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INTRODUCTION

To determine the efficiency of two dispersants, namely FINASOL OSR51 and FINASOL OSR52, using the AMSA Reference oil.

TESTS

The MacKay apparatus was set to an air and seawater temperature of 20 °C with a moderate wave action height of 3.5 cm.

A 1:20 ratio is aimed at for the dispersant/oil mixture.

After a 10 minute period of mixing in the MacKay test chamber, a subsample is taken (A cut). The wind is then turned off. After a further 5 minutes, another subsample is taken (Q cut) and samples are subsequently extracted with Methylene Chloride and analysed on a double beam spectrophotometer.

RESULTS

A good dispersant will immediately break up the oil to really fine droplets and will produce a coffee coloured appearance in the Mackay test chamber. The finer the droplets the longer they will stay in suspension and therefore the % recovery of oil in the "Q cut" (quiescence) ultimately determines this.

Three replicates are performed on each dispersant. This gives a good indication of how a dispersant performs. Ideally, to validate any method, seven replicates should be performed.

FINASOL OSR 51

The aim of the test is to try and get a 20:1 ratio as accurately as possible using the known density of oil and dispersant. Because these procedure are determined by weight, sometimes this ratio will vary slightly due to residual amount of oil or dispersant left inside the syringe after dispensing into the MacKay apparatus.

Finasol OSR 51 performed well, instantly breaking up the oil into fine droplets which remained in suspension well past the 15 minute mark.

Results reproduced well with the exception of the first 5Q. which was not used in the Mean and STDEV.



FINASOL OSR 52

The density of the OSR 52 was higher than most dispersants, with the range given as 990 – 1015 kg/m³. It was obvious that the density was at the top end as the dispersant would very slowly sink to the bottom when placed on top of water. In the actual tests, this did not occur as the oil prevented the dispersant from sinking.

The OSR 52 also did well in breaking up the oil, although not quite as quickly as the OSR 51, and produced a good efficiency result in the “A” cut. All three tests reproduced well with a STDEV OF 1.71 in the 5Q.

AMSA REFERENCE OIL "KUWAIT CRUDE WEATHERED" vs FINASOL OSR 51					
Mackay Apparatus Settings				Wave height	4 cm
				Wind	7.9"
				Temp water	20°C
				Salinity	34
Test #	Weight of Oil	Weight of Finasol osr 51		% Oil dispersed	% Oil dispersed
				10A	5Q
1	10.56	0.51		102.3	60.8
2	10.52	0.58		107.0	70.2
3	10.46	0.55		95.9	66.6
			Mean	101.7	68.4
			Std Dev	5.54	2.55
AMSA REFERENCE OIL "KUWAIT CRUDE WEATHERED" vs FINASOL OSR 52					
Mackay Apparatus Settings				Wave height	4 cm
				Wind	7.9"
				Temp water	20°C
				Salinity	34
Test #	Weight of Oil	Weight of Finasol osr 52		% Oil dispersed	% Oil dispersed
				10A	5Q
1	10.32	0.51		97.6	55.2
2	10.31	0.52		101.5	52.5
3	10.44	0.5		96.8	52.1
			Mean	98.7	53.3
			Std Dev	2.52	1.71