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ANALYSIS OF CLEAN BOOST OIL ABSORBENT

EXECUTIVE SUMMARY

ChemCentre were requested by Southern Technologies to perform a dynamic degradation test on their adsorbent sample and three test oils (14% weathered Kuwait Crude, IFO 180 and IFO 380), following method ASTM F726-17

INTRODUCTION

Testing was done according to method ASTM F726-17 section 9.2.2, the dynamic degradation test for a type II adsorbent. About 10 g of sample is weighed out and added to a 4 L jar containing 2 L of water. The jar is sealed and placed on its side on a shaker table for 15 min. The contents of the jar are left to settle for 2 minutes before observing the condition of the adsorbent and the water.

If 10% or more of the adsorbent has sunk, then the adsorbent fails the test.

The contents are strained through a mesh sieve (pre-weighed) and allowed to drain for 30 seconds before being weighed. These weights are used to calculate the water pick-up ratio.

The jar is again half-filled with fresh water and 3 mL of test oil is added before the sample is returned to the jar. It is placed back onto the shaker table for 15 minutes, then allowed to settle for 2 minutes. During this time observations are noted, including the quantity of adsorbent submerged, physical appearance of adsorbent and water, any residual sheen, and any other observations that may be relevant.

SAMPLE IDENTIFICATION

Southern Technologies supplied ChemCentre with one sample of Clean Boost Oil Absorbent (CBOA) on October 29, 2019.

ChemCentre supplied the three test oils required: Kuwait crude oil (weathered to 85% of its original weight), IFO 180, and IFO 380.

RESULTS

Water Pick-up

The water pick-up ratio is calculated as a ratio of water adsorbed to dry adsorbent weight.

Sample ID	Water pick-up ratio
19S1825/001 Test A	3.1 g/g
19S1825/001 Test B	3.1 g/g
19S1825/001 Test C	3.2 g/g
Average:	3.1 g/g

During this portion of the test, it was observed that while most of the larger particles floated on the surface, some of the very fine powder dropped to the bottom or stayed suspended in the water column. The portion that sunk was filtered out, dried and weighed, and calculated to be between 4 and 6% of the original dry weight.

The portion suspended in the water column was unable to be filtered out, and the particles were small enough that the majority was not collected during the sieving process.

See Appendix A for photographs.

Addition of oil

Three different oils were used for this test: Test A with a 15% Weathered Kuwait Crude oil, Test B with IFO 180 and Test C with IFO 380. For all 3 samples the observations were very similar.

A very small percentage of the adsorbent sank to the bottom, with the IFO 380 and Kuwait Crude causing the biggest impact. This was filtered out, dried and weighed, and was calculated 7% of the original weight. Almost no adsorbent sank when using IFO 180.

For all three the water stayed clear, with a large percentage of the oil/adsorbent stuck to the glass walls by the end of the test.

See Appendix A for photographs.



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APPENDIX A

Figure 1: After the first shake, the finer particles sit on the bottom, or are suspended in the water column



Figure 2: After adding IFO 180



Figure 3: After adding IFO 380



Figure 4: The portion of adsorbent that sank after adding IFO 380



Figure 5: After adding weathered Kuwait crude oil

