

# EATON

# Vickers

## Fluid Analysis Service



# VICKERS®

## Vickers Fluid Analysis Service

Vickers hydraulic components have an unequalled reputation for quality, reliability and performance. We built that reputation on a tradition of customer service, and stand behind every one of our products.

The Vickers Fluid Analysis Service follows that same tradition. We provide our customers with comprehensive fluid testing and diagnostic services, with detailed reports that are easy to understand.

To find out how the Vickers Fluid Analysis Service can help your operation, read on.

Then call us to get started.



## A Name You Trust

Only one fluid analysis lab lets you put years of Vickers experience to work for you. That's because nobody knows hydraulics like Vickers. So when the health of your hydraulic system is at stake, choose a partner with more than 70 years of experience. Contact your Vickers representative for more information on our Fluid Analysis Service.

## Comprehensive Testing

The Vickers Fluid Analysis Service offers a full range of tests specifically designed for the analysis of hydraulic and lubrication system fluid. Our laboratory equipment and test procedures provide an exact analysis of your hydraulic or oil lubricated system, and our drawdown particle isolation procedure ensures accurate results.

Our testing procedures can include:

**Photomicrography:** We scan and photograph a filter patch using an optical microscope to find particle size and type. The scanning process verifies the automatic particle count to identify samples needing special preparation. This provides confirmation of automatic counter results, and helps us see what contaminants are in the fluid.

**Viscosity:** This test lets us measure the time required for liquid to flow through a calibrated viscometer at a controlled temperature under gravity. Without proper hydraulic fluid viscosity, your equipment will suffer. Incorrect viscosity leads to fluid breakdown, inefficient equipment operation, premature system failure, and damage to other components.



**Water:** We determine the water content in hydraulic fluid, which helps us predict quality and performance characteristics for the fluid and system components.

## Critical Analysis

Fluid is the lifeblood of every hydraulic power system. To keep yours running efficiently and effectively, you need to know what's in it. What you don't know can hurt you.

The Vickers Fluid Analysis Service analyzes hydraulic fluid in much the same way a medical lab tests a blood sample. Just as a blood test helps a doctor diagnose health problems, a sample of hydraulic fluid can help us pinpoint sources of contamination and determine whether or your system uses adequate filtration.

We can help you reduce catastrophic equipment failures, maintain optimum component performance, and identify any substandard maintenance practices. Your bottom-line benefit is increased productivity.

## Clear Benefits

We offer testing designed to tell you the most about your hydraulic fluid. We use sophisticated computer programs and laboratory diagnostic equipment such as an infrared spectrophotometer, a scanning electron microscope with an energy dispersive x-ray analyzer, and an inductively coupled plasma spectrophotometer.

After we use this advanced equipment to provide the most detailed possible analysis of your hydraulic fluid, we create reports that are always easy to read and understand. By taking the mystery out of fluid analysis, we provide a service that clearly explains the benefits of clean fluid.

Excess water reduces the viscosity of hydraulic fluid, which increases the likelihood of adverse chemical reactions and degrades equipment performance.

## Drawdown Particle

**Isolation:** Using this test, we determine the insoluble contaminants in hydraulic fluids, both insoluble particles and gel-like matter, organic and inorganic. Used in conjunction with photomicrography, the drawdown patch helps us identify the source and type of fluid contaminants.

## Automatic Particle Count:

We use a high-intensity laser light source and a photo sensor to count the number and size of particles in the fluid sample, then define contaminants according to size distribution and quantities. Automatic particle counting is quick, repeatable and accurate. It provides reliable information we can use to check against ISO Standard 4406, which defines the relationship

between particle counts and hydraulic fluid cleanliness. This lets us determine exactly what corrective actions—if any—are needed.

## Spectrometric Analysis:

This shows us the concentration of oil-soluble elements, and indicates the additives and trace metal content in the fluids. We use this technique to evaluate the condition of the additives in a fluid rather than its particulate contamination. Used in conjunction with automatic particle counting, it helps us accurately assess the cleanliness level of the fluid.

