

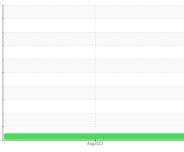
Chem-Ecol

A2308087

OIL ANALYSIS REPORT

Sample Rating Trend







Component Hydraulic System Fluid CHEM-ECOL GREENLUBE 46 (--- GAL)

DIAGNOSIS

Recommendation

This is a baseline read-out on the submitted sample.

Wear

Iron ppm levels are noted.

Contamination {not applicable}

Fluid Condition {not applicable}

SAMPLE INFORM	NATION	method	limit/base	current	history1	history2
Sample Number		Client Info		E30000139		
Sample Date		Client Info		18 Aug 2023		
Machine Age	hrs	Client Info		0		
Oil Age	hrs	Client Info		0		
Oil Changed		Client Info		N/A		
Sample Status				NORMAL		
WEAR METALS		method	limit/base	current	history1	history2
PQ		ASTM D8184*		0		
Iron	ppm	ASTM D5185(m)	>20	51		
Chromium	ppm	ASTM D5185(m)	>20	<1		
Nickel	ppm	ASTM D5185(m)	>20	<1		
Titanium	ppm	ASTM D5185(m)		0		
Silver	ppm	ASTM D5185(m)		<1		
Aluminum	ppm	ASTM D5185(m)	>20	4		
Lead	ppm	ASTM D5185(m)	>20	<1		
Copper	ppm	ASTM D5185(m)	>20	9		
Tin	ppm	ASTM D5185(m)	>20	0		
Antimony	ppm	ASTM D5185(m)		0		
Vanadium	ppm	ASTM D5185(m)		<1		
Beryllium	ppm	ASTM D5185(m)		0		
Cadmium	ppm	ASTM D5185(m)		0		
ADDITIVES		method	limit/base	current	history1	history2
Boron	ppm	ASTM D5185(m)		<1		
Barium		ASTM D5185(m)		<1		
	ppm					
Barium Molybdenum Manganese		ASTM D5185(m)		<1		
Molybdenum	ppm ppm	ASTM D5185(m) ASTM D5185(m)		<1 0		
Molybdenum Manganese	ppm ppm ppm	ASTM D5185(m) ASTM D5185(m) ASTM D5185(m)		<1 0 1		
Molybdenum Manganese Magnesium Calcium	ppm ppm ppm ppm	ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m)		<1 0 1 157		
Molybdenum Manganese Magnesium	ppm ppm ppm ppm ppm	ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m)		<1 0 1 157 167		
Molybdenum Manganese Magnesium Calcium Phosphorus	ppm ppm ppm ppm ppm ppm	ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m)		<1 0 1 157 167 832		
Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	ppm ppm ppm ppm ppm ppm	ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m)		<1 0 1 157 167 832 868	 	
Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m)	limit/base	<1 0 1 157 167 832 868 3358	 	
Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINANTS	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m)		<1 0 1 157 167 832 868 3358 <1 current		
Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINANTS Silicon	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m)	limit/base	<1 0 1 157 167 832 868 3358 <1 current 2	 history1	 history2
Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINANTS Silicon Sodium	ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m)	>15	<1 0 1 157 167 832 868 3358 <1 current 2 7	 history1	 history2
Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINANTS Silicon Sodium Potassium	ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185(m) ASTM D5185(m)	>15 >20	<1 0 1 157 167 832 868 3358 <1	 history1	 history2
Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINANTS Silicon Sodium	ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m)	>15	<1 0 1 157 167 832 868 3358 <1 current 2 7	 history1 	 history2
Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINANTS Silicon Sodium Potassium Water	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185(m) ASTM D5185(m)	>15 >20 >0.05	<1 0 1 157 167 832 868 3358 <1 <i>current</i> 2 7 3 0.004	 history1 	 history2
Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINANTS Silicon Sodium Potassium Water ppm Water FLUID CLEANLIN	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185(m) ASTM D5304*	>15 >20 >0.05 >500 limit/base	<1 0 1 157 167 832 868 3358 <1 <i>current</i> 2 7 3 0.004 42.6 <i>current</i>	 history1 history1	 history2 history2
Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINANTS Silicon Sodium Potassium Water ppm Water FLUID CLEANLIN Particles >4µm	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185(m) ASTM D6304* ASTM D6304* ASTM D6304*	>15 >20 >0.05 >500 limit/base >5000	<1 0 1 157 167 832 868 3358 <1 current 2 7 3 0.004 42.6 current 2146	 history1 history1 	 history2 history2
Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINANTS Silicon Sodium Potassium Water ppm Water FLUID CLEANLIN Particles >4μm Particles >6μm	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185(m) ASTM D6304* ASTM D6304* ASTM D6304* ASTM D7647 ASTM D7647	>15 >20 >0.05 >500 limit/base >5000 >1300	<1 0 1 157 167 832 868 3358 <1 <u>current</u> 2 7 3 0.004 42.6 <u>current</u> 2146 81	 history1 history1 	 history2 history2
Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINANTS Silicon Sodium Potassium Water ppm Water FLUID CLEANLIN Particles >4µm Particles >14µm	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185(m) ASTM D6304* ASTM D6304* ASTM D6304* ASTM D7647 ASTM D7647 ASTM D7647	>15 >20 >0.05 >500 limit/base >5000 >1300 >160	<1 0 1 157 167 832 868 3358 <1 current 2 7 3 0.004 42.6 current 2146 81 9	 history1 history1 	 history2 history2
Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINANTS Silicon Sodium Potassium Water ppm Water FLUID CLEANLIN Particles >4µm Particles >14µm Particles >21µm	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185(m) ASTM D5047 ASTM D7647 ASTM D7647 ASTM D7647 ASTM D7647 ASTM D7647	>15 >20 >0.05 >500 limit/base >5000 >1300 >160 >40	<1 0 1 157 167 832 868 3358 <1 Current 2 7 3 0.004 42.6 Current 2146 81 9 3	 history1 history1 history1	 history2 history2 history2
Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINANTS Silicon Sodium Potassium Water Potassium Water ppm Water FLUID CLEANLIN Particles >4μm Particles >14μm Particles >21μm Particles >38μm	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185(m) ASTM D6304* ASTM D6304* ASTM D7647 ASTM D7647 ASTM D7647 ASTM D7647 ASTM D7647	>15 >20 >0.05 >500 limit/base >5000 >1300 >160 >40 >10	<1 0 1 157 167 832 868 3358 <1 <i>current</i> 2 7 3 0.004 42.6 <i>current</i> 2146 81 9 3 0	 history1 history1 	 history2 history2 history2
Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINANTS Silicon Sodium Potassium Water ppm Water FLUID CLEANLIN Particles >4μm Particles >14μm Particles >21μm	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185(m) ASTM D5047 ASTM D7647 ASTM D7647 ASTM D7647 ASTM D7647 ASTM D7647	>15 >20 >0.05 >500 limit/base >5000 >1300 >160 >40 >10	<1 0 1 157 167 832 868 3358 <1 Current 2 7 3 0.004 42.6 Current 2146 81 9 3	 history1 history1 history1	 history2 history2 history2



