

# LABORATORY ANALYSIS



11525 Rock Island Court, St. Louis, MO 63043  
Tel: 1-800-876-0008 info@englube.com

**WOODWARD CORPORATION**  
6300 WEST HOWARD STREET  
NILES, IL  
United States 60714  
Contact: Daniel Aviles  
daniel.aviles@woodward.com  
T:  
F:

Department **NPI OILS**  
Equipment No. **5501 HMC (00019)**  
System **Coolant**  
Oil Type **ENGINEERED LUBRICANTS ENSPIN NO. 3-PF (--- GAL)**

## Diagnosis

Some copper in the sample but all other conditions are ok. Continue to use oil and filter element and sample at next interval. Copper (Cu) ppm levels are severe. Lead (Pb) ppm levels are abnormal. The high metal levels indicate corrosion in the system. There is no indication of any contamination in the coolant.

## Sample Information

Lab Number	New	2311-00537	2308-00181	2305-00392
Date of Sample	(Typical)	<b>16 Nov 2023</b>	03 Aug 2023	04 May 2023
Oil Added		<b>UNK</b>	UNK	UNK
Last Drain Date		--	--	--
Last Filter Service		--	--	--
Sample Point		---	---	---
Sample Status		<b>SEVERE</b>	SEVERE	ABNORMAL

## VISCOSITY @ 100F or 40C (ASTM D445)

SSU Vis. @ 100F	SSU	33.6	34.06	34.16
cSt Vis. @ 40C	cSt	2.75	2.300	---

## COLOR (BASED ON ASTM D1500 STANDARDS)

Color	Scale 0-8	<0.5	1.5	1.5	1.0

## PARTICLE COUNT (PER 1ML)

ISO CODE	ISO 4406(c)	>19/17/14	17/15/11	17/15/12	15/14/10
4 Micron & Larger	particles/ml	>5000	773	882	266
6 Micron & Larger	particles/ml	>1300	219	296	97
14 Micron & Larger	particles/ml	>160	19	27	10
21 Micron & Larger	particles/ml	>40	5	5	3
38 Micron & Larger	particles/ml	>10	0	1	1
70 Micron & Larger	particles/ml	>3	0	0	0

## ICP - OILS (REPORTED IN PARTS PER MILLION)

Aluminum (Al)	ppm	<5	<5	<5
Antimony (Sb)	ppm	<5	<5	<5
Cadmium (Cd)	ppm	<5	<5	<5
Chromium (Cr)	ppm	<5	<5	<5
Cobalt (Co)	ppm	<5	<5	<5
Copper (Cu)	ppm	20	16	10
Iron (Fe)	ppm	<5	<5	<5
Lead (Pb)	ppm	11	6	6
Manganese (Mn)	ppm	<5	<5	<5
Molybdenum(Mo)	ppm	<5	<5	<5
Nickel (Ni)	ppm	<5	<5	<5
Silver (Ag)	ppm	<5	<5	<5
Tin (Sn)	ppm	<5	<5	<5
Titanium (Ti)	ppm	<5	<5	<5
Vanadium (V)	ppm	<5	<5	<5
Barium (Ba)	ppm	27	32	32
Boron (B)	ppm	<5	<5	<5
Calcium (Ca)	ppm	<5	<5	<5
Magnesium (Mg)	ppm	<5	<5	<5
Phosphorus(P)	ppm	468	548	544
Silicon (Si)	ppm	<5	<5	<5
Zinc (Zn)	ppm	504	608	620
Sulfur (S)	ppm	25 803	1,040	1,140

Customer Id: ENC0658001  
Sample No.: EN23110537  
Lab Number: 23110537  
Test Package: TEST



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To discuss the diagnosis or test data:

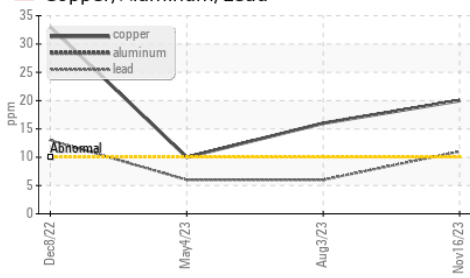
Beau Vuagniaux +1  
[bvuagniaux@englube.com](mailto:bvuagniaux@englube.com)

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Tracy Weaks +1 (314)872-9540  
[tweaks@englube.com](mailto:tweaks@englube.com)

# OIL ANALYSIS REPORT

▲ Copper/Aluminum/Lead



## DR FERROGRAPHY READINGS

L		■ 1.0	■ 0.5	■ 1.0
S		■ 0.7	■ 0.2	■ 0.5
WPC	DL + DS	■ 1.7	■ 0.7	■ 1.5

Viscosity @ 40°C

