CytoQuant®

Instructions for the Testing of Water

1. Scope

The testing protocol described within this document is applicable for the analysis of various types of process and environmental waters from the food supply chain.

Water samples that are adequate for testing with the CytoQuant® device have conductivity values ranging from 650 to 950 *µS/cm* (at 25 °*C*). Samples outside the optimum range require adjustment, by either dilution with deionized (distilled) water or addition of CytoQuant® Electrolyte Solution. Most food and feed sector waters have conductivity values of up to 1600 *µS/cm* (at 25 °C).

2. Equipment and consumables

Supplied by Romer Labs:

- CytoQuant® flow cytometer (#10006469), including CytoQuant® CountCell™ (#10006471)
- CytoQuant® Aqua Vial (#10007101)
- CytoQuant® Electrolyte Solution (#10007030) – for samples requiring upward conductivity adjustment

Not supplied:

- Deionized or distilled water – for samples requiring downward conductivity adjustment
- Graduated transfer pipettes, 3 *mL*, non-sterile
- Sample containers, non-sterile

As testing does not include incubation, sterility of diluents and materials is not crucial. However, overall background contamination should not be above the lower limit of determination to ensure the consistency of results. Deionized or distilled water will likely require filtration (pore size ≤ 0.4 *µm*) prior to diluting the sample. Most non-sterile laboratory plasticware is practically free of microorganisms and other similar-size particles.

3. Sampling

General microbiological requirements and guidelines regarding sampling and the transportation and storage of samples, as set in international standards (*e.g.*, ISO 19458), should be followed. The time between sampling and analysis should be as short as possible – ideally less than 8 *h*, but not longer than 12 *h*. Samples that are not tested within 45 minutes from sampling should be kept cooled (2-8 °*C*).

4. Procedure

Samples that do not require conductivity adjustment are tested directly, by simply dispensing 3 *mL* ± 5% into a vial and running the short or long measuring program on the device (see CytoQuant® User Manual).

Samples beyond the measuring range for bacteria and/or particles require dilution with deionized water adjusted for conductivity.

Table 1. *Conductivity adjustment chart for water samples with values higher than 950 µS/cm (at 25 °C)*

Sample Conductivity	***µS/cm***	1000	1100	1200	1300	1400	1500	1600
Sample : Deionized Water	***parts***	1 : 0.25	1 : 0.4	1 : 0.5	1 : 0.6	1 : 0.75	1 : 0.9	1 : 1

Table 2. *Conductivity adjustment chart for water samples with values lower than 650 µS/cm (at 25 °C)*

Sample Conductivity	***µS/cm***	0	100	200	300	400	500	600
CytoQuant® Electrolyte Solution*	***drops***	7	6	5	4	3	2	1
	µL	140	120	100	80	60	40	20

** Dosages are expressed for sample volumes of 3 mL ± 5%*

General Workflow

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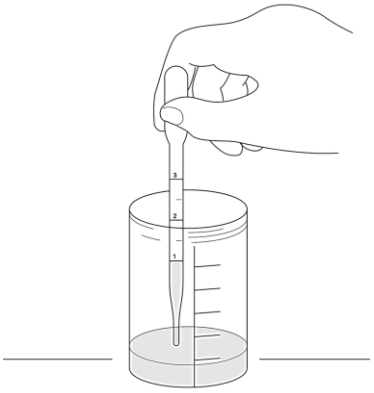
Mix the sample thoroughly and then draw 3 mL ± 5% with a pipette. **If the sample requires downward conductivity adjustment, predilute it with distilled or deionized water** by following the instructions in Table 1.



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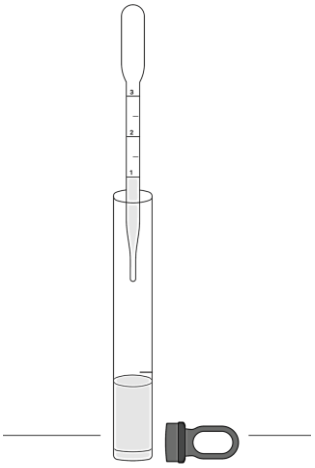
Transfer the sample into an unused CytoQuant® Aqua Vial.



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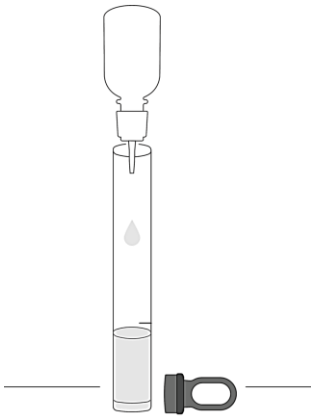
If the sample requires upward conductivity adjustment, add CytoQuant® Electrolyte Solution directly into the vial by following the dosage instructions in Table 2.



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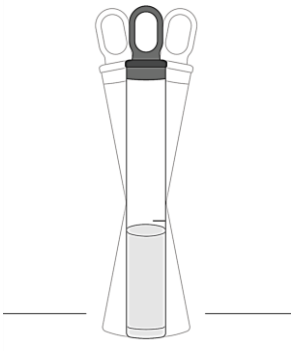
Mix the test portion well by shaking the vial horizontally. Up and down movements will cause excessive aeration of the liquid.



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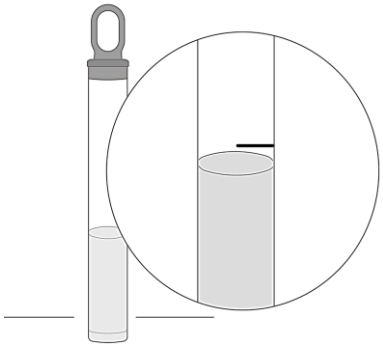
Make sure that the level of liquid in the vial is lower than the upper rim of the inner tube. Higher levels will hinder the correct flow of the liquid.



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Insert the vial into the CytoQuant® device and select the preferred measuring program.