

**SINTEF Applied Chemistry**

Postadresse: 7465 Trondheim
Besøksadresse: S.P. Andersens vei 15A
Telefon: 73 59 20 80 / 12 12
Telefaks: 73 59 70 51

Enterprice no: NO 948 007 029 MVA

SINTEF REPORT

TITTEL

Testing properties of sorbent ORS-SORB™

FORFATTER(E)

Svein Ramstad

OPPDRAGSGIVER(E)

Oy Operative Recovery Solutions JMR Ltd

REPORT NO. STF66 F99040	Classification Restricted	OPPDRAGSGIVERS REF. Jorma Jungell	
Class. This page Restricted	ISBN	PROSJEKTNR. 660021.43	ANTALL SIDER OG BILAG 7 + vedlegg
ELECTRONIC FILE CODE Rapport-final Ors-Sorb.doc	PROJECT MANAGER (NAME, SIGN.) Svein Ramstad	CHECKED BY (NAME) Hans V Jensen	
FILE CODE	DATE 1999-04-08	APPROVED BY (NAME, POSSITION) Tore Aunaas, Forskningsjef	

ABSTRACT

SINTEF has tested of the sorbent ORS-SORB™ according to the standard "Method for Testing Sorbent (CAN/CGSB-183.2-94) given by the Canadian General Standards Board with three different petroleum based testing fluids:

- ORS-SORB™ was able to take up the test fluids in amounts similar to more than ten times its own weight according to the procedures given for all types of test fluids.
- The absorption rate of the test fluids was very high, well above 90% of maximum uptake amount within 15 minutes.

The product has good hydrophobic properties, and the uptake of test fluids was only slightly affected by the presence of the product.

KEYWORDS	NORWEGIAN	ENGLISH
GROUP 1	Olje	Oil
GROUP 2	Miljø	Environment
EGENSELECTED BY AUTHOR	Absorbenter	Sorbents
	Standard testing	Standard testing

TABLE OF CONTENTS

1 Background	3
2 Materials and methods	3
2.1 Test material	3
2.2 Test fluids.....	3
2.3 Test apparatus.....	3
2.4 Hydraulic squeeze	4
3 Tests for sorbents	4
4 Results	4
4.1 "Still water take-up"	4
4.2 Long term sorption test"	4
4.3 "Dynamic degradation test"	5
4.4 "W test"	6
4.5 "L test"	6
4.6 Absorption kinetics	6
5 Discussion	7
Appendix 1 "Method for Testing Sorbent"	8
Appendix 2	20

1. Background

SINTEF has tested the sorbent ORS-SORB TM according to "Method for Testing Sorbent" CAN/CGSB-183.2-94 given by the Canadian General Standards Board. This test is recommended by SFT for producers, importers and deliverers for testing sorbent products/materials. This testing will also be a standard when the government makes its purchases (SFT Oljevernadeling 1995, "Program for videreutvikling av Norsk Oljevernteologi" Sluttrapport 1991-4, TA-no. 1241/1995, pkt. 3.4.3, page 21).

2. Materials og methods

The tests were carried out according to the Canadian Standard no. CAN/CGSB-183.2-94 (see Appendix 1) with the following emphasis and modifications.

2.1 Test material

ORS-SORB TM is a synthetic product absorbing fluids by capillary absorption. It was tested as a powder. The product was delivered to SINTEF wrapped in smaller sealed plastic bags (approximately 60-70 g). The content varied from fine powder to smaller lumps. The lumps were crumbled before they were used in the tests. The form of the product lead to the classification as "Type II" in the method description. New bag(s) were opened immediately before starting each test to assure the same water content in the product at the start of the testing.

In the L-test and the W-test 5g of material was used, and 10g material in the other tests.

2.2 Test fluids

Three different petroleum components were used as test fluids;

Statfjord crude (200+)

Statfjord is a typical paraffinic crude oil from the North Sea. The crude oil is relatively light (density = 0.835 kg/l) with a significant portion of light components that will evaporate (up to 40 to 45%) when weathering 2-3 days at sea. The crude oil was weathered by blow-through for 24 hours, giving a volume reduction of 20 %, which is similar to a weathering of 200+ (density 0.88 kg/l).

