AMOSC

DISPERSANT EFFECTIVENESS FIELD TEST KIT

OPERATIONAL GUIDE

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Purpose

Note. The AMOSC Dispersant Effectiveness Field Test Kit is based on the National Plan Dispersant Effectiveness Field Test Kit (Nat-DET). There are variances to the inventory and operational instructions provided in this guide.

The purpose of this document is to provide instructions to operators on how to undertake a quick effective test on possible dispersants to use for both preparedness and/or response to the spill they are dealing with. Providing more rigorous information to the decision-makers about the likely effectiveness of the various oil spill dispersants (OSDs) on their product(s).

The window of opportunity for the use of OSDs on slicks at sea is often very limited. Oil changes (weathers) at sea under the action of the wind and waves and will tend to become less dispersible as the oil thickens, its viscosity increases, and its pour point increases. Therefore, it is recommended that initial dispersant effectiveness testing be carried out as soon as possible (i.e. within 6 hours following the spill where the source has been contained or on newly spilt oil in a continuous spill).

This Operational Guide has been designed to be fast and easy to use in the field, while still providing results that are meaningful to response planners. However, it is advisable that responders practice the techniques described herein to ensure they are familiar with and competent in the use of the kit.

Kit Inventory

Quantity	Item
1	1L plastic beaker
1	250ml plastic beaker
12	20ml single use syringe *(Single test series use)*
6	100ml glass test jars (labelled)
20	2ml glass dispersant vials (labelled) 4 x 1ml Slickgone LTWS 4x 1ml Slickgone NS 4x 1ml Ardrox 6120 4x 1ml Corexit 9500 4x 1ml Corexit 9527
8	Nitrile disposable glove pairs *(Single use)*
2	Absorbent sheets *(Single use)*
1	Protective safety glasses
1	Operational Guide including SDS for each dispersant product

Maintenance

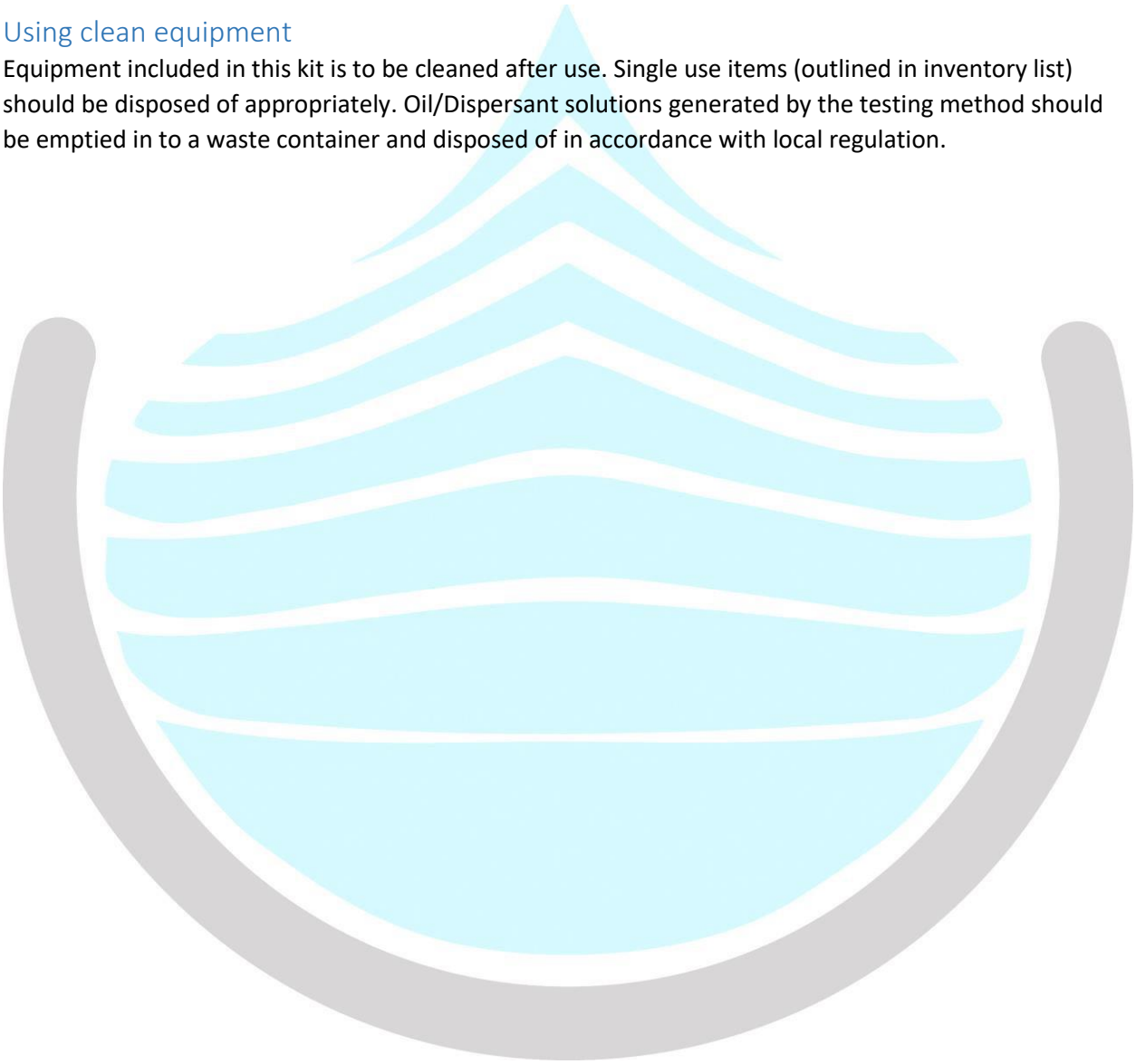
AMOSC has additional equipment available to replace equipment as required at cost.

