

AMALIE®

*Better than it has to be®
Since 1903*

ALAS+

AMALIE Lubricant Analysis System



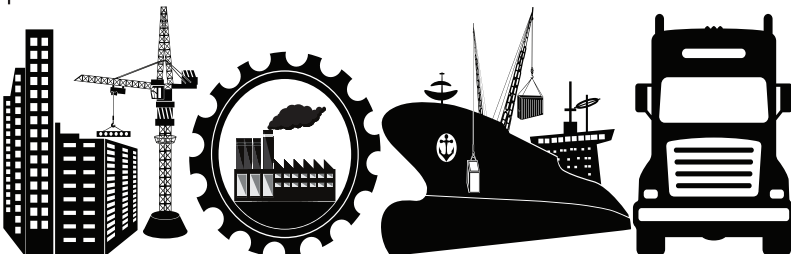
Reference Guides

When trace elements are detected, the following areas could be responsible	Aluminum (Al)	Chromium (Cr)	Copper (Cu)	Iron (Fe)	Lead (Pb)	Nickel (Ni)	Tin (Sn)	Silver (Ag)	Titanium (Ti)	Vanadium (V)
Bearings	■	■	■	■	■	■	■	■		
Bushings	■		■	■	■		■	■		
Compressor Piston	■			■			■			
Cylinder/Liners	■	■		■						
Clutch Discs			■		■			■		
EGR	■									
Gears		■		■		■			■	
Housing/Blocks	■			■		■				
Hydraulic Cylinders	■	■	■	■	■		■			
Hydraulic Pumps	■		■	■	■	■	■			
Oil Cooler	■		■				■	■		
Pistons	■			■						
Piston Skirt Overlay							■			
Rings	■	■		■		■				
Rust				■						
Shafts		■		■		■			■	
Thrust Plates	■		■		■		■			
Thrust Washers	■		■		■		■			
Turbine Blades									■	■
Valve Guides/Stern	■	■		■		■				
Valve Trains		■				■			■	
Washers	■		■	■	■					

Wear Metal Reference Guide

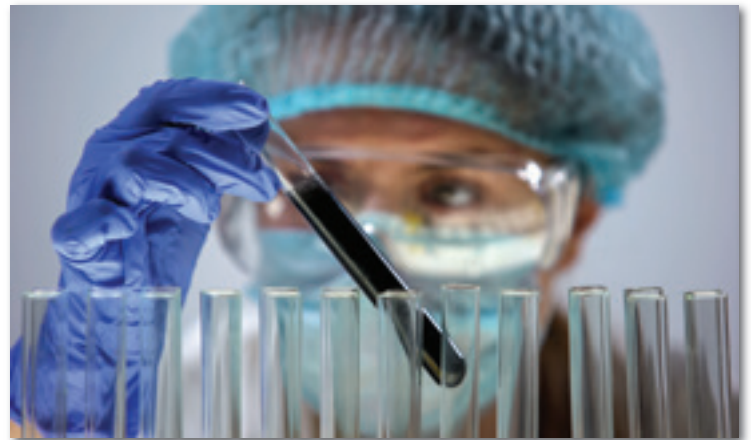
Many times, users that test their in-service lubricants will look at reports and ask “what do these tests mean?”

Most routine analysis reports display similar test parameters for monitoring the condition of the operating equipment and the lubricant in service. This simple guideline will help explain the use and meaning behind the routine tests you are likely to see on an analysis report. Please note that this serves only as a guideline; the elements listed do not purport to include all possible resources.



Why Perform Oil Analysis?

ALAS+ will help fleet managers and operators alike confirm equipment is operating properly and identify any abnormal conditions providing critical information needed to take corrective action and help avoid an emerging failure. **ALAS+** is a simple yet highly effective means of protecting your livelihood and investment.



What does **ALAS+** Test?

AMALIE ALAS+ offers a full slate of spectrochemical analysis testing which monitor and test for the following:

- Viscosity
- Fuel Dilution
- Water
- Coolant
- TAN/TBN

20 elements tested include: Iron, Chromium, Lead, Copper, Tin, Aluminum, Nickel, Silver, titanium, Vanadium, Silicon, Sodium, Potassium, Magnesium, Calcium, Barium, Phosphorous, Zinc, Molybdenum and Boron.



