Par-Test™

Fluid Analysis

ENGINEERING YOUR SUCCESS.

Par-Test™

Fluid Analysis

Par-Test kits are an easy and effective way to analyze system fluids and are a critical tool for any preventative maintenance program.

Par-Test is a complete Laboratory analysis, performed on a small volume of fluid. The Par-Test kit includes a pre-cleaned bottle, mailing container with a pre-address label, sample information datasheet (this is to be completely filled out by end user; to receive lab results, email must be included) and the analysis.

Analysis Includes:
Particle Count
Photomicrograph
Free Water Analysis
Spectrometric Analysis
Viscosity Analysis
Water Analysis (PPM)
Neutralization Analysis (Acid Number)

Description	Part Number
Fluid Test Kit (Carton of 10 test bottles)	947754

Fluid analysis is able to identify potential problems that cannot be detected by human senses. A comprehensive fluid analysis program can help prevent major hydraulic or lube oil system failures.

Fluid sample for Par-Test involves important steps to insure you are getting a representative sample. Often, erroneous sample procedures will disguise the true nature of the system fluid.

A complete sampling procedure is detailed on the back of this brochure. There also is a National Fluid Power Association standard (NFPA T2.9.1-1972) and an American National Standards Institute Standard (ANSI B93.13-1972) for extracting samples from a fluid power system.

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Fluid Analysis

Par-Test results are available through the lab's WebCheck software, and accessible via PC or Android or iOS-based mobile device using the available mobile app.

WebCheck App Icon

Available Android Store

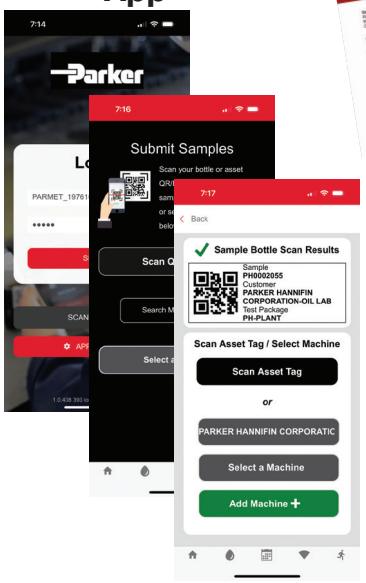
Available Apple Store

Every Par-Test bottle comes with its own mailer bag, mailing label (postage not included), and test submittal form. The datasheet form must be filled out for the very first Par-Test sample sent in by a customer or new user. After the first submission, a WebCheck profile is set up for that user and the results are emailed to the email provided on the submittal form. After the first sample submission the WebCheck software allows users with profiles to enter new sample information and check previous analysis reports via the mobile app and online via a PC.

Once a user profile has been set up, a customer then has the capability to track multiple specific assets and see the historical trending data that the Par-Test samples are providing. An asset can be QR coded and new samples can have their information uploaded and submitted via the mobile app by scanning an asset's QR code. The physical sample must still be mailed in. However, the WebCheck software allows for all the paperwork to be digital, saving users time entering sample information, as well as finding historical data.

Streamlined **Sample Kit**

Companion **App**



Subscription **Reports**

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Fluid Analysis

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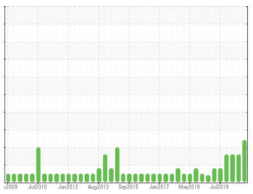
OIL ANALYSIS REPORT

Sample Rating Trend



ISO

Area
AREA I [500168796]
Machine Id
TOLHURST S1001A (S/N C-48-8)
Component
Hydraulic System
Fluid
ESSO NUTO H ISO 68 (20 GAL)

Diagnosis / Alerts

These are quick statements or alerts about any unusual results from one for the tests reported on this page.

DIAGNOSIS

▲ Recommendation
We recommend you service the filters on this component. Resample at the next service interval to monitor.

Wear
All component wear rates are normal.

▲ Contamination
There is a high amount of particulates present in the oil.

Fluid Condition
The AN level is acceptable for this fluid. The condition of the oil is suitable for further service.

Spectrometric Analysis

Wear metals and additives are analyzed to help determine the condition of the fluid. The spectrometric test is limited to identifying particles below 5-7 micron in size. Base line (new) fluid samples should be sent in for each different fluid to be analyzed. This will be used to determine the status.

