern of Fuchs-Rosenthal

### DHC-F04



Grid pattern of Fuchs-Rosenthal

### DHC-F04

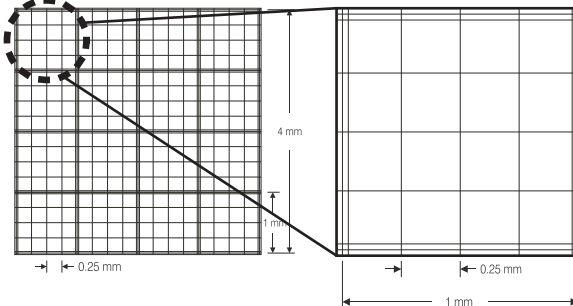
The C-Chip (DHC-F04) grid pattern is identical to Fuchs-Rosenthal. It consists of 16 large squares, each defined by triple lines. Each large square measures 1 x 1 mm, resulting in a total counting area of 4 x 4 mm.

With a depth of 0.2 mm per chamber, each large square contains a volume of 0.2µL, resulting in a total counting area volume of 3.2µL (equivalent to 3.2 mm<sup>3</sup>).

Loading volume = 20µL

Cells per mL =  
average count per large square x dilution factor x 5000 (Volume factor)

※ Dotted line indicates the large square.



Grid pattern of DHC-F04