

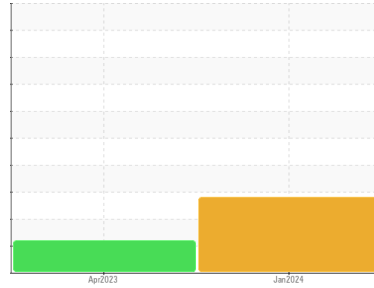


OIL ANALYSIS REPORT



Area
CONSTRUCTION POLARIS CMM INC [02608014]
 Machine Id
CATERPILLAR 336D 5537 (S/N W3K00869)
 Component
Hydraulic System
 Fluid
PANOLIN HLP SYNTH 46 (--- GAL)

Sample Rating Trend



CONTAMINANT



DIAGNOSIS

Recommendation

Nous vous recommandons de vidanger l'huile de ce composant si vous ne l'avez pas déjà fait. Nous vous recommandons de rincer complètement le composant avant de le remplir l'huile.

Wear

Les taux d'usure de tous les composants sont normaux.

Contamination

Il y a une forte concentration (23.1%) d'huile minérale présente dans le fluide. La propreté du système est acceptable pour votre objectif de propreté ISO 4406. La teneur en eau est négligeable.

Fluid Condition

Le AN est acceptable pour ce fluide.

SAMPLE INFORMATION

	method	limit/base	current	history1	history2
Sample Number	Client Info		WC	PP	---
Sample Date	Client Info		10 Jan 2024	30 Apr 2023	---
Machine Age	hrs	Client Info	10904	13310	---
Oil Age	hrs	Client Info	0	0	---
Oil Changed	Client Info		N/A	N/A	---
Sample Status			SEVERE	ABNORMAL	---

WEAR METALS

	method	limit/base	current	history1	history2	
Iron	ppm	ASTM D5185(m)	>20	5	<1	---
Chromium	ppm	ASTM D5185(m)	>10	2	0	---
Nickel	ppm	ASTM D5185(m)	>10	<1	0	---
Titanium	ppm	ASTM D5185(m)		0	0	---
Silver	ppm	ASTM D5185(m)		0	0	---
Aluminum	ppm	ASTM D5185(m)	>10	<1	<1	---
Lead	ppm	ASTM D5185(m)	>10	<1	0	---
Copper	ppm	ASTM D5185(m)	>75	<1	0	---
Tin	ppm	ASTM D5185(m)	>10	0	0	---
Antimony	ppm	ASTM D5185(m)		0	0	---
Vanadium	ppm	ASTM D5185(m)		0	0	---
Beryllium	ppm	ASTM D5185(m)		0	0	---
Cadmium	ppm	ASTM D5185(m)		0	0	---

ADDITIVES

	method	limit/base	current	history1	history2	
Boron	ppm	ASTM D5185(m)	0	<1	<1	---
Barium	ppm	ASTM D5185(m)	0	0	0	---
Molybdenum	ppm	ASTM D5185(m)	0	0	0	---
Manganese	ppm	ASTM D5185(m)	0	0	0	---
Magnesium	ppm	ASTM D5185(m)	0	1	0	---
Calcium	ppm	ASTM D5185(m)	0	▲ 38	2	---
Phosphorus	ppm	ASTM D5185(m)	1700	▲ 872	1671	---
Zinc	ppm	ASTM D5185(m)	0	15	11	---
Sulfur	ppm	ASTM D5185(m)	1350	1103	1440	---
Lithium	ppm	ASTM D5185(m)		<1	<1	---