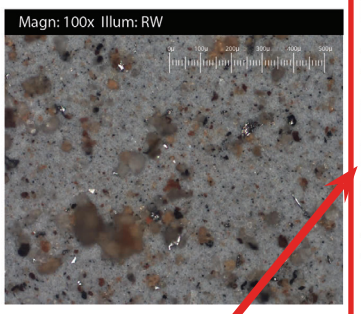
SAMPLE INFORMATION		method	limit/base	current	history 1	history 2
Sample Number		Client Info		**WC0487758**	WC0428785	WC0395564
Sample Date		Client Info		**30 Jul 2020**	08 Apr 2020	09 Jan 2020
Machine Age	hrs	Client Info		**0**	0	0
Oil Age	hrs	Client Info		**0**	0	0
Oil Changed		Client Info		**N/A**	N/A	N/A
Sample Status				**ABNORMAL**	ABNORMAL	ABNORMAL

WEAR METALS		method	limit/base	current	history 1	history 2
Iron	ppm	ASTM D5185m	>20	**1**	1	1
Chromium	ppm	ASTM D5185m	>20	**0**	0	0
Nickel	ppm	ASTM D5185m	>20	**0**	0	0
Titanium	ppm	ASTM D5185m		**0**	0	0
Silver	ppm	ASTM D5185m		**0**	<1	0
Aluminum	ppm	ASTM D5185m	>20	**0**	0	0
Lead	ppm	ASTM D5185m	>20	**0**	0	0
Copper	ppm	ASTM D5185m	>20	**<1**	<1	<1
Tin	ppm	ASTM D5185m	>20	**0**	0	0
Antimony	ppm	ASTM D5185m		**0**	0	0
Vanadium	ppm	ASTM D5185m		**0**	0	0
Cadmium	ppm	ASTM D5185m		**0**	0	0

ADDITIVES		method	limit/base	current	history 1	history 2
Boron	ppm	ASTM D5185m	0	**0**	10	0
Barium	ppm	ASTM D5185m	0	**0**	<1	<1
Molybdenum	ppm	ASTM D5185m	0	**0**	0	0
Manganese	ppm	ASTM D5185m		**0**	0	0
Magnesium	ppm	ASTM D5185m	5	**0**	0	<1
Calcium	ppm	ASTM D5185m	50	**49**	59	51
Phosphorus	ppm	ASTM D5185m	330	**321**	352	326
Zinc	ppm	ASTM D5185m	420	**436**	491	408
Sulfur	ppm	ASTM D5185m	3100	**5921**	6311	8230

CONTAMINANTS		method	limit/base	current	history 1	history 2
Silicon	ppm	ASTM D5185m	>15	**0**	<1	<1
Sodium	ppm	ASTM D5185m		**<1**	0	<1
Potassium	ppm	ASTM D5185m	>20	**<1**	<1	<1

A **photomicrograph** of of fluid (20ml) magnified 100X. This analysis gives a quick glance at the contamination present in the fluid. The photo has a reference scale in the top right where every dash is 20 microns in size.



FLUID CLEANLINESS		method	limit/base	current	history 1	history 2
Particles >4µm		ASTM D7647	>5000	▲ **88678**	▲ 57770	▲ 40677
Particles >6µm		ASTM D7647	>1300	▲ **29926**	▲ 14689	▲ 9263
Particles >14µm		ASTM D7647	>160	▲ **2782**	▲ 408	▲ 308
Particles >21µm		ASTM D7647	>40	▲ **841**	▲ 67	▲ 56
Particles >38µm		ASTM D7647	>10	▲ **44**	5	9
Particles >71µm		ASTM D7647	>3	▲ **3**	0	0
Oil Cleanliness		ISO 4406 (c)	>19/17/14	▲ **24/22/19**	▲ 23/21/16	▲ 23/20/15

FLUID DEGRADATION		method	limit/base	current	history 1	history 2
Acid Number (AN)	mg KOH/g	ASTM D8045	.40	**0.273**	0.330	0.312

Report Id: CUSANY [WUSCAR] 012345 (Generated: 05/04/2023 10:49:16) Rev: 1

Contact/Location: Sarah Smith - Base Plant

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Particle Counts and ISO Code

Results are reported over 6 different particle size ranges and expressed as an ISO code (modified). The counts are per milliliter of fluid and the reporting is cumulative. For example – The particle count in the > 2 micron row includes the number of particles greater than 5, 10, 15, 25 and 50 microns as well as particles between 2-5 microns in size. Particle resuspension method is utilized for water-based fluid samples.

Acid Number

Referred to as the Acid Number, this titration test measures the acid level of the sample fluid. The production of acidic material causes oxidation degradation or aging of most fluids. The activity is promoted by elevated temperatures, presence of entrained metal particles, and intimate contact with air. It is the rate of increase of the Total Acid Number (TAN) during any given time period that is significant, not just the absolute value.