Marine diesel

Marine diesel is a refined product and a mix of kerosene and heavier gas oils giving a boiling point area of 150-360°C. The density is 0.84 kg/l. Because of the lack of heavier components (or maximum 5%), the diesel is transparent. 60-80% of the diesel will evaporate quickly when released at sea.

IF-30 (low sulphur) Intermediate bunker fuel

Bunker fuel oil delivered from Esso Refinery. The oil is a dark refinery product with high density (0.92 kg/l), containing approx. 35% diesel and 65% Bunker C..

2.3 Testapparatur

The analysis was carried out in plastic cases measuring (width*depth*height) 55*35*13 cm with lids. Because of the shape of the test material (powder), a stainless steel grid was used (diameter on top 21 cm, diameter on the bottom 14 cm, height 10 cm) with a flat bottom. In the bottom there were 84 holes with a diameter of 3mm . To prevent product particles leaving the grid with the fluid, a steel cloth with a mask width of approximately 0.5mm was installed on the inside bottom.

2.4 Hydraulic squeeze

A hydraulic press with steel netting with a mask width of 0.5 mm (similar to the grids) was used. The working pressure was 70 bar.

3. Sorbent tests

The following procedures were carried out to map the properties of the sorbent:

- "Still water take-up" – procedure designed to test the water uptake under stagnant conditions.
- "Long term sorption test" – procedure designed to test for liquid take-up and determine hydrophobic properties of a sorbent sample.
- "Dynamic degradation test" – procedure designed to determine the amount of water uptake and to determine the oleophilic of a sorbent sample under dynamic conditions.
- "W test" – procedure to determine the amount of fluid that a sorbent will take up in 15 minutes.
- "L test" – procedure to test amount of test liquid taken up by the sorbent in 15 minutes.

4. Resultater

The results for each test are given for each test, as described in the procedure. The raw data from each test is given in Appendix 2.

4.1 "Still water take-up"

The uptake of water in the sorbent during 12 hours was:

(g vann/g sorbent)	0,76
(mL vann/g sorbent)	0,76
(ml vann/ml sorbent)	0,05

The test cannot separate between absorbed and adsorbed water in the test material.

4.2 "Long term sorption test"

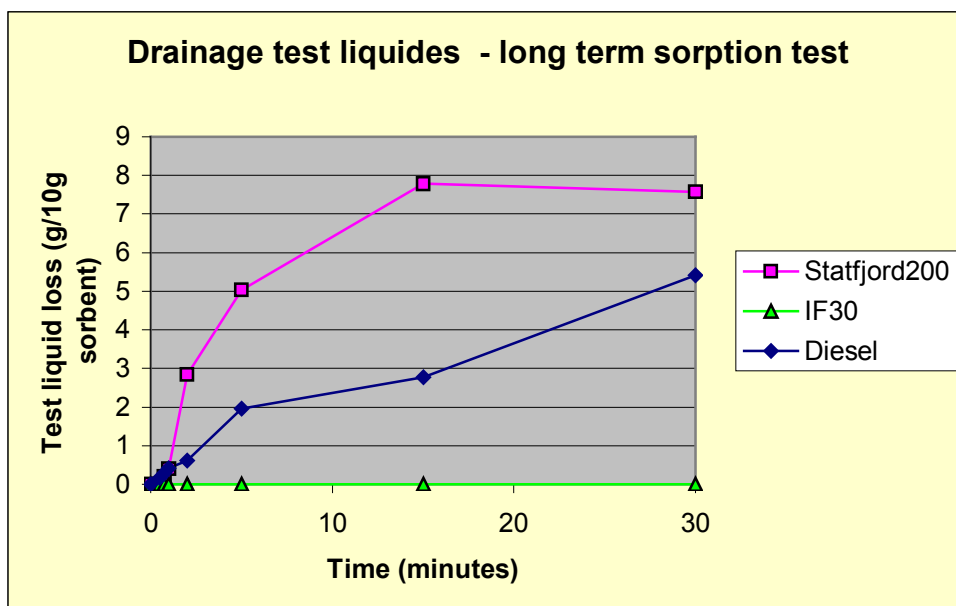
The uptake of test fluid in the sorbent during 12 hours:

	Diesel	Statfjord	IF30
(g test fluid/g sorbent)	11,92	10,64	11,67
(ml test fluid/g sorbent)	10,01	9,36	10,74
(ml test fluid/mL sorbent)	0,70	0,66	0,75

Uptake of water in the sorbent:

	Diesel	Statfjord	IF30
(g water/g sorbent)	0,38	0,17	0,26
(mL water/g sorbent)	0,38	0,17	0,26
(ml water/ml sorbent)	0,03	0,01	0,02

Run-off of the test fluid during 30 minutes is given in the figure below;



4.3 "Dynamic degradation test"

Shaking the sorbent with water showed that significant amounts of water is bound to the sorbent (the sorbent's properties makes the water stay in the grid). The mechanism for water uptake (absorption or adsorption) cannot be determined through these tests. The water can also stay as free water in the grid, but is prevented from running out because of the properties of the "wet" sorbent.

(g water/g sorbent)	7,17
(ml water/g sorbent)	7,17
(ml water/ml sorbent)	0,50

The addition of test fluids after the shaking with water showed that a significant amount of test fluid was absorbed. Free floating test fluid was not observed after the exposure period in the test apparatus. This shows that the test material can absorb test fluids also when wetted. The capacity / properties of the sorbent was not determined in this test.

4.4 "W test"

Uptake of test fluid during 15 minutes::

	Diesel	Statfjord	IF30
(g testv fluid/g sorbent)	10,99	13,68	14,96
(ml test fluid/g sorbent)	9,23	12,04	13,76
(ml test fluid/ml sorbent)	0,65	0,84	0,96

Water uptake:

	Diesel	Statfjord	IF30
(g vann/g sorbent)	1,12	0,40	0,40
(mL vann/g sorbent)	1,12	0,40	0,40
(ml vann/ml sorbent)	0,08	0,03	0,03

Share of water in the absorbed fluid::

	Diesel	Statfjord	IF30
Andel vann absorbert	10,1%	2,9%	2,7%

The water uptake in this test is low, compared to adsorbed water in the dynamic test..

4.5 "L test"

Amount of oil possible to absorb was tested, and were found to be the following for the different test fluids:

	diesel	Statfjord	IF30
(g testvæske/g sorbent)	9,01	12,47	16,33
(ml testvæske/g sorbent)	7,57	10,98	15,02
(ml testvæske/mL sorbent)	0,53	0,77	1,05

With the exception of minor amounts in the diesel test, water mixed with oil was not found after the pressurisation.

4.6 Absorpsjonskinetikk

Comparing the W-test and the L-test with the long-term absorption test, it is clear that the sorbent can absorb test fluids quickly, and well within the criteria in the testing procedure (90% within 15 minutes). Nevertheless, the result has to be evaluated based on the fact that in the L-test and the W-test half the amount sorbent was used, compared to the long-term absorption tests (see point 4.2).

5. Discussion

The results from the test show that the test material has a very high potential for absorbing the type of petroleum products used in these tests. The sorbent can take up oil corresponding to at least ten times its own weight. The results obtained with diesel is the most reliable, since the equipment and procedures used might affect the results for the heavier oils. This is related to the fact that a small-meshed steel net has to be used to prevent the absorption particles from being pressed out with absorbed fluid. Using this net and the size of the netting must be considered up against the fluid being contained in the grid as unbound, since the absorption material will work as a filter. Because of the low viscosity of diesel compared to Statfjord and IF-30, the effect of these conditions will be less pronounced with diesel.

Comparing the absorption capacity of wetted and dry sorbent shows little difference, meaning that the properties does not change significantly when there is a larger amount of water in the sorbent. This indicates that the product might be used as sorbent for several fluids with different properties. Observing the sorbent on water (similar to the still water uptake test) throughout the test period (a total of 6 weeks), the product shows very good floating properties, with limited or none visible changes during this period.

The product housing, to prevent spreading the particles into the environment, will most probably significantly affect the absorption quantities and the absorption kinetics. The design and property of this "wrapping" will affect the properties of the final product.

