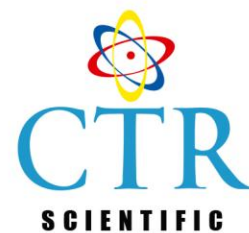


Application Note - The Oxidization of Motor Oil



Introduction:

There are many *DigiPREP* applications which do not require the acidification of samples. For example, the evaluation of oxidation stability in motor oil using ASTM Method D-943-04 as a reference. This test method is currently in use at one of our International customers who uses a *DigiPREP MS* and Color Touch Screen Controller with great success. This company is one of the major players in the electrical market.

Sample Type:

Motor Oil (45 ml)

Supplies and Reagents:

- 1) *DigiTUBE*s, 50 ml
- 2) Cap for 50 ml *DigiTUBE*s
- 3) *DigiPREP MS* and Color Touch Screen controller
- 4) *DigiPROBE*
- 5) 5 g of Cu
- 6) Air compressor
- 7) Polypropylene pipettes
- 8) Rubber bulb

Sample Preparation Procedure:

Modification of the *DigiTUBE* Cap:

In reference to the ASTM Method D-943-04, the standard mountings were modified in order to use *DigiTUBE* caps with *DigiTUBE*s. As well, an in-house tubed-manifold was manufactured to blow air from a compressor into each tube.

Take a *DigiTUBE* cap and create two holes. In the first hole, insert the end of the tube from the manifold into the cap; this is to be used as an air channel. The second hole will be used for proper ventilation of the sample.

DigiPREP

Application Note - The Digestion of Oil Samples

Sample Preparation:

Insert 45 ml of the motor oil into a 50 ml *DigiTUBE*. Screw on the modified *DigiTUBE* cap onto the *DigiTUBE* and place the sample into the well of the *DigiPREP* system. Set the set point temperature of the Touch Screen controller to 120°C for 500 hours. Extract an aliquot from the *DigiTUBE* every 90 hours and analyze sample.

Note: Additional tests were done to measure kinematic viscosity using a Kinematic Viscosity Tester (refer to ASTM D-445-06) and current flow using a polarograph (refer to ASTM D-6810-02).

Sample Analysis Procedure:

These samples were analyzed by FT-IR spectroscopy, calibrated glass viscosity tubes and by polarography.

References:

- 1) ASTM Method D-943-04, Standard Test Method for Oxidation Characteristics of Inhibited Mineral Oils.
- 2) ASTM D-445-06, Standard Test Method for Kinematic Viscosity of Transparent and Opaque Liquids (and Calculation of Dynamic viscosity).
- 3) ASTM D-6810-02, Test Method for Measurement of Hindered Phenolic Antioxidant Content in HL Turbine Oils by Linear Sweep Voltammetry.

DigiPREP

www.ctr.com.mx

ctrscientific@ctr.com.mx

Ave. Lincoln #3410 Pte. Col. Mitras Norte CP. 64320 Monterrey Nuevo León. Tel. 8158 0600