

# INSTRUCTIONS FOR **TITRACLOR<sup>®</sup>-C**

## Used Oil Titration Kit Quantitative Determination of the Chlorine Content in Petroleum Products

### **EACH KIT CONTAINS:**

1. Ten plastic test tubes with white dispensing caps each containing a colorless ampule (bottom) and a yellow dotted gray ampule (top) - Tube #1.
2. Ten plastic test tubes with a clear cap each containing 7 ml of a buffer solution, and a red-green ampule - Tube #2.
3. Ten plastic filtration funnels.
4. An amber bottle of standardized mercuric nitrate titrant.

### **REQUIRED EQUIPMENT:**

1. Titration beaker.
2. 10 ml capacity dispensing burette.
3. Magnetic stirrer (optional).
4. Distilled or deionized water.
5. Analytical balance.

**READ CAUTION AND INFORMATION SECTIONS ON BACK BEFORE PERFORMING TEST. WEAR RUBBER GLOVES AND SAFETY GLASSES.**

### DIRECTIONS

**1. PREPARATION** Remove a white dispensing capped tube, a clear capped tube and a filtration funnel from the box. Rinse and fill the burette to be used during the analysis with the standardized mercuric nitrate titrate.

**2. SAMPLE INTRODUCTION** Unscrew the white dispensing cap from Tube #1. Using an analytical balance, tare the tube and weigh approximately 0.35 grams of the oil to be analyzed into the tube. After recording the actual sample weight, remove the tube from the balance and replace the white cap on the tube tightly.

**3. REACTION** Break the lower (colorless) ampule in the tube by compressing the sides of the tube. Mix thoroughly by shaking the tube vigorously for about 30 seconds. Break the top (gray) ampule in the tube and shake thoroughly for about 20 seconds. Allow the reaction to proceed for an additional 40 seconds (total of one

minute), while shaking intermittently several times.

**4. EXTRACTION** Remove the caps from both tubes and pour the clear buffer solution from Tube #2 (clear cap) into Tube #1. Replace the white cap tightly on Tube #1 and shake vigorously for about 10 seconds. Vent the tube carefully by partially unscrewing the dispensing cap. Close securely and shake well for an additional 10 seconds. Vent again, tighten cap and stand tube upside down in its cap. Allow the phases to separate for a full two minutes.

**5. ANALYSIS** Place the plastic filtration funnel into Tube #2. Position Tube #1 over the funnel and open nozzle on dispenser cap. Dispense 5 mls of the clear solution through the filter into Tube #2 (up to the line) by squeezing the sides of Tube #1. Close the nozzle on the dispenser cap on Tube #1 and remove the filter funnel from Tube #2. Replace the clear cap on Tube #2 and break the (colored) ampule and shake the solution for 10 seconds. Dispense the contents of Tube #2 into a titration beaker. Rinse the tube with two 5 ml aliquots of distilled water, adding the rinses to the titration beaker. Titrate the solution with the standardized mercuric nitrate solution while stirring the solution. The endpoint is determined when the yellow solution turns to purple.

**6. RESULTS** Stop the titration when the color matches the middle picture below.

**7. CALCULATION** Record the amount of titrant required to reach the endpoint. Calculate the total chloride concentration by the following equation.

$$Cl^{-} PPM = \frac{(A)(248.15)}{\text{sample wt. (grams)}}$$

A= mls of mercuric nitrate to titrate sample

**DEXSIL®** Titrator-C is a trademark of the Dexsil Corporation.

## SUGGESTIONS FOR USING THE TITRACLOR-C KIT

- The kit is designed for testing used oil, and is not intended to be used on water/oil mixtures that contain more than 20% water. For samples that contain more than 20% water, contact Dexsil about the Hydroclor-Q® kit designed for testing samples for chlorinated organic compounds in water.
- The kit works well on all types of waste and used oils including crankcase, hydraulic, diesel, lubricating, fuel oils and kerosene. It is strictly designed for use only on oils which are hydrocarbon-based. Some oils, such as cutting fluids which contain more than 3 or 4% sulfur may give false positive results. False negatives will not occur. If you have any questions as to the applicability of the kit for your sample, contact Dexsil's technical service department.
- The kit should be examined upon opening to see that all of the components are present and are in place and not leaking (Tube #1 contains two (2) ampules and Tube #2 contains one (1) ampule). The liquid in Tube #2 (clear cap) should be approximately 1/4 inch above the 5 ml line and the tube should not be leaking. The ampules are not supposed to be completely full.
- Always crush the clear ampule in Tube #1 first. If this sequence has not been followed, stop the test immediately and start over using another white dispensing capped tube. False negative results may result which may allow a contaminated sample to pass without detection.
- When transferring the buffer solution from Tube #2 into Tube #1, tip Tube #2 to an angle of only 45E to prevent the ampule holder from sliding out.

### CAUTION

- When crushing the glass ampules, press firmly in the center of the glass ampule **ONCE**. Never attempt to re-crush broken glass as it may come through the plastic and cut fingers.
- In case of accidental breakage onto skin or clothing, wash with large amounts of water. All the ampules are poisonous and should not be taken internally.
- Do not ship kits on passenger aircraft.
- The gray ampule in the white-capped test tube contains metallic sodium. Metallic sodium is a flammable solid and is water reactive.

- Wear rubber gloves and safety glasses while performing test.
- Dispose of kits properly. Contact Dexsil if you have any specific questions concerning disposal procedure.
- Read the Material Safety Data Sheet before performing the test.
- Keep Out of Reach of Children.

## **MANUFACTURER'S WARRANTY**

This kit is warranted to be free of defects in material and workmanship until the expiration date stamped on the box. Manufacturer's sole and exclusive liability under this warranty shall be limited to replacement of any kit that is proven to be defective. Manufacturer shall not be liable for any incidental or consequential damages.

Reliable test results are highly dependent upon the care with which the directions are followed and, consequentially, cannot be guaranteed.

This kit is manufactured by **DEXSIL**<sup>®</sup> corporation  
One Hamden Park Drive, Hamden, Connecticut 06517  
(203) 288-3509 FAX: (203) 248-6523  
<http://www.dexsil.com>