



1 = Normal  
 2-3-4 = Abnormal  
 5 = Critical

# ANA LABORATORIES, INC.

## TEST REPORT

716 Morse Ave. SCHAUMBURG, IL 60193  
 (877) 592-8111 (847) 352-6780 Fax (847) 352-8094

Serving Customers Since 1973

DANIEL MACKEY

Attn: DAN  
 6N520 THORN ROAD  
 ROSELLE, IL 60172

**U** YOUR COMPUTER NAME **CADMARIL**  
**N** YOUR COMPUTER UNIT I.D. **DANS CAR**  
**I** TYPE  
**N** MAKE  
**F** MODEL  
**O** SUMP CAPACITY  
 TYPE OF OPERATION  
 SERIAL #

**S** **TRANS**  
**S**  
**I**  
**N**  
**F**  
**O** TEST TYPE **B2**

LAB#	SAMPLE DATE	PROCESS DATE	HOURS/MILES			OIL		FLTR CHANGE		K	V	MO	MG	ADDITIVES			
			SYS	OIL	ADDED	DRAINED	FF	BY	CA					BA	P	ZN	
R17H070032	07/30/2017	08/01/2017	0	0	0	No	No	No	1	0	0	0	74	2	421	3	

### ELEMENTAL ANALYSIS VALUES IN PPM BY WEIGHT

### OIL QUALITY

Severity Code	Antimony	Titanium	Silver	Copper	Lead	Tin	Aluminum	Nickel	Iron	Chromium	Cadmium	Sodium	Boron	Silicon	Water % by vol	%Solids	Glycol	SAE/ISO Grade	Vis @ 40C	Vis @ 100C	TAN (mg/g)
2	0	0	0	26	0	1	5	0	36	0	1	4	15	9	<.05	<.01	N	22	23.30	NA	2.53

TAN ELEVATED. TRACE METAL(S) -NORMAL. ADDITIONAL SAMPLE NEEDED TO INITIATE TREND. PLEASE SUBMIT SAMPLE AT NEXT SAMPLING INTERVAL. WEAR RATES LOOK OK ACID NUMBER MARGINAL SAMPLE AT HALF SERVICE TO MONITOR TREND

Since services are based on samples and information supplied by others, and since corrective action, if any, is necessarily taken by others, these services are rendered without any warranty or liability.



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 TYPE OF OPERATION  
 SERIAL #

**S** GEAR  
**S** LEXIS  
**I** LEX15  
**N**  
**F**  
**O** TEST TYPE B2

LAB#	SAMPLE DATE	PROCESS DATE	HOURS/MILES		OIL		FLTR CHANGE		K	V	MO	MG	ADDITIVES			
			SYS	OIL	ADDED	DRAINED	FF	BY					CA	BA	P	ZN
R17H070033	08/01/2017	08/01/2017	24,150	0	0	No	No	No	4	0	0	0	5	14	2197	20

### ELEMENTAL ANALYSIS VALUES IN PPM BY WEIGHT

### OIL QUALITY

Severity Code	Antimony	Titanium	Silver	Copper	Lead	Tin	Aluminum	Nickel	Iron	Chromium	Cadmium	Sodium	Boron	Silicon	Water % by vol	%Solids	Glycol	SAE/ISO Grade	Vis @ 40C	Vis @ 100C	TAN (mg/g)
2	0	0	0	1	0	0	1	1	193	2	1	4	46	32	<.05	<.01	N	68	76.60	NA	4.04

TAN ELEVATED. TRACE METAL(S) IRON MILDLY ABOVE NORMAL. LUBE CONTAMINANTS SILICON MILDLY ABOVE NORMAL. ADDITIONAL SAMPLE NEEDED TO INITIATE TREND. PLEASE SUBMIT SAMPLE AT NEXT SAMPLING INTERVAL.

Since services are based on samples and information supplied by others, and since corrective action, if any, is necessarily taken by others, these services are rendered without any warranty or liability.

# THE FOLLOWING INFORMATION HAS BEEN PROVIDED TO ASSIST IN THE INTERPRETATION OF YOUR OIL ANALYSIS

## WEAR METALS

These metals indicate wear on particular components of an individual unit. The particles of these metals will indicate a wear problem on the microscopic level before the problem can be detected by conventional means.

The existence of a wear problem is determined not only by absolute values of metals, but more importantly a relative increase or trend in one or more of these metals.

