



How does a BactoScanTM work?

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You may have heard people say: « I got my BactoScan results», or « The milk truck driver takes the blue bottle sample for the BactoScan », etc. So what is a BactoScan? It is an instrument that counts the bacteria in the milk.



Where are these Bactoscans located?

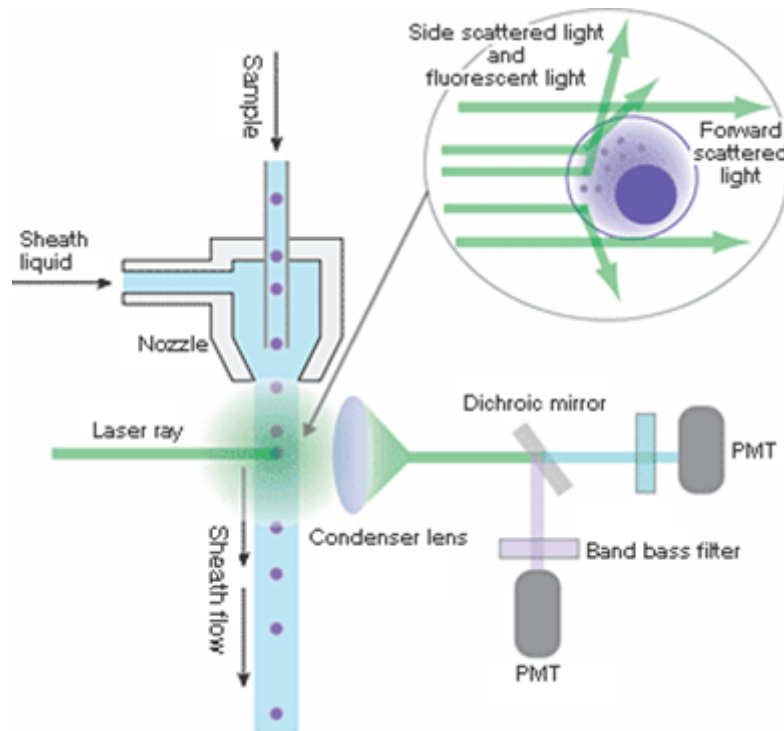
The Lactanet milk quality laboratory in Sainte-Anne-de-Bellevue, near Montreal, has three BactoScan™ (Foss Electric, Hillerød, Denmark) instruments. These large dark blue instruments play a very precise role, they count the number of bacteria that are present in a milk sample. Our laboratory in Edmonton, Alberta also has one to meet the needs of our clients and partners in the Western provinces.



How does it work?

BactoScans use flow cytometry technology to count bacteria. The instrument aspirates 4.5 ml of milk to which it adds a dye that colors the bacteria's DNA and makes them detectable. If a bacterium is not intact, its DNA will float free in the milk and cannot be counted by the instrument.

The sample is then pumped into a very small tube and the bacteria passes one after the other, like a very tiny string of pearls.



* Foss Electric, Hillerød, Danemark

When the bacteria pass through the tube, they are illuminated by a laser, causing them to emit a fluorescent light which is then detected by a highly sensitive sensor. This sensor sends an electrical impulse for each bacterium that passes. Each of these signals is counted, thus providing an Individual Bacterial Count (IBC). This count is then converted to bacteria per ml of milk which is the result that you are accustomed to seeing on your report. The analysis takes around nine minutes per sample.

One of the great qualities of this instrument is that it is capable of counting all of the intact bacteria, regardless of whether they are alive. Classic microbiology techniques, where the milk is spread on an agar plate (culture medium), only allows us to count the bacteria in the sample that are alive or are able to grow in a specific kind of medium and at a specific temperature. There are no known mediums that will allow every type of bacteria to grow, and multiply to provide a similar result to that of the BactoScan.

How can we be sure that the result is accurate?

The instrument calibration is verified twice daily; once before beginning the analysis and again mid-way through the analysis. Also, to ensure that the exactitude of the results is constant, a control sample with a known number of bacteria is analyzed after every 34 samples.

A great deal of attention is paid to the maintenance and calibration of the instruments to ensure that the results are precise. The laboratory follows a very strict protocol to meet the highest International ISO standards.

BactoScan analysis... at a glance.

- It takes 9 minutes to analyze one sample.
- The instrument uses 4.5 ml of milk.
- The bacteria pass, one by one, through a small tube.
- The bacteria are detected by a laser.
- The instrument is verified after every 34 samples.

The sample in the blue vial:

The collection and transport of a sample are as important as the quality of the instrument that analysis it. Even the best instrument can only provide a mediocre result when analyzing a mediocre sample. In our next article we will attempt to answer this question: how is a sample for bacteria analysis taken and transported to the laboratory?





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