The product absorbs test fluids by capillary absorption. With sorbent in excess the test liquid will be enclosed in the capillary system. This residual product is easily handled, because the absorbed fluid is capsulated within capillaries, and therefore hardly causes secondary pollution. The tests carried out in CAN/CGSB-183.2-94 are, however, not designed so that phenomenon may be verified in this work. The weight of the sorbent was determined by weighting after pressurisation (see Appendix 2).

Comparing the weight of the residual sorbent, large variations was found for short-time and long-time tests. For the short-time tests the weight increased in comparison to what was added. This shows that the sorbent contains residual fluid after pressurisation, but that is impossible to separate between the test fluid and water. For long-term tests (4.2) the weight of pressured sorbent is lower than the added amount. Assuming that the sorbent in addition contains remains of fluids, there is a considerable loss of sorbent during this test. Mechanisms for this might be that long-term contact between the sorbent and the test fluids changes the properties of the test material, so that it easier will be pressured through the steel grid in the pressurisation process. These will be important elements when it comes to choosing material and design when e.g. producing absorption booms.

In the short-time tests there is a significantly higher amount absorbed for the "heavier" oils (e.g. higher density and viscosity), while in the long-term tests there was no significant difference in absorbed amount. This might be connected to the properties of the oil being more important in the short-time tests, while the difference is smaller in the long-term tests when the sorbent's properties is affected / changed. The design of the test apparatus (grid) makes the drainage of the oil being affected in the finalisation of the tests, and free oil will be held back in the grid. This cannot, however, be quantified in these tests.

Vedlegg 1

”Method for Testing Sorbent”

Vedlegg 2

Oppdragsgiver: Oy Operative Recovery Solutions JMR Ltd
Absorbent: Ors-Sorb tm
Tetthet: 0,070028 **Form:** Pulver
Test #: Still water take-up
Test væske: Vann **Tetthet:** 1

	1	2	3	Gjennomsnitt
Vekt absorbent (innveid) (vannopptak)	10,11	10,13	10,21	10,15
Vekt absorbent med vann	17,69	17,39	18,52	
Vekt vann	7,58	7,36	8,31	
Vekt absorbent presset (tilsats testvæske)				
Vekt absorbent med testvæske				
Vekt testvæske 1				
Vekt testvæske 2				
Vekt testvæske totalt				
Vekt vann				
Vekt absorbent presset				

Beregninger

Opptak vann

(g vann/g sorbent)	0,75	0,73	0,81	0,76
(mL vann/g sorbent)	0,75	0,73	0,81	0,76
(ml vann/ml sorbent)	0,05	0,05	0,06	0,05

Opptak testvæske

(g testvæske/g sorbent)
 (ml testvæske/g sorbent)
 (ml testvæske/mL sorbent)

Oppdragsgiver: Oy Operative Recovery Solutions JMR Ltd
Absorbent: Ors-Sorb tm
Tetthet: 0,070028 **Form:** Pulver
Test #: Long term sorption test
Test væske; Diesel **Tetthet:** 0,84

	1	2	3	Gjennomsnitt
Vekt absorbent (innveid) (vannopptak)	10,01	10,1	10,12	
Vekt absorbent med vann				
Vekt vann	2,9	4,6	4,1	
Vekt absorbent presset (tilsats testvæske)				
Vekt absorbent med testvæske				
Vekt testvæske 1				
Vekt testvæske 2				
Vekt testvæske totalt	116,7	120,14	123,48	
Vekt vann	2,9	4,6	4,1	
Vekt absorbent presset	11,88	9,43	9,52	

Beregninger

Opptak vann

(g vann/g sorbent)	0,29	0,46	0,41	0,38
(mL vann/g sorbent)	0,29	0,46	0,41	0,38
(ml vann/ml sorbent)	0,02	0,03	0,03	0,03

Opptak testvæske

(g testvæske/g sorbent)	11,66	11,90	12,20	11,92
(ml testvæske/g sorbent)	9,79	9,99	10,25	10,01
(ml testvæske/mL sorbent)	0,69	0,70	0,72	0,70

Oppdragsgiver: Oy Operative Recovery Solutions JMR Ltd
Absorbent: Ors-Sorb tm
Tetthet: 0,070028 **Form:** Pulver
Test #: Long term sorption test
Test væske; Staffjord 200+ **Tetthet:** 0,88

