

Bacteria quantification in minutes instead of days

# CyStain BacCount reagents

How much bacteria are in  
your water?



# A new method using **Flow Cytometry** for water testing

Bacteria naturally populate aquatic ecosystems including drinking water and the number of bacteria present is an important consideration in the production process.

Our analytical instrument uses a new method to determine bacterial counts in drinking water, and to assess process efficacy, thus allowing for preventive actions to be taken.

The CyStain **BacCount Total** kit enables rapid detection of the total amount of bacteria in water samples. This is crucial for water treatment process control and for the analysis of microbial ecology.

The CyStain **BacCount** kit, unlike PCR kits, differentiates between live and dead bacteria, which is important for monitoring successful inactivation of harmful bacteria in drinking water.

Both kits are designed for quality control of drinking water from different sources (ground water, spring water or surface water) but can also be used for quality control of industrial water.



CyFlow Cube 6 V2m

*How much bacteria are in your water?*



## Bacteria quantification **in minutes** instead of days

Traditional time-consuming bacterial cultivation can only detect 0.1-1% of waterborne bacteria when cultivating on agar in petri dishes. Moreover, neither traditional heterotrophic plate count nor PCR methods are able to detect viable but non-culturable (VBNC) bacteria.

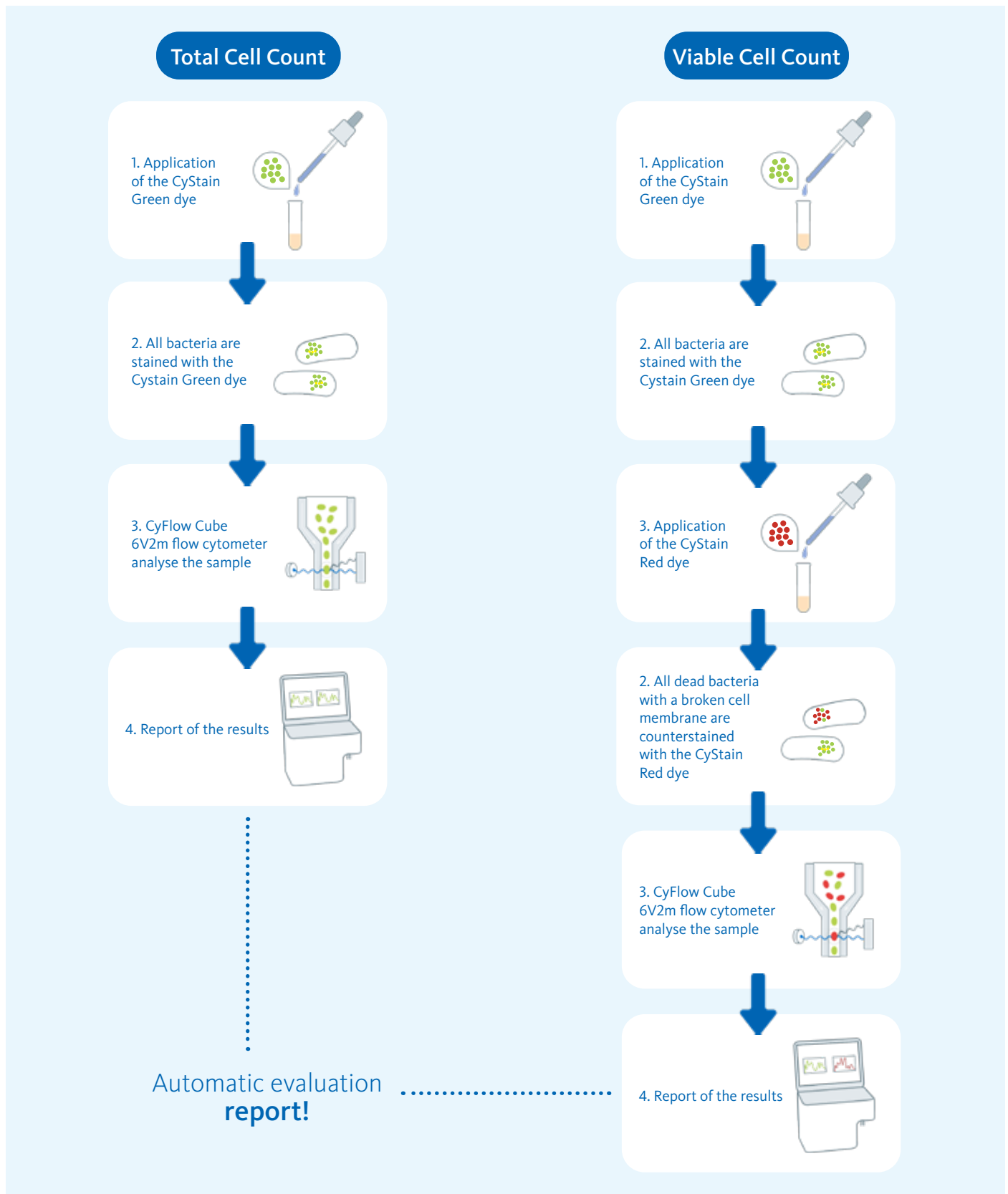
Total Cell Count (TCC) and Viable Cell Count (VCC) kits enable fast and reliable quality control of water samples.