### WEAR METAL SOURCES

Iron.....	Cylinders, Gears, Rings, Crankshafts, Liners, Bearings, Housings, Rust.
Chromium.....	Rings, Roller/Taper Bearing, Rods, Platings.
Lead.....	Bearing Overlays, additive in gear oil and gasoline.
Copper.....	Bearings, Bushings, Thrust-Washers, Friction Plates, Oil Cooler, Additive in oil.
Tin.....	Bearings, Bushings, Pistons' Platings.
Aluminum.....	Pistons, Bearings, Pumps, Blowers, Rotors, Thrust-Washers.
Nickel.....	Valves.
Silver.....	Bearings, Bushings, Platings.
Manganese.....	Trace elements in liners and rings, additive in gasoline.
Titanium.....	Trace element.
Vanadium.....	Trace element.

## CONTAMINANTS

These elements can be an indicator of both internal and external contamination. The source and amount of contamination can be determined by comparison to a previously normal sample or to a new oil reference. Specific tests for some contaminants can supplement the analysis.

### CONTAMINANT SOURCES

Silicon.....	Element used to determine the level of airborne dirt and abrasives in the oil (Sometimes used as an anti-foam agent).
Boron.....	Present in most permanent anti-freeze systems and cooling system inhibitors (Sometimes used as an additive).
Sodium.....	Present in most permanent anti-freeze systems and cooling system inhibitors (Sometimes used as an additive).
Potassium..	Present in most permanent anti-freeze systems and cooling system inhibitors (Sometimes used as an additive in gear oil).

## WATER

Reports percent water and percent insolubles (ASTM D-1744)

## GLYCOL

A specific test for the presence of Glycol (Anti-freeze) in an oil (ASTM D-2982).

## ADDITIVES

These elements are blended into the oil in different forms and quantities by the manufacturer. The additive package in an oil will vary depending on the type of oil.

### ADDITIVE FUNCTIONS

Magnesium.....	Dispersant/Detergent additive.
Calcium.....	Dispersant/Detergent additive.
Barium.....	Dispersant/Detergent additive.
Phosphorus.....	Anti-Wear additive.
Zinc.....	Anti-Wear additive.
Molybdenum.....	Anti-Wear additive.

## FUEL DILUTION

Unburned fuel in the oil may signal fuel system leaks or incomplete combustion.

## FUEL SOOT

A result of incomplete combustion, blow-by. High levels may indicate combustion problems or overextended drain intervals.

## VISCOSITY

The Kinematic viscosity (ASTM D-445) determined at 40 C and/or 100 C is a measure of the flow rate of an oil in relation to time. This data is used to assign an SAE grade to an oil.

### ENGINE OIL VISCOSITY CLASSIFICATION CHART

SAE GRADE	MIN-cSt-100 C	MAX-cSt-100
10W	4.10	
20	5.60	9.29
30	9.30	12.49
40	12.50	16.29
50	16.30	21.89

### SEVERITY CODE CONDITIONS

5	<b>(C) EXCESSIVE/UNACCEPTABLE</b>	Must take corrective action before further use. Contact Lab to discuss.
4	<b>MODERATELY HIGH</b>	Monitor closely or take corrective action. Send half interval recheck to monitor the rate of increase and determine seriousness of abnormality
3	<b>(A) MILD/ACCEPTABLE</b>	Monitor by sending recheck sample as requested so that the rate of increase may be monitored for it's seriousness.
2	<b>MODERATE</b>	Lab will monitor. Follow normal operation and sampling. The sample Normal/Acceptable show a minor trend change since last report.
1	<b>(N) SATISFACTORY</b>	Lab will monitor. Follow normal operation and sampling..

### ADDITIONAL TESTS

CL .....	Chlorine	VI .....	Viscosity Index (ASTM D-2270)
IR .....	Infrared Spectrophotometric analysis	pH .....	pH Range
TBN .....	Total Base Number (ASTM D-4739)	POUR PT ....	Pour Point (ASTM D-97)
TAN .....	Total Acid Number (ASTM D-664)	SUGAR .....	Sugar in lubricating oils
PC .....	Particle Count	SULFUR .....	Sulfur Determination (ASTM D-4294 or D-1552)

**COMPLETE COOLANT & FUEL TESTING AVAILABLE**

**CALL LAB FOR COMPLETE LISTING**