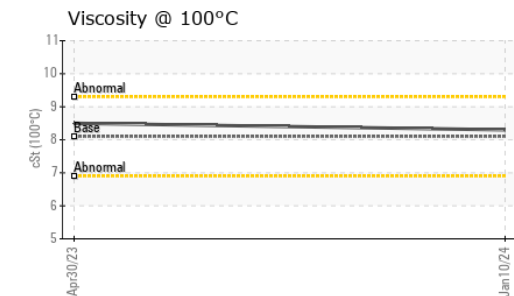
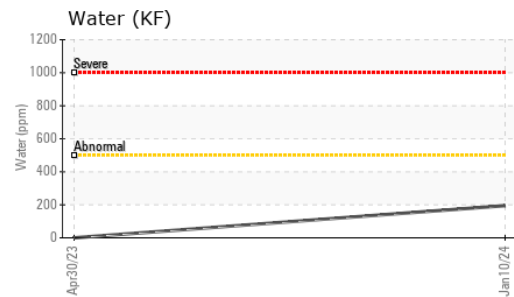
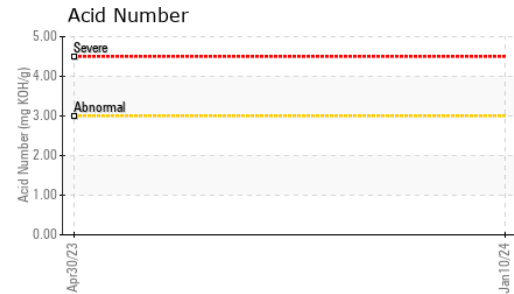
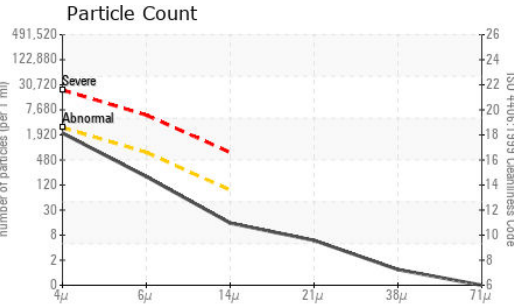
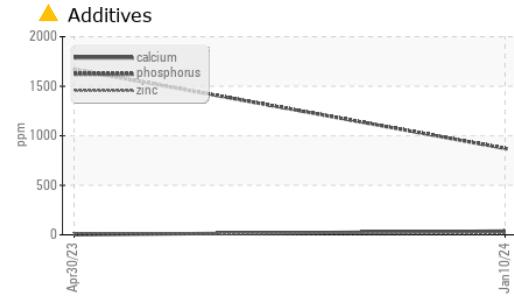
CONTAMINANTS

	method	limit/base	current	history1	history2	
Silicon	ppm	ASTM D5185(m)	>20	1	<1	---
Sodium	ppm	ASTM D5185(m)		0	<1	---
Potassium	ppm	ASTM D5185(m)	>20	4	<1	---
Water	%	ASTM D6304*	>0.05	0.019	---	---
ppm Water	ppm	ASTM D6304*	>500	195	---	---

INFRA-RED

	method	limit/base	current	history1	history2	
Soot %	%	ASTM D7844*		0	0	---
Nitration	Abs/cm	ASTM D7624*		3.0	3.9	---
Sulfation	Abs/.1mm	ASTM D7415*		137.1	158.0	---
Mineral Oil Content	%	ASTM D7418*	<5.0%	● 23.1	0.0	---

OIL ANALYSIS REPORT



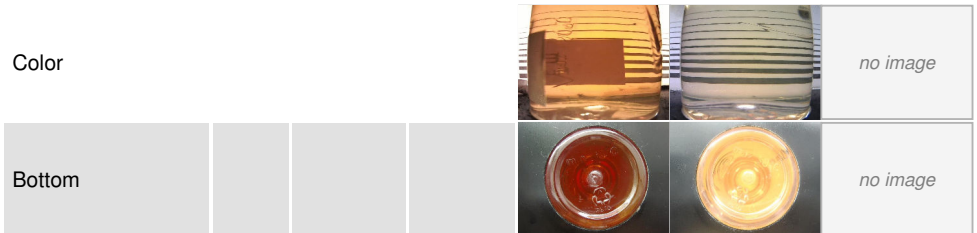
FLUID CLEANLINESS	method	limit/base	current	history1	history2
Particles >4µm	ASTM D7647	>2500	1856	▲ 9670	---
Particles >6µm	ASTM D7647	>640	168	▲ 926	---
Particles >14µm	ASTM D7647	>80	13	53	---
Particles >21µm	ASTM D7647	>20	5	17	---
Particles >38µm	ASTM D7647	>4	1	3	---
Particles >71µm	ASTM D7647	>3	0	3	---
Oil Cleanliness	ISO 4406 (c)	>18/16/13	18/15/11	▲ 20/17/13	---

FLUID DEGRADATION	method	limit/base	current	history1	history2
Oxidation	Abs./1mm	ASTM D7414*	116.9	155.3	---
Acid Number (AN)	mg KOH/g	ASTM D974*	1.17	---	---

VISUAL	method	limit/base	current	history1	history2
White Metal	scalar	Visual*	NONE	NONE	---
Yellow Metal	scalar	Visual*	NONE	NONE	---
Precipitate	scalar	Visual*	NONE	NONE	---
Silt	scalar	Visual*	NONE	NONE	---
Debris	scalar	Visual*	NONE	NONE	---
Sand/Dirt	scalar	Visual*	NONE	NONE	---
Appearance	scalar	Visual*	NORML	NORML	---
Odor	scalar	Visual*	NORML	NORML	---
Emulsified Water	scalar	Visual*	>0.05	NEG	NEG
Free Water	scalar	Visual*	NEG	NEG	---

FLUID PROPERTIES	method	limit/base	current	history1	history2
Visc @ 40°C	cSt	ASTM D7279(m)	47.0	44.5	46.9
Visc @ 100°C	cSt	ASTM D7279(m)	8.1	8.3	8.5
Viscosity Index (VI)	Scale	ASTM D2270*	146	164	159

