OIL ANALYSIS PROGRAM OVERVIEW

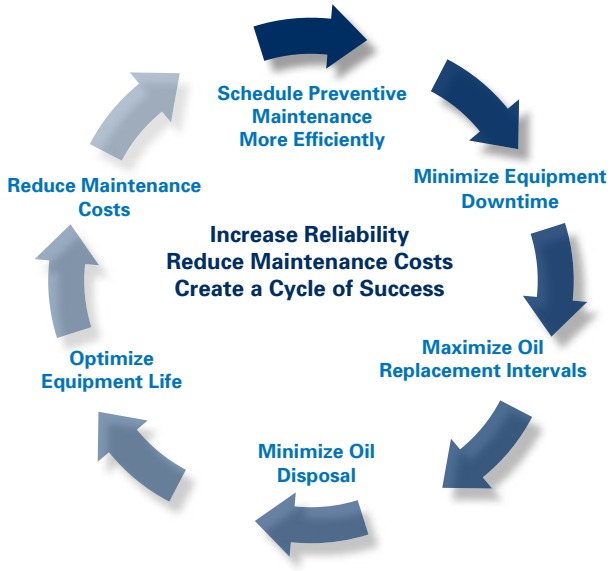
LUBEWATCH®

The Value of Reliability-based Lubrication

Chevron Lubricants' business model is a blend of knowledgeable people, targeted products and customized services that can help lower operational costs while maximizing machinery uptime. It's focused on what you need most: **reliability.** Predictive measures and analysis play an important role. Our LubeWatch® oil analysis program can identify contamination or wear before it results in costly downtime.

What You Can Expect from Implementing This Program

LubeWatch oil analysis enables you to track the performance of equipment that is the lifeblood of your business. By analyzing oil samples on a regular basis, you can optimize equipment life and oil replacement intervals, identify lubricant-related needs and understand the changing environment within a piece of equipment. This knowledge helps in the precise scheduling of maintenance work that can reduce downtime or even eliminate the risk of catastrophic failure.



LubeWatch®
Oil Analysis Program

A **Chevron** company service

Reliability-based Lubrication Practices for Increased Productivity and Optimal Equipment Performance

The LubeWatch® Oil Analysis Program Provides:

- Accurate results on six basic test packages and a wide variety of specialized testing procedures
- Reliable interpretation of test results and actionable recommendations based on the data
- 24-hour turnaround of tests and analyses indicating abnormal or critical steps will be provided by phone, fax or e-mail in 90 percent of cases
- Advanced technical services including component failure and/or wear particle analysis
- Expert training and in-field counsel and support
- Cost-effective standard and specialty tests
- Added assurance of oil and system integrity when running on an extended oil drain interval program

65% of heavy-duty mobile equipment operators use oil analysis to monitor the condition of their equipment and establish appropriate drain intervals.

79% of large industrial plants in the United States use oil analysis as a diagnostic tool on their equipment.

40% of heavy industry oil analysis users expect to increase their use of monitoring techniques like oil analysis in the next three years.

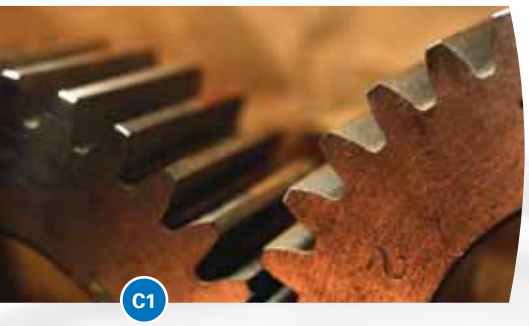
4% of a typical industrial maintenance budget goes toward lubricant costs. Yet, lubricant-related down-time can cost over 50 percent of your budget.

Standard Test Packages and Specialty Tests

LubeWatch simplifies the process of testing by creating standard test packages for frequent, typical applications. The six test packages for standard, used oil analysis are:

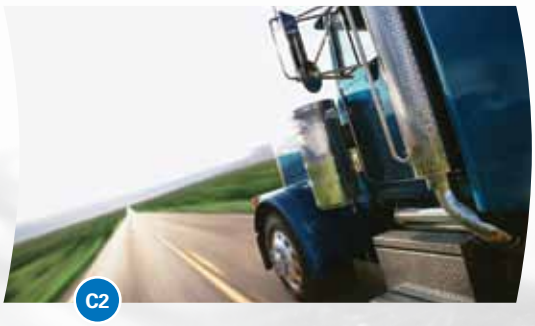
C1 Lubrication — Basic*
C2 Diesel Crankcase*
C3 Natural Gas*
C4 Industrial Oils*
C5 Metal Working Fluids
C6 Turbine Oils

* For all paper machine oils and any oils in which free water is detected—run % water by Karl Fisher (D1744)



C1

Lubrication — Basic
Viscosity @ 40°C or 100°C (ASTM D445)
Trace Elements & Additives (AE)
% Water (Crackle Test)*