Dispersant samples

AMOSC will ensure the kit always has a full inventory of dispersant samples upon delivery for hire or purchase (prepared vials less than one year old). Replacement dispersant can be provided as required. A current copy of the safety data sheet (SDS) for each dispersant is included in the kit.

Using clean equipment

Equipment included in this kit is to be cleaned after use. Single use items (outlined in inventory list) should be disposed of appropriately. Oil/Dispersant solutions generated by the testing method should be emptied in to a waste container and disposed of in accordance with local regulation.



Quick Effectiveness Test "Jar Test" (QET)

Aim

Designed to measure the likely effectiveness, now or in the near future, of OSDs on the oils spilled. It is a critical step in the dispersant decision-making process. The aim of the test is:

a) To estimate the overall effectiveness of an OSD on the oils being tested, and

b) To determine which OSD would be most effective on these oils now or in the near future.

NOTE: *remember, oils weather and change with time. You may have to repeat the test before each day's operations (or over the day) to test whether the oil present now is still dispersible. Also, the best test of whether an oil is or remains dispersible is the actual field application of dispersant coupled with reliable, accurate and timely observations by a trained and skilled (normally aerial) observer.*

Method

The quick effectiveness test may be used as a preliminary test of Oil Spill Dispersant (OSD) effectiveness, or where a result is required in a short time period. The quick test involves applying OSD to the test oil, mixing with seawater and observing its effectiveness in dispersing oil, compared to a reference solution containing only oil and seawater. This test may be used if a simple 'effective/not effective' criterion is all that is required when assessing if an OSD will be effective on particular oil.

QET – Safety and PPE:

- Gloves and eye goggles
- Use of overalls is advised
- A bench and sink with running water is advised
- Cloths and rubbish containers available

Part A: QET – Preparing the reference solution

The reference solution of non-dispersed oil and seawater is to compare with your test mixture.

1. Collect a sample of fresh, clean seawater in a large plastic beaker or bucket. Keep out of direct sunlight and use immediately. Dispose and resample if delayed.
2. Measure 80ml of seawater and pour into the reference jar.
3. Add 20ml of test oil to the surface of the seawater in the reference jar.
4. Tighten the lid on the test jar and mix the oil/seawater solution by slowly swirling the jar for 30 seconds (this prevents the oil sticking to the glass immediately). Followed by slowly rotating the jar end over end (at a rate of about one half turn for every two seconds) for 90 seconds. This mimics the mixing action of the ocean on the dispersant/oil mixture.
5. Stand the jar upright and allow to rest while you prepare the test solution.

