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NucleoCounter[®] YC-100[™]

Fast, precise and objective counting and viability determination of yeast cells

Wine application



**Determination of wild yeasts
Inoculation of the must
Stuck fermentation**

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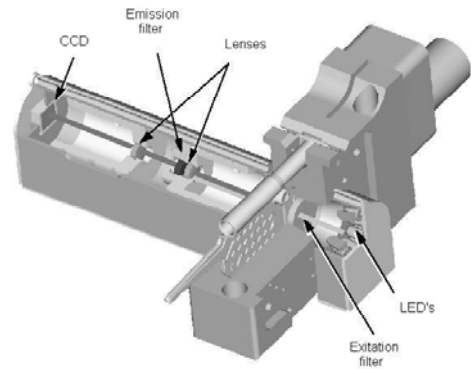
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Principle:

The NucleoCounter is an integrated fluorescence microscope designed to detect signals from the fluorescent dye, propidium iodide (PI) bound to DNA. Results from the NucleoCounter represent either total or non-viable cell concentration, depending on the sample preparation. The result is shown on the display after 30 seconds.



NucleoCassette™:

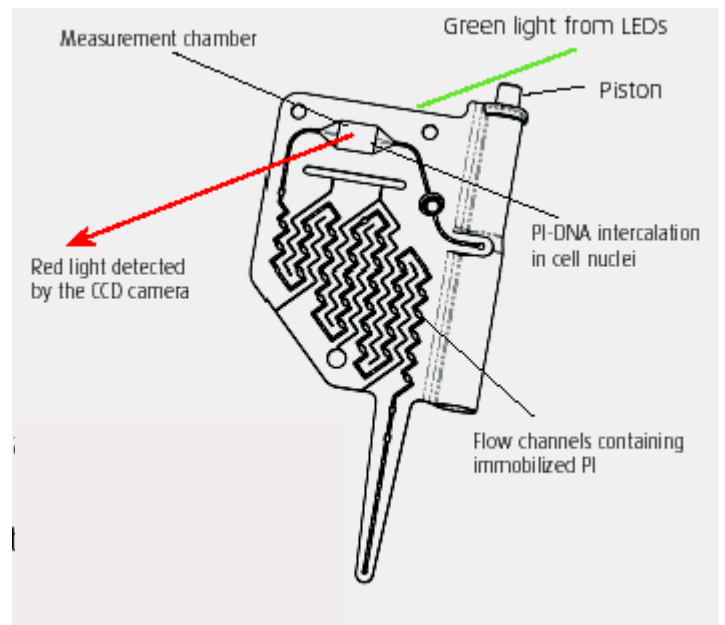
PI is immobilised and enclosed in the interior of the disposable cassette. In this way any contact with the user is avoided.

When the sample is loaded into the cassette, PI dissolves immediately and stains the DNA of the cells.



After placement in the NucleoCounter, the stained mixture is automatically transferred to the measurement chamber. As the instrument has durable optical components, the instrument is calibration free. Moreover, after the analysis, the sample and the PI are contained inside the cassette, which can be safely discarded, without particular disposal requirements.

As the cassette contains the entire flow system as well as the measurement chamber, neither cleaning nor maintenance of the instrument is needed.



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Sample preparation



The fluorescent dye PI intercalates with DNA of cells with non-intact cell membrane (non-viable cells).

The living cells, with intact membrane, reject the PI, preventing it from reaching the DNA.

For the viability determination of the sample, therefore, it is enough to make two analyses:

- 1) Non-viable cell count of the sample, diluting sample in the saline buffer solution;
- 2) Total cell count of the sample, after performing lysis on the cells (destroying cells membrane), diluting the sample in reagent Y100.

The difference between total cell count and non-viable cell count is the viability of the sample.

Result display

<p>Cells/ml: 1.234 x 10E6</p>

After an analysis, the cell density will be displayed on the display screen.