	1	2	3	Gjennomsnitt
Vekt absorbent (innveid) (vannopptak)	10,1	10,09	10,12	
Vekt absorbent med vann				
Vekt vann	1,6	2,6	1	
Vekt absorbent presset (tilsats testvæske)				
Vekt absorbent med testvæske				
Vekt testvæske 1				
Vekt testvæske 2				
Vekt testvæske totalt	108,42	103,76	110,38	
Vekt vann				
Vekt absorbent presset	8,03	7,51	8,23	

Beregninger

Opptak vann

(g vann/g sorbent)	0,16	0,26	0,10	0,17
(mL vann/g sorbent)	0,16	0,26	0,10	0,17
(ml vann/ml sorbent)	0,01	0,02	0,01	0,01

Opptak testvæske

(g testvæske/g sorbent)	10,73	10,28	10,91	10,64
(ml testvæske/g sorbent)	9,45	9,05	9,60	9,36
(ml testvæske/mL sorbent)	0,66	0,63	0,67	0,66

Oppdragsgiver: Oy Operative Recovery Solutions JMR Ltd
Absorbent: Ors-Sorb tm
Tetthet: 0,070028 **Form:** Pulver
Test #: Long term sorption test
Test væske: IF30 **Tetthet:** 0,92

	1	2	3	Gjennomsnitt
Vekt absorbent (innveid) (vannopptak)	10,03	10	9,99	10,00667
Vekt absorbent med vann				
Vekt vann	1,9	3,3	2,7	
Vekt absorbent presset (tilsats testvæske)				
Vekt absorbent med testvæske				
Vekt testvæske 1				
Vekt testvæske 2				
Vekt testvæske totalt	114,7	116,42	119,28	
Vekt vann				
Vekt absorbent presset	7,68	7,64	7,88	

Beregninger

Opptak vann

(g vann/g sorbent)	0,19	0,33	0,27	0,26
(mL vann/g sorbent)	0,19	0,33	0,27	0,26
(ml vann/ml sorbent)	0,01	0,02	0,02	0,02

Opptak testvæske

(g testvæske/g sorbent)	11,44	11,64	11,94	11,67
(ml testvæske/g sorbent)	10,52	10,71	10,98	10,74
(ml testvæske/mL sorbent)	0,74	0,75	0,77	0,75

Oppdragsgiver: Oy Operative Recovery Solutions JMR Ltd
Absorbent: Ors-Sorb tm
Tetthet: 0,070028 **Form:** Pulver
Test #: Dynamic
Test væske; Vann **Tetthet:** 1

	1	2	3	Gjennomsnitt
Vekt absorbent (innveid) (vannopptak)	9,98	9,98	9,99	
Vekt absorbent med vann	78	80,4	86,2	
Vekt vann	68,02	70,42	76,2	
Vekt absorbent presset (tilsats testvæske)				
Vekt absorbent med testvæske				
Vekt testvæske 1				
Vekt testvæske 2				
Vekt testvæske totalt				
Vekt vann				
Vekt absorbent presset				

Beregninger

Opptak vann

(g vann/g sorbent)	6,82	7,06	7,63	7,17
(mL vann/g sorbent)	6,82	7,06	7,64	7,17
(ml vann/ml sorbent)	0,48	0,49	0,53	0,50

Opptak testvæske

(g testvæske/g sorbent)
 (ml testvæske/g sorbent)
 (ml testvæske/mL sorbent)

Oppdragsgiver: Oy Operative Recovery Solutions JMR Ltd
Absorbent: Ors-Sorb tm
Tetthet: 0,070028 **Form:** Pulver
Test #: W-test
Test væske; Diesel **Tetthet:** 0,84

	1	2	3	Gjennomsnitt
Vekt absorbent (innveid) (vannopptak)	5,08	5,06	5,01	
Vekt absorbent med vann				
Vekt vann	7	4	6	
Vekt absorbent presset (tilsats testvæske)				
Vekt absorbent med testvæske				
Vekt testvæske 1	20,83	12,02	12,67	
Vekt testvæske 2	35,28	42	43,68	
Vekt testvæske totalt	56,11	54,02	56,35	
Vekt vann				
Vekt absorbent presset				