Part B: QET – preparing the test solution

1. Collect a sample of fresh, clean seawater in a large plastic beaker or bucket. Keep out of direct sunlight and use immediately. Dispose and resample if delayed.

2. Select your dispersant sample and matching test jar and lay out on a sheet of absorbent.

3. Measure 80ml of seawater and pour into the test jar.

4. Dispersant and test oil is to be added at the correct dispersant to oil application ratio. A ratio of 1:20 is recommended as a guide. To achieve this, measure 20 ml of oil (1 x 20 ml syringe can be used for all oil sampling for complete set of dispersants) and add to the surface of the water in your test jar. Open the pre-measured vial (1 ml) of oil spill dispersant and apply by
'dripping' evenly over the surface of the oil.

5. Tighten the lid on the test jar and mix the oil/dispersant/seawater solution by slowly swirling the jar for 30 seconds (this prevents the oil sticking to the glass immediately). Followed by slowly rotating the jar end over end (at a rate of about one half turn for every two seconds) for 90 seconds. This mimics the mixing action of the ocean on the dispersant/oil mixture.

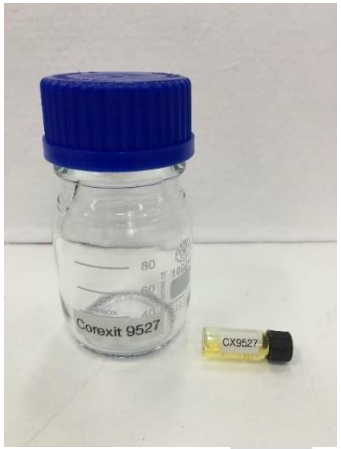
6. Stand the jar upright and rest for 2 minutes.

NOTE: *If testing alternative oil spill dispersants, repeat steps 2 –6 for each dispersant type. The solutions can be visually compared to determine the effectiveness of each OSD.*

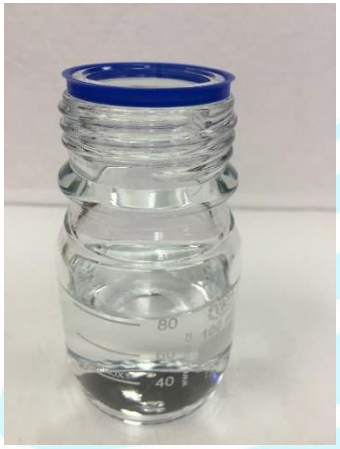
Part C: QET – Interpretation

Visually compare the ***Test Mixture***(s) with the ***Reference*** solution containing just oil and seawater. If the OSD is effective, you will see the test mixtures will be darker or more opaque than the water in the reference mixture due to the quantity of dispersed oil suspended in the seawater.

QET Method

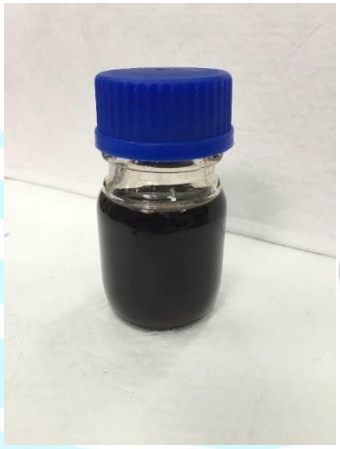


A.
Select sample test jar that corresponds with chosen dispersant sample.



B.
Fill test jar with 80ml of fresh seawater.

C.
Measure 20ml of oil and apply with syringe to surface of water. Apply dispersant by evenly dripping over the surface of the oil.



D.
Gently swirl jar for 30 seconds, followed by rotating end over end for 90 seconds.

E.
Rest upright for 2 minutes.

Testing Record

The Dispersant Effectiveness Field Kits inventory allows for each dispersant to be tested four times. Repeat tests should be conducted to record the potential change in effectiveness over time.

NOTE: *After each test, a photo should be taken of the Test Mixtures and the Reference solution as a record. The solutions should then be disposed of appropriately into a waste container, in accordance with local regulation, and suitably washed with soap and water to remove any residual oil and dispersant prior to reuse. All tests should be conducted with clean equipment.*

Sample No.	Date	Time	Dispersant Type	Photo (Y/N)	Success (Y/N)	Comments (incl: Location Lats/Longs)