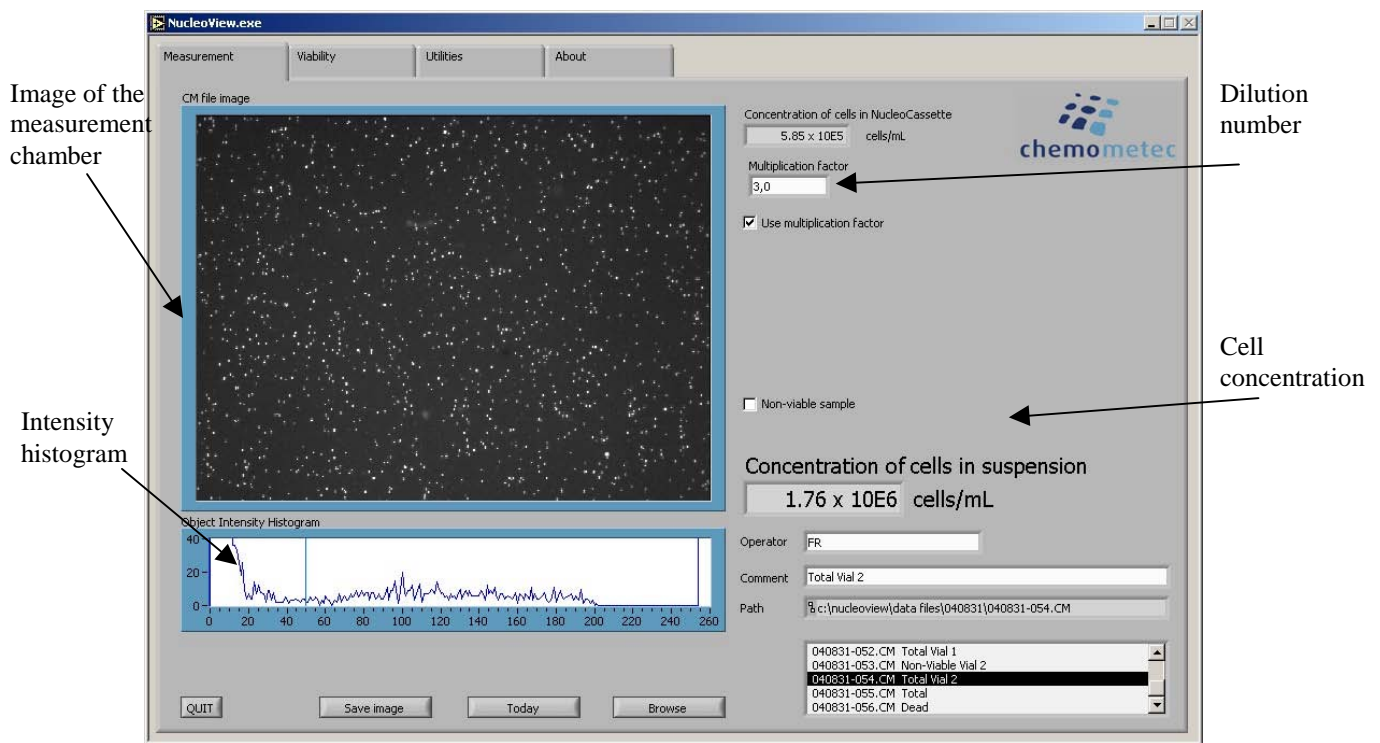
Optionally, the data is transferred to an external PC using USB connection or printed on an external printer.

Technical specifications for NucleoCounter YC-100

Analysis	Cells stained with the DNA specific fluorescent dye, PI.
Sample types	Suspension of dispersed yeast cells.
Sample consumption	The sample is diluted prior to analysis. Withdraw at least 50 µl of sample for the dilution, in order to reduce error caused by sample handling. Prepare at least 100 µl of diluted solution or of raw sample for cassette loading. Approximately 50 µl of sample are loaded into the cassette.
Reagent consumption	It is recommended to use at least equal amounts of lysis buffer and sample.
Analysis volume	Approximately 1 µl of sample is being analysed in the NucleoCounter YC-100
PI	Each cassette contains 3 µg of PI
Measurement range	Cell density in diluted sample Total range: 5×10^3 to 2×10^6 cells /ml Recommended range: 5×10^4 to 2×10^6 cells /ml
Presentation of Result	The NucleoCounter YC-100 presents the estimated cell density in the diluted sample in the cassette. In order to obtain cell concentration in a cell suspension, the result must be multiplied by the appropriate multiplication factor to compensate for any dilution.
Operation	Menu-controlled by means of keyboard and LCD display.
Analysis time	When pressing “Run” on the NucleoCounter YC-100 the result will be displayed within 30 seconds
Operation conditions	Maximum relative humidity 80 percent for temperatures up to 31°C, decreasing linearly to 65 percent relative humidity at maximum 35°C; minimum temperature 15°C.

Software NucleoView – optional

When the NucleoCounter is connected to an external computer, the software NucleoView can store and print the results.



The NucleoView software is operated through a number of tabs. In particular, in the measurement tab, the cell concentration and image of the measurement chamber are displayed. It is also possible to input the dilution number, and the result can be corrected to obtain automatically the cells concentration in the original cell suspension of wine or must before dilution.

The NucleoView software has also a viability tab, where it is possible to calculate the viability (%) and the concentration of viable cells on basis of two counts: non-viable cell count and total cell count.

Physical data

Weight: 3 kg
 Height: 26 cm
 Width: 38 cm
 Depth: 22 cm

Power

Input 12V DC (11-13 V DC)
 Fuse UL Listed fuse: 600mA/250V AC (UL 248)

Power consumption

Peak 25 W
 Ready mode 2.5 W
 Standby 2 mW