Beregninger

Opptak vann

(g vann/g sorbent)	1,38	0,79	1,20	1,12
(mL vann/g sorbent)	1,38	0,79	1,20	1,12
(ml vann/ml sorbent)	0,10	0,06	0,08	0,08

Opptak testvæske

(g testvæske/g sorbent)	11,05	10,68	11,25	10,99
(ml testvæske/g sorbent)	9,28	8,97	9,45	9,23
(ml testvæske/mL sorbent)	0,65	0,63	0,66	0,65

Oppdragsgiver: Oy Operative Recovery Solutions JMR Ltd
Absorbent: Ors-Sorb tm
Tetthet: 0,070028 **Form:** Pulver
Test #: W-test
Test væske; Staffjord 200+ **Tetthet:** 0,88

	1	2	3	Gjennomsnitt
Vekt absorbent (innveid) (vannopptak)	5,06	5,03	5,01	5,033333
Vekt absorbent med vann				
Vekt vann	2	2	2	
Vekt absorbent presset (tilsats testvæske)				
Vekt absorbent med testvæske				
Vekt testvæske 1	3,8	3,83	5,18	
Vekt testvæske 2	51,04	72,16	70,4	
Vekt testvæske totalt	54,84	75,99	75,58	
Vekt vann				
Vekt absorbent presset	10,64	8,28	10,65	

Beregninger

Opptak vann

(g vann/g sorbent)	0,40	0,40	0,40	0,40
(mL vann/g sorbent)	0,40	0,40	0,40	0,40
(ml vann/ml sorbent)	0,03	0,03	0,03	0,03

Opptak testvæske

(g testvæske/g sorbent)	10,84	15,11	15,09	13,68
(ml testvæske/g sorbent)	9,54	13,29	13,28	12,04
(ml testvæske/mL sorbent)	0,67	0,93	0,93	0,84

Oppdragsgiver: Oy Operative Recovery Solutions JMR Ltd
Absorbent: Ors-Sorb tm
Tetthet: 0,070028 **Form:** Pulver
Test #: W-test
Test væske; IF-30 **Tetthet:** 0,92

	1	2	3	Gjennomsnitt
Vekt absorbent (innveid) (vannopptak)	5,06	5,07	5,03	5,053333
Vekt absorbent med vann				
Vekt vann	2	2	2	
Vekt absorbent presset (tilsats testvæske)				
Vekt absorbent med testvæske				
Vekt testvæske 1	3,53	2,53	2,69	
Vekt testvæske 2	86,48	69,92	61,64	
Vekt testvæske totalt	90,01	72,45	64,33	
Vekt vann				
Vekt absorbent presset	12,8	9,32	10,92	

Beregninger

Opptak vann

(g vann/g sorbent)	0,40	0,39	0,40	0,40
(mL vann/g sorbent)	0,40	0,39	0,40	0,40
(ml vann/ml sorbent)	0,03	0,03	0,03	0,03

Opptak testvæske

(g testvæske/g sorbent)	17,79	14,29	12,79	14,96
(ml testvæske/g sorbent)	16,37	13,15	11,77	13,76
(ml testvæske/mL sorbent)	1,15	0,92	0,82	0,96

Oppdragsgiver: Oy Operative Recovery Solutions JMR Ltd
Absorbent: Ors-Sorb tm
Tetthet: 0,070028 **Form:** Pulver
Test #: L-test
Test væske; Diesel **Tetthet:** 0,84

	1	2	3	Gjennomsnitt
Vekt absorbent (innveid) (vannopptak)	5	5,01	5,02	5,01
Vekt absorbent med vann				
Vekt vann	2	2	2	
Vekt absorbent presset (tilsats testvæske)				
Vekt absorbent med testvæske				
Vekt testvæske 1	2,93	3,22	3,49	
Vekt testvæske 2	41,92	41,92	41,92	
Vekt testvæske totalt	44,85	45,14	45,41	
Vekt vann				
Vekt absorbent presset	8	7,57	7,7	

Beregninger

Opptak vann

(g vann/g sorbent)	0,40	0,40	0,40	0,40
(mL vann/g sorbent)	0,40	0,40	0,40	0,40
(ml vann/ml sorbent)	0,03	0,03	0,03	0,03

