

INSTRUCTIONS FOR
TITRA-LUBE® TBN Test Kit
Quantitative Test Kit to Determine Total Base Number Values
Between 0 and 20 in All Types of Engine Lubricating Oil.

EACH KIT CONTAINS:

1. Tube #1 - A plastic test tube with a white dispensing cap containing a white-dot ampule (bottom) and a black-dotted ampule (top).
2. Tube #2 - A plastic test tube with white cap containing 7 ml of an aqueous buffer solution and a red-orange ampule.
3. A polypropylene sampling syringe and a tissue wipe.
4. A sealed plastic syringe with a break-off tip containing titrating solution.
5. A white plastic syringe plunger rod.
6. A plastic filtration funnel

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

DIRECTIONS

1. SAMPLE INTRODUCTION Remove Tube #1 (black cap) and the sampling syringe from the kit box and place Tube #1 into the holder in the front of the box. Remove the black cap from the test tube. Work the plunger of the sampling syringe a few times to ensure that it slides easily. Place the tip of the syringe in the well-mixed oil sample to be tested. Pull back slowly on the syringe plunger until it reaches the stop and cannot be pulled further, making sure the sample contains no air bubbles. Remove the syringe from the sample container and wipe any excess oil off the tip with the enclosed tissue. Dispense the oil sample into Tube #1. Dispose of the sampling syringe.

2. REACTION Replace the black cap on the test tube tightly. Break the bottom (colorless, white-dot) ampule in the test tube and shake well for 15 seconds. Break the top (colorless, black-dot) ampule and shake vigorously for 30 seconds.

3. EXTRACTION Remove the caps from both test tubes and pour the clear buffer solution from Tube #2 (white cap) into Tube #1 (black dispensing cap). Replace the black cap tightly on Tube #1 and shake vigorously for 30 seconds. Vent the tube by partially unscrewing the dispensing cap one half turn and re-tighten the cap securely. Stand the tube upside down on its cap and allow the phases to separate for a full three minutes.

4. ANALYSIS Place the plastic filtration funnel into Tube #2. Position Tube #1 over the funnel and, keeping the black-capped tube vertical, open the nozzle on the dispenser cap. Be sure to point the nozzle away from the operator while opening it, and check that the nozzle is open completely before dispersing the clear solution. Dispense 5 ml of the clear solution through the filter into Tube #2 (up to the 5 ml line) by squeezing the sides of Tube #1. Do not allow any oil to pass through the filter into the test tube. If the tube must be squeezed twice to dispense enough solution, make sure to let the air in slowly so that the oil and water layers are not mixed. Close the nozzle on the dispensing cap on Tube #1 and remove the filter funnel from Tube #2.

5. Open the foil pouch containing the plastic syringe by tearing across the notched edges. Place the plunger rod into the titrating syringe and press until it clicks into place. Break off (do not pull off) the tip on the titration syringe. Place the syringe into Tube #2 and tighten the cap. Break the red-orange ampule by squeezing the sides of the test tube and shake the tube initially for five seconds. **Do NOT zero the plunger prior to analyzing the sample.** While shaking the tube, slowly depress the syringe plunger and look for a color change. Stop depressing the plunger as soon as the solution changes from magenta to yellow.

6. RESULTS Read the TBN number directly off the titrating syringe right at the tip of the black plunger.

SUGGESTIONS FOR USING TITRA-LUBE TBN KIT

- ! The kit should be examined upon opening to see that all of the components are present and that all the ampules (3) are in place and not leaking. The liquid in Tube #2 (white cap) should be approximately ½ inch (1 cm) above the 5 ml line and the tube should not be leaking. The ampules are not intended to be completely full.
- ! Perform the test in a warm, dry area with adequate light.
- ! Always crush the bottom ampule in Tube #1 first. If this has not been followed, stop the test immediately and start over using another complete kit. When an incorrect sequence is followed, a false reading may result.
- ! In Step #3, tip Tube #2 to an angle of only about 45° to prevent the ampule holder from sliding out.
- ! Crush each ampule only ONCE to prevent glass from piercing the tube.

CAUTION

- ! When crushing the glass ampules, press firmly in the center of the glass ampule **ONCE**. Never attempt to recrush broken glass as it may come through the plastic and cut fingers.
- ! The bottom ampule in the black-capped tube contains a flammable solvent. Do not use test kit near fire or flame. Do not smoke while performing test. The top ampule contains 0.5% hydrochloric acid.
- ! In case of accidental breakage or spillage onto skin or clothing, wash immediately with large amounts of water. All the ampules are poisonous and should not be taken internally.
- ! The kit contains both dilute acid and base and small amounts of combustible solvents. None of the components are severe health hazards.
- ! Wear rubber gloves and safety glasses while performing test.
- ! Keep out of reach of children.
- ! Refer to Material Safety Data Sheet for additional information
- ! Used kits should be disposed of as used solvents. Do not throw in trash unless solvents have been drained from the test tube first.

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**[®] Corporation
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