Using the ultra-compact, portable and cost-efficient CyFlow Cube 6 V2m flow cytometer from Sysmex Partec, it is possible to detect the extent and risk of bacterial contaminations in drinking water in less than 15 minutes.

*CyStain BacCount enables a fast and convenient detection of all bacteria in your water sample*

# Quick, reliable and cost-effective

The workflow is fast, effortless and allows for highly accurate detection of all bacteria in water samples. The Total Cell Count kit (TCC) marks all bacterial cells with a green fluorescent marker. The Viable Cell Count (VCC) kit also contains a red fluorescent stains dye for the detection of dead cells. This allows for easier differentiation between live and dead bacteria.

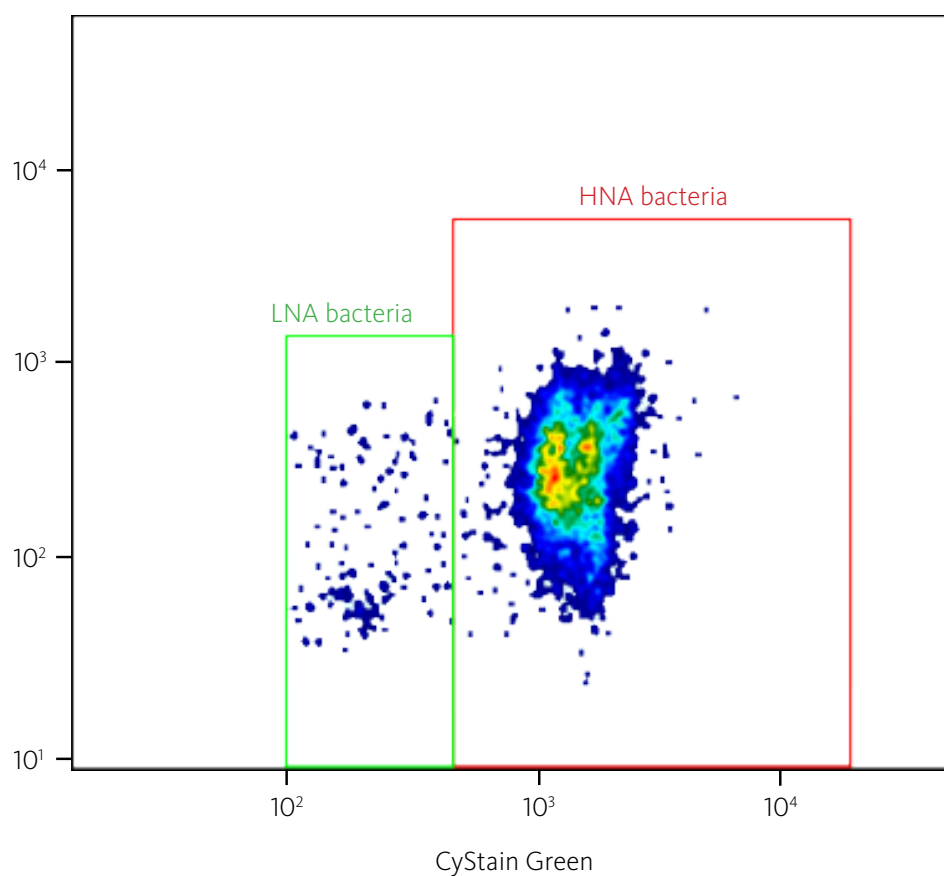


## Automatic read-out of the results – State of the art

Until now, the industry standard for detection of bacteria in drinking water is time-consuming bacterial cultivation. In contrast, flow cytometry is faster, easier to handle and leads to a superior analysis.