C2

Diesel Crankcase
Viscosity @ 100°C (ASTM D445)
Trace Elements & Additives (AE)
% Water (Crackle Test)*
Glycol (ASTM D2982)
Fuel Dilution (ASTM D3524)
Fuel Soot by Wilks Soot Meter
Base Number (ASTM D4739)

C3

Natural Gas
Viscosity @ 100°C (ASTM D445)
Trace Elements & Additives (AE)
% Water (Crackle Test)*
Oxidation (FTIR)
Nitration (FTIR)
Acid Number (ASTM D664)

ON- AND OFF-HIGHWAY: Agriculture, Automobile, Construction, Forestry, Mass Transit, Mining & Quarrying, Railroad, Trucking

Equipment Type	Suggested Sampling Frequency	
	Hours	Miles
Diesel Engines	250 hours	10,000 miles
Gasoline Engines	-	5,000 miles
Transmissions	300 hours	20,000 miles
Gears, Differentials and Final Drives	300 hours	20,000 miles
Hydraulics	300 hours	20,000 miles

MANUFACTURING & PROCESSING AND INLAND MARINE: Cement, Food & Beverage, Marine Equipment, Natural Gas Distribution, Oil & Gas Exploration, Power Generation, Pulp & Paper, Sugar Mills

Equipment Type	Suggested Sampling Frequency	
	Normal Use	Intermittent Use
Diesel Engines	Monthly, 500 hours	Quarterly
Natural Gas Engines	Monthly, 500 hours	Quarterly
Gas Turbines	Monthly, 500 hours	Quarterly
Steam Turbines	Bi-monthly	Quarterly
Air, Gas Compressors	Monthly, 500 hours	Quarterly
Refrigeration Compressors	Bi-monthly	Quarterly
Gears, Bearings	Bi-monthly	Quarterly
Hydraulics	Bi-monthly	Quarterly

Industrial Oils
Viscosity @ 40°C (ASTM D445)
Trace Elements & Additives (AE)
% Water (Crackle Test)*
Oxidation (FTIR)
Nitration (FTIR)
Acid Number (ASTM D664 or D974)
Particle Count (ISO 4406/11500)

Metal Working Fluids
Viscosity @ 40°C (ASTM D445)
Trace Elements & Additives (AE)
% Water by Karl Fisher (ASTM D1744)
Chlorine (XRF)
Sulfur (LECO)
% Fat (FTIR)

Turbine Oils
Viscosity @ 40°C (ASTM D445)
Trace Elements & Additives (AE)
% Water by Karl Fisher (ASTM D1744)
Oxidation (FTIR)
Particle Count (ISO 4406/11500)
Water Separability (ASTM D1401)
Oxidation by Rotary Pressure Vessel (RPVOT)

Add LubeWatch® To Your Maintenance Program

The LubeWatch Process

Submitting oil or other lubricants for LubeWatch oil analysis is simple. Contact your Chevron representative, or visit www.chevronlubricants.com to contact the LubeWatch program lab nearest your location. The lab will set up your account and send a sampling kit to you. After pulling a sample, simply send it back with complete sample information to the lab in the pre-addressed LubeWatch mailing container.

Most sample tests will be completed within 24 hours of receipt. You can receive results immediately via phone, fax, or e-mail. Mailed analysis results can be returned within a maximum of five working days.

Setting a Foundation for Reliability

The best way to address the future is to have a firm grasp of the present. When you create a detailed profile of your work environment, we can bring the full predictive powers of LubeWatch to bear. These profiles identify your oil, fuel and equipment types, applications and special needs. Therefore, it is important to thoroughly fill out a LubeWatch sample information form for all samples—particularly on the initial round. This confidential information will help LubeWatch labs conduct appropriate test procedures to accurately analyze the used oil samples. When you provide accurate and complete information on the equipment from which the sample has been taken, LubeWatch analysts can make the most accurate evaluation and recommendations that benefit your overall equipment effectiveness.

Achieving World-class Performance

LubeWatch is designed to help you achieve world-class performance through the Reliability-based Lubrication (RbL™) Program. Incredible care and attention to detail were brought to every aspect of the program development and lab evaluation process. The driving force behind this intensive effort was to bring greater value through accurate and insightful data interpretation—as well as outstanding technical expertise and service—to our marketers and customers. We are very proud of this program and invite you to use our achievement to create new standards of your own.

For Us, Reliability Isn't a Promise—It's a Legacy

Building reliability into your day-to-day business takes commitment. We should know. At Chevron, we've created a corporate culture that revolves around safety and reliability. We combine that with our legacy of industry-leading innovation in product formulation to deliver Reliability-based Lubrication. It's an extension of who we are, and it sets us apart from lubricant vendors that just talk about reliability. At Chevron, we live it.

If you could use more reliability from your equipment or your lubrication partner, please contact your Chevron representative or visit us online at www.chevronlubricants.com. We'll be there for you.

For more information, go to www.chevronlubricants.com

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