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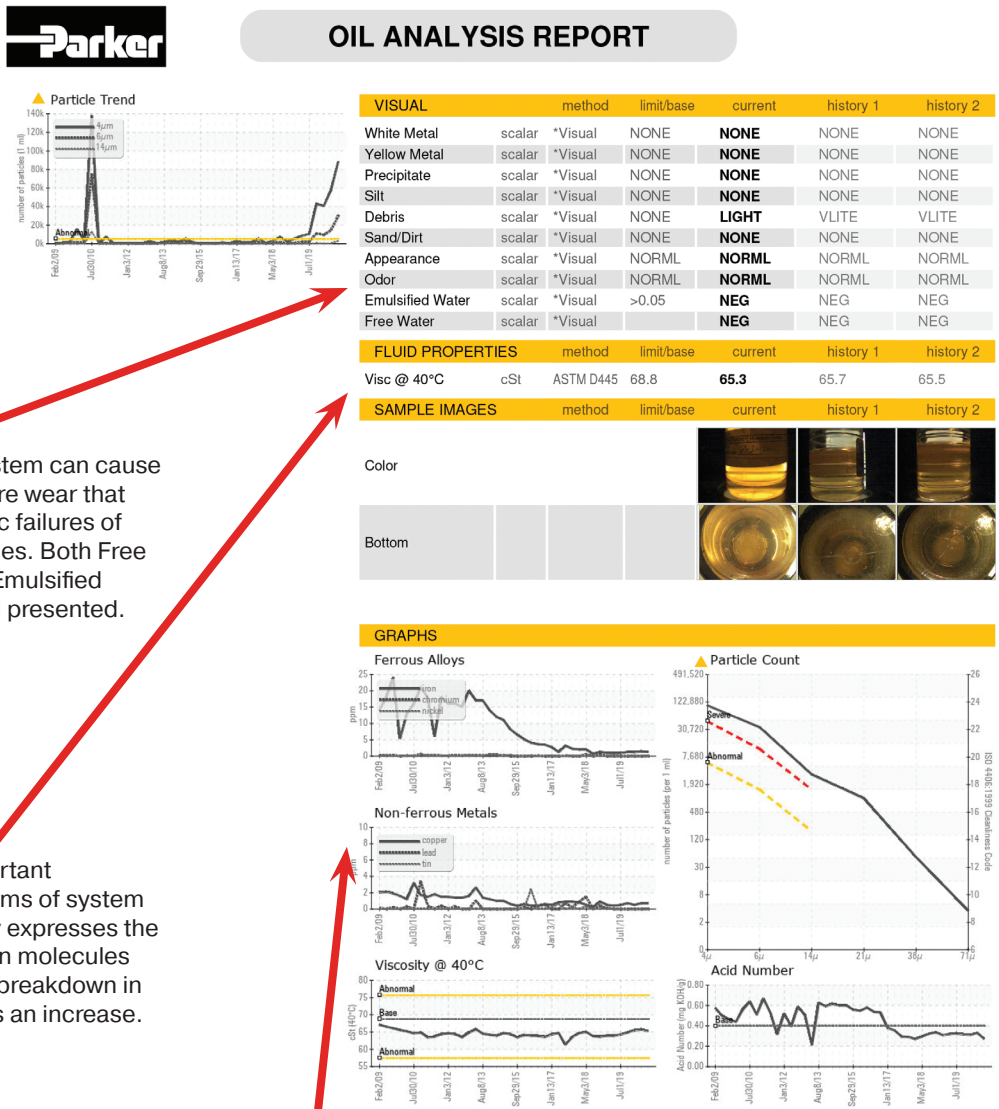
Fluid Analysis



Parker

OIL ANALYSIS REPORT

Particle Trend

VISUAL		method	limit/base	current	history 1	history 2
White Metal	scalar	*Visual	NONE	**NONE**	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	**NONE**	NONE	NONE
Precipitate	scalar	*Visual	NONE	**NONE**	NONE	NONE
Silt	scalar	*Visual	NONE	**NONE**	NONE	NONE
Debris	scalar	*Visual	NONE	**LIGHT**	VLITE	VLITE
Sand/Dirt	scalar	*Visual	NONE	**NONE**	NONE	NONE
Appearance	scalar	*Visual	NORML	**NORML**	NORML	NORML
Odor	scalar	*Visual	NORML	**NORML**	NORML	NORML
Emulsified Water	scalar	*Visual	>0.05	**NEG**	NEG	NEG
Free Water	scalar	*Visual		**NEG**	NEG	NEG