Thanks to **CyStain BacCount** kits, you can get an automatic read-out of your results and the pre-set template allows for a rapid clear-cut decision. Data interpretation from an expert is not necessary and easy handling makes a smooth workflow possible.

Using the immense resolution of a flow cytometer, all present bacteria (LNA, low nucleic acid and HNA, high nucleic acid bacteria) can be detected. LNA / HNA cell numbers differ across water sources therefore, represent a “fingerprint” for a sample.



*Legend:* Analysis of water sample (mineral water) with the **CyStain BacCount** Total kit. In the automatic read-out all detectable bacteria are visualised.

*Total bacteria:* 59077 counts/mL

*Low Nucleic Acid containing bacteria (LNA):* 6,167 counts/mL

*High Nucleic Acid containing bacteria (HNA):* 52,912 counts/mL

# Robby 6 V2m – Autoloading Station

The new optional **CyFlow Robby 6 V2m** autoloading station is directly attached to the Cube 6 flow cytometer and can pipette and shake the samples using a 96-well plate. The Robby 6 V2m autoloading station provides a full solution package for semi-automated enumeration of bacteria in water.





## Key benefits

- Rapid detection of bacteria in water samples (Low limit of detection)
- Counts all bacteria cells (TCC kit) and differentiates between dead / living bacteria (VCC kit)
- Detection of almost all bacteria including viable but non-culturable cells
- Allows for rapid and clear-cut release decision
- Provides an automated read-out of water sample results
- Easy handling
- Perfect for routine analysis
- Faster than any bacterial cultivation method

## Product references

PRODUCT CODES	DESCRIPTION
ZPS40632	CyStain BacCount Total
ZPS40633	CyStain BacCount Viable
CF685799	CyFlow Cube 6 V2m
CS751741	Robby 6 V2m Autoloading station

# An effective solution for many applications

	<b>BacCount Total</b>	<b>BacCount Viable</b>
		
<b>Primary Parameter</b>	All bacterial cells (including live, dead, VBNC)	Live cells with intact membrane integrity
<b>Secondary Parameter</b>	<ul style="list-style-type: none"> <li>• Serial measurement of growth</li> <li>• Fingerprint (LNA/HNA ratio)</li> </ul>	<ul style="list-style-type: none"> <li>• Living/VBNC bacteria</li> <li>• Fingerprint (LNA/HNA ratio)</li> </ul>
<b>General Information (Readout)</b>	Stable Baseline of TCC monitoring e.g. with the observation of a significant spike from the baseline, results can flag scrutiny of treatment process	Treatment response kinetics to manage process control e.g. correlation between kind of treatment, dosage of reagents and secondary parameters enable process control and optimisation
<b>Specific Example Applications</b>		
<b>Disinfection</b>	<p><b>Ozone:</b> Fast oxidative burst and lysis of the cells decreases TCC</p> <p><b>Chlorine:</b> Compromise membrane integrity – no changes seen with BacCount Total</p> <p><b>UV radiation:</b> No changes in membrane integrity by UV – no changes seen with BacCount Total</p>	<p><b>Ozone:</b> Fast oxidative burst and lysis of the cells decreases VCC</p> <p><b>Chlorine:</b> Dose and time dependent decrease of intact cells can be observed</p> <p><b>UV radiation:</b> Integrity of the membrane as the cause of death can be excluded</p>
<b>Filtration Control</b>	TCC measurement of removal efficiency	VCC measurement of removal efficiency
<b>Susceptibility Check</b>	<b>Measurable growth inhibition kinetics:</b> Detection of gain/loss of growth inhibition	<b>Measurable change in viability:</b> Changes in membrane integrity is detected rapidly
<b>Sewage Water Treatment</b>	Control and performance monitoring of treatment process	Control and optimisation of treatment processes
<b>Key Examples</b>	<ul style="list-style-type: none"> <li>• Stable baseline (TCC) in springs, aquaculture or cooling towers</li> <li>• Sensitive fingerprinting method for detecting small changes and shifts within the bacterial community</li> </ul>	<ul style="list-style-type: none"> <li>• Effectiveness of cleaning steps in sewage water plants</li> <li>• Optimisation of disinfectant concentrations to minimise downstream impact on product qualities</li> </ul>

Design and specifications may be subject to change without prior notice due to further product development.

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