DATE SAMPLED	30-Mar-19	30-Oct-18	24-May-18	17-Nov-17	17-Apr-17	30-Sep-16
DATE RECEIVED	18-Apr-19	27-Nov-18	13-Jun-18	08-Dec-17	03-May-17	28-Oct-16
DATE REPORTED	23-Apr-19	28-Nov-18	14-Jun-18	11-Dec-17	05-May-17	31-Oct-16
LAB NO.	43021261413	43021210349	43021152026	43021080859	43020987930	43020908329
SIF NO.	35554702	34904283	34092914	33295635	32179521	31351150
TIME ON UNIT	399723	368677	334785	293309	266020	228755
TIME ON OIL	mi 31046	mi 33892	mi 25000	mi 25000	mi 25000	mi 25000
OIL BRAND	Amalie	Amalie	Amalie	Amalie	Amalie	Amalie
OIL TYPE	XLO	XLO	Unidentified	Unidentified	Unidentified	Unidentified
OIL GRADE	SAE 10W30	SAE 10W30	SAE 10W30	SAE 10W30	SAE 10W30	SAE 10W30
OIL ADDED						
FILTER	mi	33892	25000			
OIL CHANGED		Not Changed				
WO NUMBER						

Metals (ppm)						
Iron (Fe)	30	51	61	42	48	26
Chromium (Cr)	1	2	2	2	2	1
Lead (Pb)	6	12	18	20	24	8
Copper (Cu)	2	3	3	1	2	1
Tin (Sn)	1	1	2	1	2	<1
Aluminum (Al)	2	5	4	3	3	4
Nickel (Ni)	<1	1	<1	<1	<1	<1
Silver (Ag)	<1	<1	<1	<1	<1	<1
Titanium (Ti)	1	<1	<1	<1	<1	<1
Vanadium (V)	<1	<1	<1	<1	<1	<1

Contaminants (ppm)						
Silicon (Si)	5	7	7	8	6	5
Sodium (Na)	2	<1	10	2	5	2
Potassium (K)	3	5	5	9	9	10

Additives (ppm)						
Magnesium (Mg)	917	985	982	960	942	449
Calcium (Ca)	1578	1698	1798	1745	1656	2151
Barium (Ba)	<1	<1	<1	<1	<1	<1
Phosphorus (P)	1252	1308	1326	1227	1156	1178
Zinc (Zn)	1414	1464	1499	1445	1420	1476
Molybdenum (Mo)	61	68	79	75	74	74
Boron (B)	15	19	20	15	12	29

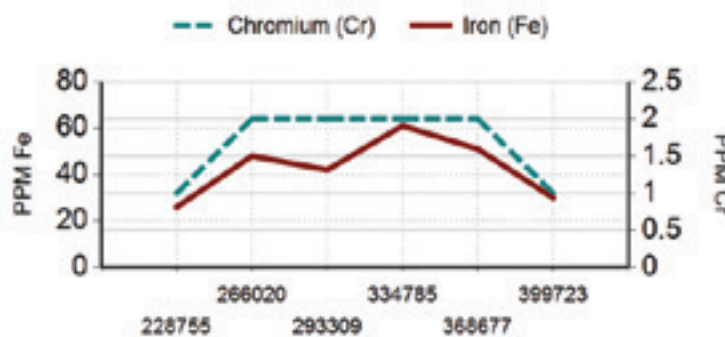
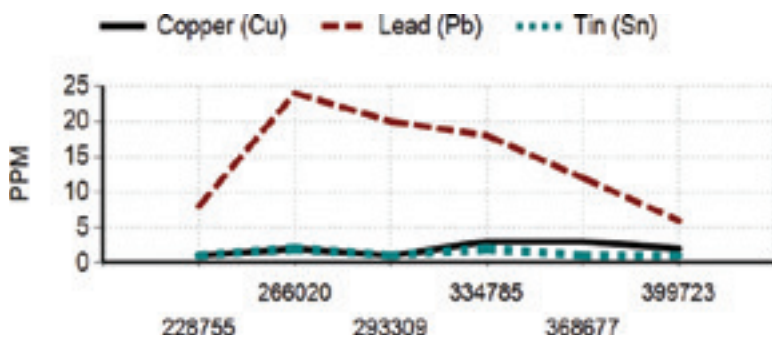
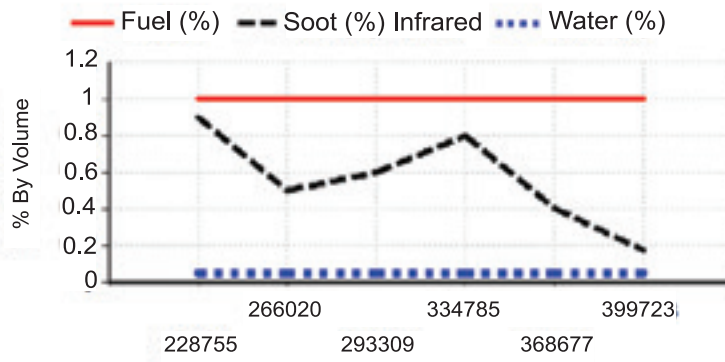
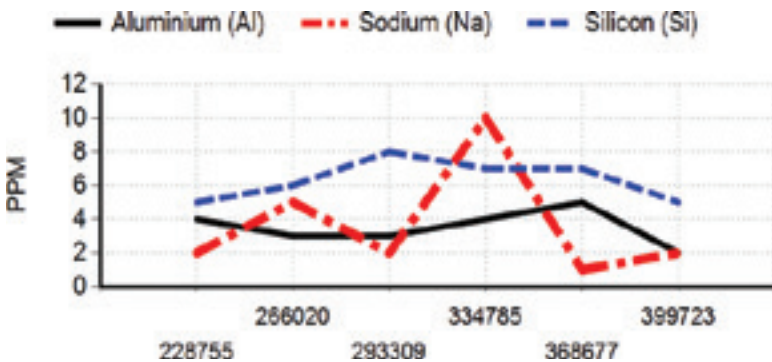
Contaminants						
Water (%)	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Coolant	No	No	No	No	No	No