## Scanning Electron Microscope (SEM)/Energy Dispersive X-ray Analysis (EDX):

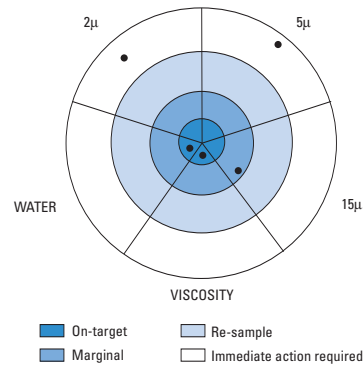
We perform SEM/EDX analysis on samples with extremely high concentrations of particulate contamination. By isolating chemical elements, we pinpoint contaminant types so we can establish their origins, and so you can take corrective action.

## Easy-to-Read Reports

We present your fluid test results in a format that is easy to understand. Results typically include these items:

**Results Target:** A results target compares your actual fluid cleanliness results and your ideal cleanliness level. If you don't have a target level yet, we can use your sample to help you determine what it should be.

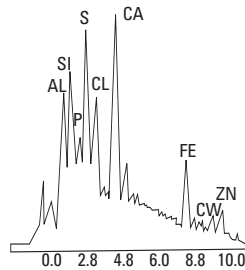
Fluid Results



**Trend Information:** We evaluate data from your previous two samples along with the results of your current sample. This provides a trend analysis of critical measurements, and shows changes in the fluid over time.

DATE	PREVIOUS 6/22/92	PREVIOUS 7/25/92	CURRENT 8/31/92
Viscosity @ 100°F cSt (SUS)	45.0 (210)	45.5 (212)	45.8 (213)
Water % Weight	0.03%	0.03%	0.03%
pH <i>Note: pH is for water containing fluids only.</i>	9.4	9.5	9.6
TAN mg KOH/gm <i>Note: TAN is for synthetic fluids only.</i>	2.1	2.0	2.1

SEM/EDX



Particle Count Summary

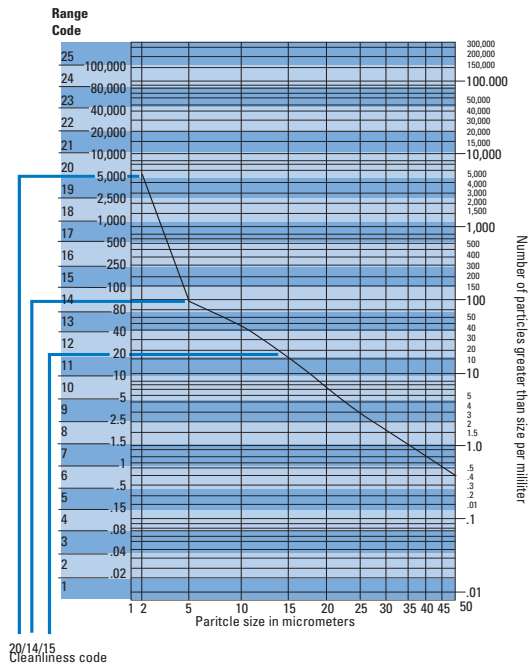
DATE	PREVIOUS 6/22/92	PREVIOUS 7/25/92	CURRENT 8/31/92
>2µ	65,120	4,100	418
>5µ	12,220	1,250	88
>10µ	5,800	700	39
>15µ	900	250	22
>25µ	125	60	4
>50µ	12.0	5.0	1.0
Cleanliness Code	23/21/17	19/17/15	16/14/12

## Cleanliness Code Graph:

This graph uses the ISO 4406 standard for measuring and depicting the amount and size of particles per milliliter in hydraulic fluid, shown in a log-log2 graph that charts the amount of particles greater than certain micron sizes per milliliter of fluid.

**Recommendations:** This section of the report provides you with valuable information on the cleanliness of your hydraulic system, as well as tips on maintaining or improving its current condition.

Cleanliness Code Graph



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