

## DESCRIPTION

The DREW XP INSOLUBLES TESTER is a quick, cost effective screening tool for identifying the presence of contaminants in lube oil. It indicates the degree of contamination using a qualitative comparison of test spots from lube oil samples, dried on special test paper, against reference spots. The self-contained test kit includes chromatography test paper, sample bottle, test beaker and test stirring rod, with sufficient test paper to perform 100 comparisons. Results are available as soon as sample test papers are dry.

Contaminants in lube oil are typically insoluble products of combustion, including carbon particles or agglomerates of carbon and other materials. Lube oil is formulated with special additives including detergents and dispersants designed to hold combustion deposits and other contaminants in suspension. The potential for costly engine damage is substantial when these contaminants precipitate out because of the accumulation of excessive combustion byproducts and wear metal contaminants, as well as lube oil degradation while in service. This simple, inexpensive onboard test provides an easy way to routinely monitor insolubles as an indication of lube oil condition during operation. A weekly testing schedule is recommended.

For best value, the DREW XP INSOLUBLES TESTER is offered as part of an integrated onboard testing program designed to streamline and optimize lube oil management. The DREW XP LUBE OIL FIVE-TEST KIT also provides all components needed for testing lube oil for water content and sea water contamination, total base number as a measure of alkalinity reserve, and qualitative evaluation of viscosity.

## INSOLUBLES IN ENGINE OIL – VALUE OF ONBOARD TESTING

Insolubles present in engine oil are evidence of contamination from a variety of possible sources, including: combustion deposits, unburned fuel, engine wear metals, corrosive wear metals, oil oxidation and degradation, and water contamination. For monitoring these conditions, samples should be taken from the same sample point with the system running, to catch the initial build-up of contaminants in the oil. When onboard tests show even “light” readings for insolubles, oil samples should be sent to shore-based laboratories for confirmation, more precise analysis, and guidelines for optimal corrective action.

“Medium” readings for insolubles indicate the development of serious machinery problems because of deteriorating lube oil condition, both of which are likely to worsen quickly.

Frequency of testing should be increased, and the machinery should be inspected as soon as possible. Test results in this range also signal the need to consider measures to remove or reduce the level of contaminants, including the use of portable filtration carts or in-line centrifuging to remove contaminants from the oil. If available, it may be possible to add fresh lube oil to “dilute” the presence of insolubles in the system.

“Heavy” insolubles means the lube oil is at the end of its useful service life and is failing to lubricate as intended. Because of the likelihood that irreversible machinery damage is also occurring, the machinery should be inspected to identify and procure spare parts as needed. In addition, machinery repairs and lube oil replacement are recommended at the first opportunity.

## INSOLUBLES IN COMPRESSOR OR GEARBOX OILS

Although the presence of insolubles in compressor or gearbox oil is rare, rapid changes in insolubles test results indicate the likelihood of serious problems developing, and should trigger submittal of an oil sample for complete analysis by a shore-based laboratory. Onboard tests for insolubles are recommended either once each voyage or monthly to monitor and detect such changes.

## TECHNICAL FEATURES AND OPERATION

- The level of insolubles is indicated by the shade of sample spots dried on the test paper – the darker the spot, the heavier the amount of insolubles present.
- Results are available as soon as sample test papers dry. (When supplied as part of the complete DREW XP FUEL & LUBE OIL TEST CABINET, a compatibility tester oven is also available, which may be used to accelerate the drying process.)
- The comparison chart (shown here and in the Drew Marine Operating Manual) shows a matrix of reference spots for three levels of insolubles – light, medium and heavy. The reference spots also show three approximations of dispersancy – good, moderate, poor – as a function of approximated base number, for each level of insolubles. (Precise measurement of base number for oil samples can be obtained using the DREW XP TOTAL BASE NUMBER TEST KIT, available separately.)
- Step-by-step testing procedures are easy to follow.



Contact your Drew Marine representative for more information

## CLEANUP AND HANDLING

- The use of harsh chemicals for cleaning test kit instruments and accessories is not advisable. Use only approved cleaning agents (e.g. Drew Marine's TEST KIT CLEANER — PCN 1AB2738) to clean test kit components, and wipe clean using a dry rag. Dispose of the used rag as used oil.

## TEST PROCEDURES

For step-by-step operating procedures and precautions, refer to the Insolubles section of the Operating Manuals for the DREW XP FUEL & LUBE OIL TEST CABINET and the DREW XP LUBE OIL FIVE-TEST KIT.

### Contents and Ordering Information

**This test is standard as part of:**

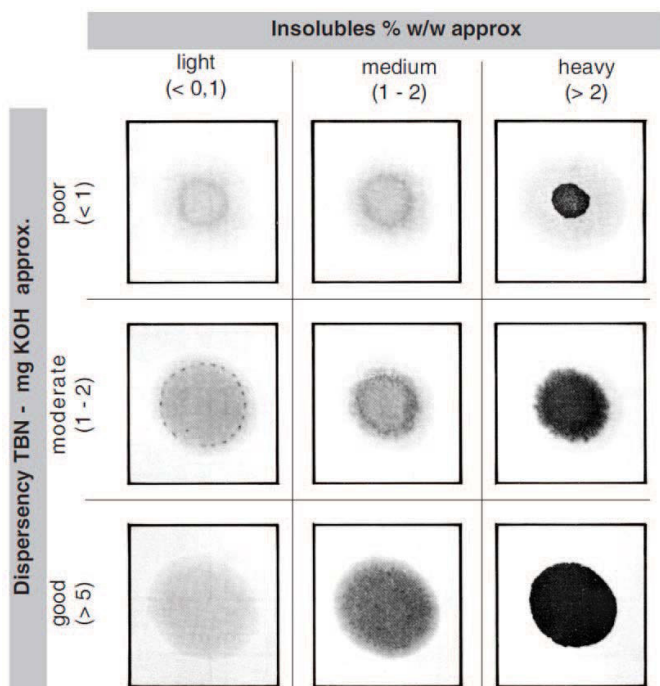
- DREW XP FUEL & LUBE OIL TEST CABINET
- DREW XP LUBE OIL FIVE-TEST KIT

### Reorders

- DREW XP INSOLUBLES TESTER (PCN 1AB2759)

### Spares and Replacements

Description	PCN
Test Paper, Chromatography	1AB2807
Sample Bottle, 50x100ML	1AB2808
Stirring Rod, 3 CT.	1AB2809



## BENEFITS AT A GLANCE

- Fast, cost-effective testing capability allows optimizing insolubles monitoring on a weekly schedule for lube oil, and monthly for compressor or gearbox oils.
- Allows prompt action to minimize machinery problems and damage when rising insolubles levels indicate deteriorating lube oil condition.



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