FLUID PROPERTIES		method	limit/base	current	history 1	history 2
Visc @ 40°C	cSt	ASTM D445	68.8	**65.3**	65.7	65.5

SAMPLE IMAGES	method	limit/base	current	history 1	history 2
Color					
Bottom					

GRAPHS

Ferrous Alloys

Non-ferrous Metals

Viscosity @ 40°C

Particle Count

Acid Number

Sample No. : WC1234567 Received : 27 Aug 2020
Lab Number : 01234567 Diagnosed : 28 Aug 2020
Unique Number : 12345678 Diagnostician : Don Baldridge
Test Package : IND 2

To discuss this sample report, contact Customer Service at 1-800-237-1369.
** - Denotes test methods that are outside of the ISO 17025 scope of accreditation.*
Statements of conformity to specifications are based on the simple acceptance decision rule (JCGM 106:2012)

Certificate L2367

Cusany Logistics Inc.
1212 Industrial Place
Centerville, OH
USA 75900
Contact: Jim Leduc
abc123@cusanylogisticsinc.com
T: (305)555-1212
F: (305)555-1222

Report Id: CUSANY [WUSCAR] 01234567 (Generated: 08/04/2023 10:49:16) Rev: 1

Contact/Location: Sarah Smith - Base Plant

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Water Analysis

Water in a hydraulic system can cause cavitation and premature wear that can lead to catastrophic failures of equipment in some cases. Both Free Water and the PPM of Emulsified Water are analyzed and presented.

Viscosity Analysis

Viscosity is a very important property of a fluid in terms of system performance. Viscosity expresses the internal friction between molecules in the fluid. Typically, a breakdown in viscosity will be seen as an increase.

Graphs

The graphs provided on the analysis report allow for easily identifying trends over the lifecycle of a piece of equipment.

The graphs provide historical trends for Particle Count, Ferrous Alloys, Non-Ferrous Metals, and Acid Number.

The Viscosity and Particle Count graphs also provide references to abnormal and severe results.

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SAMPLING PROCEDURE

Obtaining a fluid sample for analysis involves important steps to make sure you are getting a representative sample. Often erroneous sampling procedures will disguise the true nature of system cleanliness levels. Use one of the following methods to obtain a representative system sample.

I. For systems with a sampling valve

A. Operate system for at least 1/2 hour.

B. With the system operating, open the sample valve allowing 200 ml to 500 ml (7 to 16 ounces) of fluid to flush the sampling port. (The sample valve design should provide turbulent flow through the sampling port.)

C. Using a wide mouth, pre-cleaned sampling bottle, remove the bottle cap and place in the stream of flow from the sampling valve. Do NOT "rinse" out the bottle with initial sample.

D. Close the sample bottle immediately. Next, close the sampling valve. (Make prior provision to "catch" the fluid while removing the bottle from the stream.)

E. Tag the sample bottle with pertinent data; include date, machine number, fluid supplier, fluid number code, fluid type, and time elapsed since last sample (if any).

II. Systems without a sampling valve

There are two locations to obtain a sample in a system without a sampling valve: in-tank and in the line. The procedure for both follows:

A. In the Tank Sampling

1. Operate the system for at least 1/2 hour.
2. Use a small hand-held vacuum pump to extract sample. Insert sampling device into the tank to one half of the fluid height. You will probably have to weight the end of the sampling tube. Your objective is to obtain a sample in the middle portion of the tank. Avoid the top or bottom of the tank. Do not let the syringe or tubing came in contact with the side of the tank.
3. Put extracted fluid into an approved, pre-cleaned sample bottle as described in the previous sampling valve method.
4. Cap immediately.
5. Tag with information as described in sampling valve method.

B. In-line Sampling

1. Operate the system for at least 1/2 hour.
2. Locate a suitable valve in the system where turbulent flow can be obtained (ball valve is preferred). If no such valve exists, locate a fitting which can be easily opened to provide turbulent flow (tee or elbow).
3. Flush the valve or fitting sample point with a filtered solvent. Open valve or fitting and allow adequate flushing. (Take care to allow for this step. Direct sample back to tank or into a large container. It is not necessary to discard this fluid.)
4. Place in an approved, pre-cleaned sample bottle under the stream of flow per sampling valve methods.
5. Cap sample bottle immediately.
6. Tag with important information per the sampling valve method.

   Note: Select a valve or fitting where the pressure is limited to 200 PSIG (14 bar) or less.