Opptak testvæske

(g testvæske/g sorbent)	8,97	9,01	9,05	9,01
(ml testvæske/g sorbent)	7,53	7,57	7,60	7,57
(ml testvæske/mL sorbent)	0,53	0,53	0,53	0,53

Oppdragsgiver: Oy Operative Recovery Solutions JMR Ltd
Absorbent: Ors-Sorb tm
Tetthet: 0,070028 **Form:** Pulver
Test #: L-test
Test væske; Staffjord 200+ **Tetthet:** 0,88

	1	2	3	Gjennomsnitt
Vekt absorbent (innveid) (vannopptak)	5,02	5	5,05	5,023333
Vekt absorbent med vann				
Vekt vann	0	0	0	
Vekt absorbent presset (tilsats testvæske)				
Vekt absorbent med testvæske				
Vekt testvæske 1	3,42	3,8	3,76	
Vekt testvæske 2	58,48	58,24	60,24	
Vekt testvæske totalt	61,9	62,08	64	
Vekt vann				
Vekt absorbent presset	7,24	8,17	6,99	

Beregninger

Opptak vann

(g vann/g sorbent)	0	0	0	0
(mL vann/g sorbent)	0	0	0	0
(ml vann/ml sorbent)	0	0	0	0

Opptak testvæske

(g testvæske/g sorbent)	12,33	12,42	12,67	12,47
(ml testvæske/g sorbent)	10,85	10,93	11,15	10,98
(ml testvæske/mL sorbent)	0,76	0,77	0,78	0,77

Oppdragsgiver: Oy Operative Recovery Solutions JMR Ltd
Absorbent: Ors-Sorb tm
Tetthet: 0,070028 **Form:** Pulver
Test #: L-test
Test væske; IF-30 **Tetthet:** 0,92

	1	2	3	Snitt
Vekt absorbent (innveid) (vannopptak)	5,01	5,03	5,09	5,043333
Vekt absorbent med vann				
Vekt vann	0	0	0	
Vekt absorbent presset (tilsats testvæske)				
Vekt absorbent med testvæske				
Vekt testvæske 1	1,84	2,19	2,1	
Vekt testvæske 2	69,92	82,8	88,32	
Vekt testvæske totalt	71,76	84,99	90,42	
Vekt vann				
Vekt absorbent presset	9,16	9,65	8,29	

Beregninger

Opptak vann

(g vann/g sorbent)	0	0	0	0
(mL vann/g sorbent)	0	0	0	0
(ml vann/ml sorbent)	0	0	0	0

Opptak testvæske

(g testvæske/g sorbent)	14,32	16,90	17,76	16,33
(ml testvæske/g sorbent)	13,18	15,54	16,34	15,02
(ml testvæske/mL sorbent)	0,92	1,09	1,14	1,05

		Vann	Diesel	Statfjord200+	IF30	Diesel	Statfjord200+	IF30
9.1								
9.2	(g vann/g sorbent) (mL vann/g sorbent) (ml vann/ml sorbent)	0,76 0,76 0,05						
9.3	(g testvæske/g sorbent) (ml testvæske/g sorbent) (ml testvæske/mL sorbent) (g vann/g sorbent) (mL vann/g sorbent) (ml vann/ml sorbent)		11,92 10,01 0,70	10,64 9,36 0,66	11,67 10,74 0,75	0,38 0,38 0,03	0,17 0,17 0,01	0,26 0,26 0,02
9.4	(g vann/g sorbent) (mL vann/g sorbent) (ml vann/ml sorbent)	7,17 7,17 0,50						
9.5	(g testvæske/g sorbent) (ml testvæske/g sorbent) (ml testvæske/mL sorbent) (g vann/g sorbent) (mL vann/g sorbent) (ml vann/ml sorbent)		10,99 9,23 0,65	13,68 12,04 0,84	14,96 13,76 0,96	1,12 1,12 0,08	0,40 0,40 0,03	0,40 0,40 0,03
			diesel	Statfjord200+	IF30			
	(g testvæske/g sorbent) (ml testvæske/g sorbent) (ml testvæske/mL sorbent)		9,01 7,57 0,53	12,47 10,98 0,77	16,33 15,02 1,05			

