LCK 333 Nonionic surfactants

DOC312.53.94096

0.2–6.0 mg/L TRITON x 100 LCK 333

Scope and application: For water, waste water, surface water, formulations, degreasing baths, wash solutions and process analysis.

Test preparation

Test storage

Storage temperature: 15–25 °C (59–77 °F)

pH/Temperature

The pH of the water sample must be between pH 4–9.

The temperature of the water sample and reagents must be between 20–23 °C (68–73.4 °F).

Before starting

Review the Safety Data Sheets (MSDS/SDS) for the chemicals that are used. Use the recommended personal protective equipment.

Dispose of reacted solutions according to local, state and federal regulations. Refer to the Safety Data Sheets for disposal information for unused reagents. Refer to the environmental, health and safety staff for your facility and/or local regulatory agencies for further disposal information.

Attention:

The phase separation may take several hours if the cuvette is inverted or shaken too vigorously!

The phase separation must be complete before the Cuvette Test is evaluated. Incomplete phase separation causes high-bias results to be obtained.

If the cuvette is inverted too cautiously the extraction may be incomplete, so that low-bias results are obtained.

This method of surfactant analysis determines the sum of the surfactant types alkylphenol ethoxylates ($AP(EO)_n$), fatty alcohol ethoxylates ($FA(EO)_n$) and polyethylene glycols (PEG). Unless the composition of the sample is known, it is not possible to determine the individual substances. The result of the measurement is therefore expressed as a concentration of a standard surfactant with 10 ethoxy bridges as mg/L TRITON x 100.

The result can only be converted to concentrations of other surfactants with the help of a special calibration:

Conversion factor for nonylphenol ethoxylate (10 EO):

Displayed measurement result x 1.1

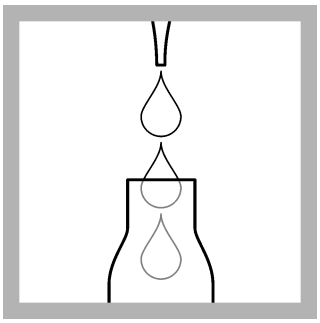
Conversion factor for Marlipal 24/60 (6 EO):

Displayed measurement result x 1.2

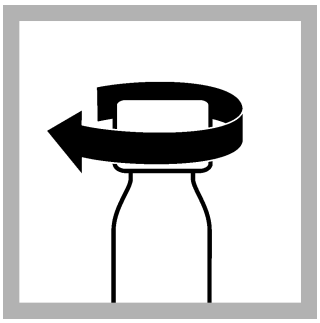
Make sure to work at the recommended temperature to get correct results.

This method is applicable on DR1900, DR2800, DR3800, DR3900, DR5000 and DR6000 only.

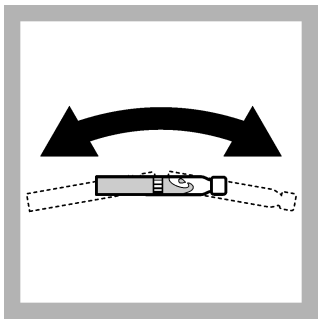
Procedure



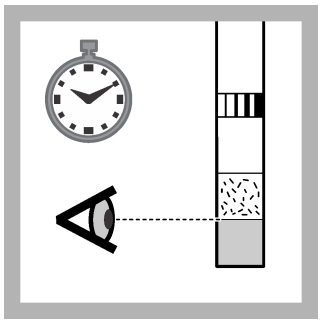
1. Carefully pipet **2.5 mL** of **sample**.



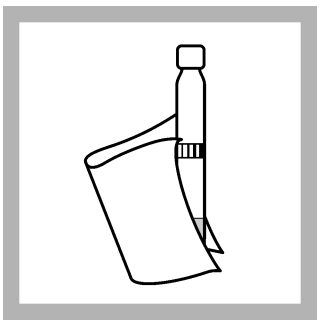
2. Close the cuvette.



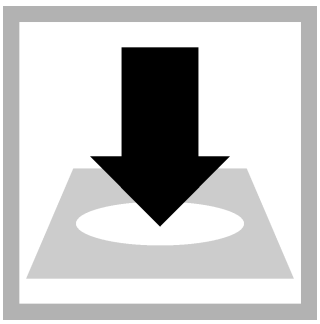
3. Hold the cuvette between thumb and index finger. **Mix intensively** (2–3 times per second) for **2 minutes** – **do not shake.**



4. Then leave the cuvette to stand. Wait for the phase separation to finish (**approximately 2 minutes**).



5. Thoroughly clean the outside of the cuvette and evaluate.



6. Insert the cuvette into the cell holder.
DR 1900: Go to LCK/TNTplus methods. Select the test, push **READ**.

Interferences

Cationic surfactants cause high-bias results to be obtained.

Anionic surfactants cause low-bias results to be obtained, depending on the concentration of the anionic surfactant. At anionic surfactant concentrations of 2.0 mg/L the bias is approximately 10%, while at concentrations of 20 mg/L the bias is between 40%.

APGs (alkyl polyglycosides) are not measured.

The ions listed in the table have been individually checked against the given concentrations and do not cause interference. The cumulative effects and the influence of other ions have not been determined.

The measurement results must be subjected to plausibility checks (dilute and/or spike the sample).

Interference level	Interfering substance
1000 mg/L	K^+, Na^+, Cl^-
500 mg/L	NH_4^-, SO_4^{2-}, NO_3^-, NO_2^-, Mg^{2+}
200 mg/L	Cu^{2+}, Ni^{2+}, Zn^{2+}
100 mg/L	Ca^{2+}, Al^{3+}

Summary of method

Nonionic surfactants (ethoxylates with 3–20 ether bridges) react with the indicator TBPE to form complexes, which are extracted in dichloromethane and photometrically evaluated.

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