



David L. Wooton, Ph.D.
DaveWooton@Wooton-Consulting.com

www.Wooton-Consulting.com
17145 Tulip Poplar Rd.
Beaverdam, VA 23015
Phone: (804) 227-3418
Fax: (804) 227-9426

Wooton Consulting Overview

Dr. Wooton has spent 30 years as an analytical chemist developing hundreds of lubricant testing standards and methods. He has a unique understanding of lubricant chemistry having been a formulator for a major lubricant additive company. He has over 40 published papers, multiple patents and is a sought after speaker and writer in lubrication circles.

Lube Condition Report - Turbine Oil Analysis Packages

Over the last several years, Dr. Wooton has been on the front-lines of turbine oil degradation, varnish and deposit formation, and fluid analyses and interpretation. His fluid analysis packages are designed to augment a routine oil analysis program by providing key insights into the fluid condition. Each fluid report comes with a detailed interpretation and suggestions on how to optimize the performance of your turbine oil.

Turbine Oil Platinum - The most in-depth analysis available for turbine oils.
(16 oz Sample - The new oil is required to properly compare the results)

Test – Test Procedure – Purpose

- Membrane Patch Colorimetry – ASTM D02.C Section C01.B (WK13070) – (Draft)
 - Measures the varnish potential of the lubricant by measuring the amount of soft contaminants and reporting the value on a 1 to 10 severity scale
- Fourier Transform Infrared – ASTM D02.CS96 – (WK12567) – (Draft)
 - Examines oil degradation mechanisms, additive condition and formulation changes
- Linear Sweep Voltammetry (RULER) – ASTM D6971
 - Plots the aromatic amine and hindered phenol antioxidants against a new oil reference sample to determine the relative concentration
- Rotating Pressure Vessel Oxidation Test – ASTM D2272
 - Determine the oxidative stability of the turbine oil.
- ISO Particle Count – ISO 4406-99
 - Measures the oil cleanliness by determining amount of hard contaminants greater than 4-microns in size
- Acid Number – ASTM D664
 - Calculates the acidic constituents in the oil which increases through oxidation
- Viscosity – ASTM D445
 - Determines the viscosity in centistokes at 40oC
- Spectrograph Analysis – ASTM D6595
 - Measures the metal components in ppm
- Water by Karl Fisher – ASTM D6304
 - Measures the amount of moisture in the oil
- Foam Tendency – ASTM D892 (Sequence I)
 - To measure the ability of the lubricant to control foam formation and prevent cavitation and microdieseling problems

Turbine Oil Gold – Designed to test the three critical components omitted from routine analysis.
(2 oz Sample - The new oil is required to properly compare the results)

Test – Test Procedure – Purpose

- Membrane Patch Colorimetry – ASTM D02.C Section C01.B (WK13070) – (Draft)
 - Measures the varnish potential of the lubricant by measuring the amount of soft contaminants and reporting the value on a 1 to 10 severity scale
- Fourier Transform Infrared – ASTM D02.CS96 – (WK12567) – (Draft)
 - Examines oil degradation mechanisms, additive condition and formulation changes
- Linear Sweep Voltammetry (RULER) – ASTM D6971
 - Plots the aromatic amine and hindered phenol antioxidants against a new oil reference sample to determine the relative concentration

Turbine Oil Silver – Examination of a fluid’s degradation mechanisms and antioxidant health
(2 oz Sample - The new oil is required to properly compare the results)

The new oil is required to properly compare the results

Test – Test Procedure – Purpose

- Fourier Transform Infrared – ASTM D02.CS96 – (WK12567) – (Draft)
 - Examines oil degradation mechanisms, additive condition and formulation changes
- Linear Sweep Voltammetry (RULER) – ASTM D6971
 - Plots the aromatic amine and hindered phenol antioxidants against a new oil reference sample to determine the relative concentration

Varnish Potential – Based on the upcoming ASTM Standard.
(2 oz Sample)

The new oil is required to properly compare the results

- **Test – Test Procedure – Purpose**
- Membrane Patch Colorimetry – ASTM D02.C Section C01.B (WK13070) – (Draft)
 - Measures the varnish potential of the lubricant by measuring the amount of soft contaminants and reporting the value on a 1 to 10 severity scale

**Analytical Testing
Pricing Schedule**

November, 2006

| Test Package | Price |
|-------------------------------|--------------|
| Turbine Oil Platinum | \$850 |
| Turbine Oil Gold | \$400 |
| Turbine Oil Silver | \$250 |
| Turbine Oil Varnish Potential | \$150 |

