HORIBA
Process & Environmental

Application note

Oil Content measurement

OCMA-500 OIL

OCMA series are used to measure the concentration of oil extracted from drainage and environmental water.
Measurement can be easily and automatically made in a short amount of time by pressing the start button. OCMA-500 provides a great experience for various usages such as drainage control, environmental protection and quality control.

Oil Content measurement for factory drainage including surfactant

Applications

The oil content in factory drainage needs to be strictly monitored before discharging to the environment. However, in many cases, those factory drainages contain surfactant and form the emulsion in the extraction process. This application note explains the pre-treatment method to enable the oil content measurement for the samples which contain surfactant.
Furthermore, this easy-operating OCMA-500 can be widely used by measuring highly volatile oil content which is unlikely measured by n-Hexane method.*

* n-Hexane method: A method to measure the oil content which is written in EPA Method 1664A

Measurement Procedure

STEP 1 –Visual check before the measurement–

To confirm if pre-treatment is needed, the sample needs to be checked after mixing with an extraction solvent. The pictures on the right side show how the samples look like after mixing with solvent. If the 2 layers are totally separated as the picture with ○ icon (see right side), pre-treatment is not required. In the case where white turbidity has appeared on the sample and solvent as shown in the picture with △ and × icon, pre-treatment work is recommended.

STEP 2 –Pre-treatment–

① Add 30 g NaCl into 100 mL of sample. (NaCl helps to separate the layers)
② Stir the sample ① with stirrer until NaCl gets saturated.
③ Measure the volume of sample ②.

STEP 3 –Measurements and Calculations–

④ Apply Sample ② and solvent S-316 into OCMA-500
⑤ Calculate the concentration from sample volume before 100 mL and after adding NaCl ③.

Actual oil content in the sample =
Displayed result ×[Sample volume after adding (mL) / before adding (mL)]

Conclusion

2 types of factory drainage sample are tested on OCMA-500 and n-hexane method in this experiment and table 1 shows the result and comparison.
In sample 1, OCMA-500 shows same measurement result with n-hexane method, however OCMA-500 shows higher than n-hexane method in sample 2.
It can be considered that OCMA-500 can detect highly volatile oil content which is unlikely measured by n-hexane method.
From those results, thanks to its specification and mechanic, it can be concluded that OCMA provides the accurate oil content measurement with performing the pre-treatment and accurately detects necessary oil content in the sample.

The samples after mixing with solvent

× (White turbidity)	△ (Some white turbidity)	○

Table 1: The oil concentration in factory drainage

	by n-Hexane method (mg/L)	by OCMA (mg/L)
Sample 1	3.5	3.5
Sample 2	<0.5	1.0

Based on in-house experiments