Physical Tests						
Viscosity (cSt 100C)	12.2	11.7	12.1	11.8	11.9	12.1
Fuel (%)	<1.0	<1	<1	<1	<1	<1
PQ Index	16	18	23	<10	<10	<10
Soot (%) Infrared	0.2	0.4	0.8	0.6	0.5	0.9

Physical / Chemical						
Base Number (mgKOH/g)	4.1	3.1	3.1	3.8	3.3	3.4

LEGEND

- Normal (Green checkmark)
- Severe (Red stop sign)
- Abnormal (Red X)
- Caution (Yellow triangle)
- Normal (Green checkmark)



What is **ALAS+**?

The **AMALIE** Lubricant Analysis System, or simply **ALAS+** is a comprehensive oil analysis service utilizing the most modern laboratory equipment to provide valuable information about your engines' condition.

ALAS+ Lubricant Analysis System is designed exclusively for **AMALIE's** XLO HD Fleet, **AMALIE** XLO Ultimate, and Super XLO Ultimate engine oil customers. **ALAS+** provides a detailed look to what is happening inside your engine and should be a routine ongoing activity for analyzing and monitoring of the engine oils health, contamination and engine component wear.



ALAS+ is fast, easy and convenient!

Submitting an oil sample is easy via handwritten form/label, mobile phone application, Webtrieve website or through a dedicated barcode sticker. **ALAS+** offers a great deal of flexibility in the delivery and management of oil analysis data with reporting via:

- Email
- Webtrieve Website
- Webtrieve Mobile Application
- Comprehensive Data Files which show trends and potential emerging problems

What are the benefits of **ALAS+**?

ALAS+ accurately measures three main fluid properties; wear metals, contamination, and viscosity as well as other critical fluid properties to help diagnose potential problems, prevent component failure, determine optimum drain intervals, and help reduce fleet operating costs.

ALAS+ provides clear, concise, analytical reporting in a timely fashion including the necessary data needed to help successfully manage expensive equipment investment.

Your customers depend on you and you depend on your equipment to get the job done. Oil analysis can help identify problems that, if left unchecked, could considerably shorten engine life and performance.



AMALIE Customer Service Representatives can assist with ordering kits and supplies, new customer set-up, equipment registration, and general questions.

To find out more information about our **AMALIE ALAS+** Used Oil Program, contact: your local lubricant distributor, call the **AMALIE** Tech Line, or visit **AMALIE.com**.

AMALIE Tech Line: (800) 368-1264

✉ techservices@AMALIE.com

Amalie Oil Company

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