



## Water Detection Field Test Instructions

For the detection of suspended and separated free water, and particulates in diesel, biodiesel, biodiesel blends, off-road fuel, jet fuel, heating oil, and kerosene

### Instructions:

#### Part 1 Visual Inspection

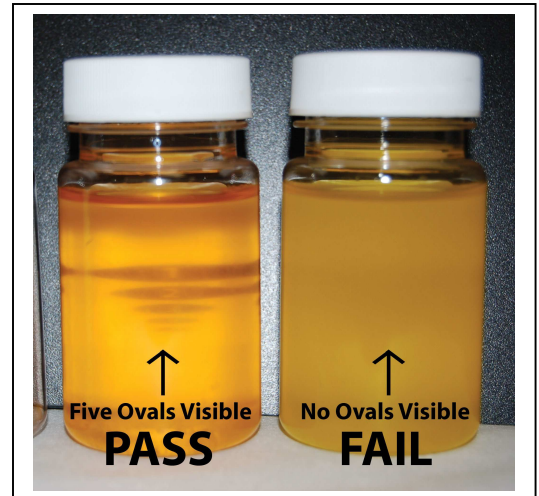
- Step 1. Open test bottle and remove the small tube of indicator solution. **Discard desiccant packet.**
- Step 2. Fill test bottle to the shoulder with fuel. Replace the cap securely.
- Step 3. Shake for 5 seconds and wait one minute.
- Step 4. Closely examine the sample looking at the ovals through the bottle.

#### Interpreting the results

**PASS:** Clear and bright fuel, with numbers and ovals clearly visible through the fuel.

**FAIL:** Cloudy fuel with numbers and ovals not clearly visible, may indicate the presence of contaminants.

### Background info on reverse side



*Note: DO NOT DISPOSE OF THE FUEL; it will be used in the next step.*

#### Part 2 Water Detection

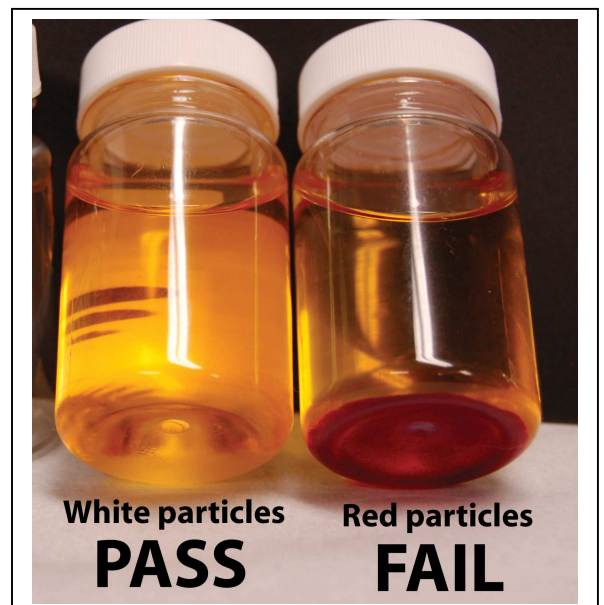
- Step 1. Vigorously shake or flick the small tube of indicator solution until completely mixed.
- Step 2. Open the test bottle containing fuel, and pour in the indicator solution (from small tube).
- Step 3. Replace and tighten the cap of test bottle and vigorously shake for 5 seconds.
- Step 4. Let the sample stand for 3 minutes.
- Step 5. Holding the bottle upright, examine the contents and the bottom of bottle.

#### Interpreting the results

You will see particles from the indicator settling on the bottom.

**PASS:** Particles are white.

**FAIL:** Particles turn red (dark purple in dyed fuel).  
Fuel likely contains water exceeding 200-500ppm.



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Test Bottle

Water Indicator in small tube

## **BACKGROUND**

Water in fuel will often lead to serious problems, including blown injectors, failed injector pumps, filter plugging, microbial growth, poor starting and idling, loss of power, and general decreases in performance and function, all potentially leading to down time and expensive repair of equipment. Fleet Fuel Testing's Water/Viz Field Test makes it fast and easy to monitor water and sediment contamination. Our test identifies not only separated free water (water bottoms) but also suspended free water – the cause of most engine problems.

Fleets should regularly and frequently test fuel for water, as effective preventative measures are possible only if the water is identified early. Entire fleets have been suddenly taken down by water contamination often without knowing the source. A weekly testing regimen of fuel sampled from main storage tanks or from fleet vehicles will provide the Fleet Manager with on-going fuel surveillance. At just \$10 per test, this is cheap insurance against the high risk and cost of contamination related repair and down time. Service technicians should also use the test to check fuel in vehicles that are being serviced for injectors, filters, and injection pumps.

Water moves into fuel throughout the supply chain, and changes its physical characteristics according to temperature, fuel type, and other parameters. Similar to how water behaves in air - where it moves from humidity to condensation, and finally to fog and rain - water in fuel can be dissolved (like humidity) and then fall out of solution into suspended free water (similar to fog), and finally it will form larger droplets and fall to the bottom like rain where it accumulates as "water bottoms". Importantly, biodiesel blends hold water up in suspension more readily than petrodiesel, so the increased use of biodiesel blends (much without pump labeling) has created the need for more rigorous testing for water contamination. This is why it is now critical to not only test for separate "water bottoms", but also for water in suspension. It is this suspended water that can cause many problems to equipment.

Our test is an effective test for detecting separate and suspended water in the range consistent with industry recommendations and standards such as the ASTM and the Engine Manufacturer's Association (500ppm). The test works well for all types of diesel and biodiesel blends, and it also works well for dyed off-road fuel. Test shelf life is 6-12 months, depending on storage conditions. A red ring will develop in the indicator solution in expired tests.

### **Disclaimer and Warranty**

All Fleet Biodiesel and Fleet Fuel Testing Field and Lab Tests are offered only as general indicators of fuel quality. All commercial tests – even analytical tests performed according to ASTM specifications – are subject to error due to sampling techniques, unique fuel attributes, and statistical anomaly. Failed test should be verified by repetition or more detailed analytical testing. No warranties, either expressed or implied, are made regarding the accuracy of the tests or the quality of fuel that is tested.

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