ifn Forschungs- und Technologiezentrum GmbH

Tracking the hydrocarbon index of oil-contaminated water samples before and after treatment with the absorber material SORB®XT

Quote number	121/2023AF from 04.12.2023
Client	SORB®XT – Allegro Capital, Logistics, Services & More GmbH Herr Thorsten Narawitz Klosterhofweg 64 41199 Mönchengladbach
Contractor	ifn Forschungs- und Technologiezentrum GmbH Dr.-Bergius-Straße 19 06729 Elsteraue Tel. 03441/53 88 45 Fax 03441/53 88 40 e-Mail: info@ifn-ftz.de website: www.ifn-ftz.de
Project editor	Dr. rer. nat. Peter Hahn
Realization period	06.12.2023 - 13.12.2023

Elsteraue, 13.12.2023

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Project Manager
Dr. rer. nat. Peter Hahn

Tracking the hydrocarbon index of oil-contaminated water samples before and after treatment with the absorber material SORB®XT

Task

The aim is to determine the hydrocarbon content of oil-contaminated water samples before and after treatment with the absorber material SORB®XT.

Experimental procedure

For the tests, a test solution was prepared in which 1 ml of used oil was emulsified in 1000 ml of water for 24 hours by shaking (initial sample). The hydrocarbon index of this stable water-oil emulsion was determined using GC-FID measurements (DIN EN ISO 9377-2(H53)). Then 500 ml of the old oil-doped water-oil emulsion was mixed with 5 g SORB®XT and shaken for 2 h, whereby the oil is bound by the absorber material. The hydrocarbon index of the solution was again determined according to DIN EN ISO 9377-2(H53). Finally, the hydrocarbon index of the water used (preparation water) was determined as a blank value. In the course of the investigations, the use of the TOC content as a measure of the oil contamination of the water was abandoned, as this provided incorrect values. The reason for this are small particles of the organic absorber material SORB®XT, which inevitably remain in the water-oil emulsion after treatment and increase the TOC content. Filtration of these fine particles is not possible, as conventional membrane or paper filters in turn draw the oil out of the emulsion and thus falsely minimize the TOC content. The use of the hydrocarbon index as a measure of the oil contamination of the water does not show this source of error due to different analysis technology, as only hydrocarbons are detected here, which originate exclusively from the used oil and not from the absorber material.

Evaluation

The following table summarizes the experimentally determined hydrocarbon indices of the individual samples:

Sample name	Sample number	Hydrocarbon index [mg/l]
used oil-doped water-oil emulsion (initial sample)	2409-01-23	198
used oil-doped water-oil emulsion after treatment with SORB®XT	2409-02-23	21,5
Blank (preparation water)	-	<0,1

The initial sample has a hydrocarbon index of 198 mg/l. After treatment with SORB®XT, this value drops to just 21.5 mg/l. This means that 90 % of the used oil has been bound by the absorber material and is no longer present in the water. The blank value of the preparation water has a hydrocarbon index of <0.1 mg/l, which again proves that the water used does not contribute to the hydrocarbon index.

The experiments thus show that the absorber material SORB®XT is very well suited for removing oil fractions from aqueous systems.

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SORB®XT – Allegro Capital, Logistics,
Services & More GmbH
Herr Thorsten Narawitz
Klosterhofweg 64

41199 Mönchengladbach

Test report Nr.: 2409/12/23

Client:	SORB®XT – Allegro Capital, Logistics, Services & More GmbH Herr Thorsten Narawitz Klosterhofweg 64 41199 Mönchengladbach
Test to be carried out:	analytical determination according to order (order Nr. 121/2023AF)
Date of order placement:	04.12.2023
Sample name:	Waste oil-doped water-oil emulsion (initial sample) Waste oil-doped water-oil emulsion after treatment with Sorb®XT
Test period:	04.12. – 16.01.2024
Sampling:	Not applicable
Receipt of sample:	04.12.2023
Resetting the sample:	none

Dipl.-Chem. Thomas Glaubauf
Head of testing and environmental Laboratory

Quality management officer

Elsteraue, 16.01.2024

The test results refer only to the test objects. Publication of extracts of test results requires the approval of the Testing and Environmental Laboratory of ifn FTZ GmbH.

Geschäftsführer: Dipl.-Chem. Thomas Glaubauf · Amtsgericht Stendal HRB 7570 · St.Nr. 119/107/40352 · USt-IdNr. DE 259457147

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Sparkasse Altenburger Land
IBAN DE20 8305 0200 120 010 3706
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Test procedure:

Hydrocarbon index	DIN EN ISO 9377-2:2001-07

Prüfergebnisse:

Sample name of the client:	Waste oil-doped water-oil emulsion (initial sample)	LOQ
Sample number:	2409-01-23	

Hydrocarbon index	mg/l	198	0,1

Blindwert (Ansetzwasser)

Hydrocarbon index	mg/l	<0,1	0,1

Sample name of the client:	Waste oil-doped water-oil emulsion after treatment with Sorb®XT	LOQ
Sample number:	2409-02-23	

Hydrocarbon index	mg/l	21,5	0,1

LOQ Limit of quantification