SAMPLE IMAGES	method	limit/base	current	history1	history2
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Laboratory : WearCheck - C8-1175 Appleby Line, Burlington, ON L7L 5H9
Sample No. : WC
Lab Number : **02608333**
Unique Number : 5709419
Test Package : MOB 2 (Additional Tests: TAN Man)
Received : 11 Jan 2024
Diagnosed : 17 Jan 2024
Diagnostician : Bill Quesnel

To discuss this sample report, contact Customer Service at 1-800-268-2131.
 Test denoted (*) outside scope of accreditation, (m) method modified, (e) tested at external lab.
 Validity of results and interpretation are based on the sample and information as supplied.

Envirolin Canada
 520 rue Adanac
 Quebec, QC
 CA G1C 7B7
 Contact: Patrick Levesque
 patrick.levesque@envirolin.com
 T: (418)623-1216
 F: (418)660-8889



MINERAL OIL CONTENT REPORT

FAIL



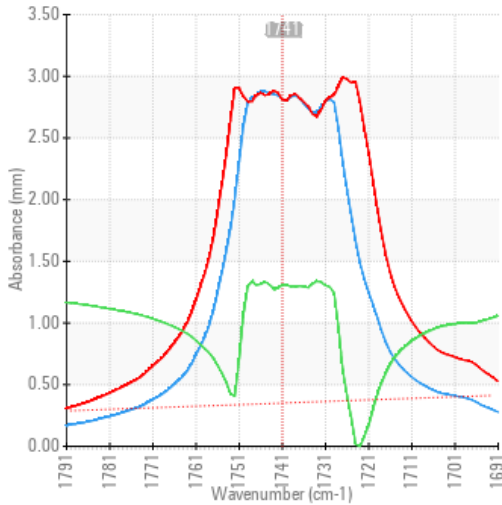
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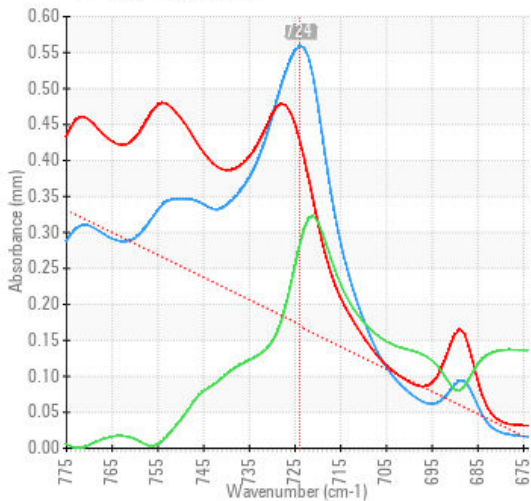
SPECTRAL ANALYSIS

		method	limit/base	current	history1	history2
Zinc	ppm	ASTM D5185(m)	0	15	11	---
Mineral Oil Content	%	ASTM D7418*	<5.0%	23.1	0.0	---

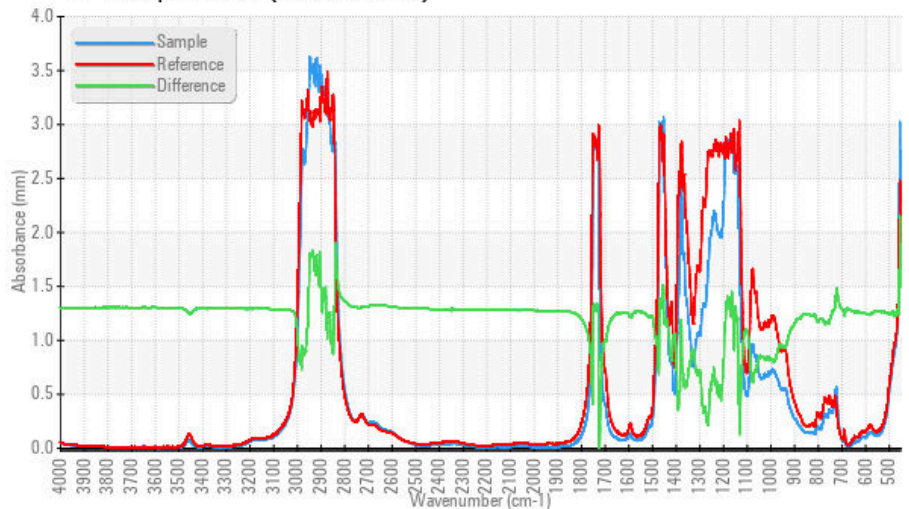
FT-IR - Esters I



FT-IR - Esters II



FT-IR Spectrum (Absorbance)



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 Quebec, QC
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 patrick.levesque@enviroLin.com
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