OIL ANALYSIS REPORT

0.60	Water	FLUID DEGRADA	ATION	method	limit/base	current	history1	history2
0.60	Severe	Acid Number (AN)	mg KOH/g	ASTM D974*		0.92		
_ <u>لت</u> 0.36		VISUAL		method	limit/base	current	history1	history2
™ ≥°0.24		White Metal	scalar	Visual*	NONE	NONE		
0.12		Yellow Metal	scalar	Visual*	NONE	NONE		
	Abnormal	Precipitate	scalar	Visual*	NONE	NONE		
0.00	23 -		scalar	Visual*	NONE	NONE		
	Aug18/23	Debris	scalar	Visual*	NONE	NONE		
		Sand/Dirt	scalar	Visual*	NONE	NONE		
9.	Viscosity @ 100°C	Appearance	scalar	Visual*	NORML	NORML		
		Odor	scalar	Visual*	NORML	NORML		
8.	Abnormal	Emulsified Water	scalar	Visual*	>0.05	NEG		
-5 5 100°C) 9		Free Water	scalar	Visual*		NEG		
) 장 6·	Abnomal	FLUID PROPERT	TIES	method	limit/base	current	history1	history2
5.		Visc @ 40°C	cSt	ASTM D7279(m)	46	48.8		
4.	۲ <u>۲</u>		cSt	ASTM D7279(m)		7.4		
	Aug18/23	Viscosity Index (VI)	Scale	ASTM D2270*		113		
	⊲ ⊲ PQ	SAMPLE IMAGES	S	method	limit/base	current	history1	history2
250	г у 1							
200-	Severe	Color					no image	no image
150-		00101					no image	no image
문 100-	Abnormal							
50-		Bottom				52 (S 2 (S 2))	no image	no image
0.	(23 -	-						
	Aug18/23	GRAPHS						
	Particle Trend	Ferrous Alloys				Particle Count		
6k ·		60 iron			491,520			T ²⁶
Ê 5k ·	$\frac{4 \mu m}{6 \mu m}$	20 - inclusion and the second			122,880	Severe		-24
4k - 3k	μ	20-			30,720	1		-22
flied 3k -		2	***********	******************	EZ E 7,680	Abnormal		-20 4406:1999 Cleanliness Code -14 -14 -14 -14 -12 -14
jo Jagunu 1k		Aug 18/23			Aug 18/23 18/23 18/23 18/23 18/23 18/23 18/23 18/23 18/23 18/23 18/23 18/23 18/23 18/23 18/23 18/23 18/23 18/23			-18 6.1
₽ 1k.		Non-ferrous Meta	s					
0k ·		_ 10 copper]			120			14 ine
	Aug18/23	E 5-			and			-12 8
	A. A.						-	-10
52	Viscosity @ 40°C	0						-8
52· 50·	Abnormal	Aug18/23			Aug18/23			
48.		Viscosity @ 40°C			4	ہ بھ Acid Number	4μ 21μ	38µ 71µ
cSt (40°C)	Base	55			0.0 Hold Number (mg KOH(g)			
ます。 です。 44.		G 50 Base 8 45			B			
42		ي بخ 45 - Abnormal						
40	Abnormal d	40 ++			0.0 verg N			
40.	8/23 -	Aug 18/23			Aug18/23 Ac	Aug 18/23		Aug18/23
	Aug18/23	Au			Au	Ан		Au
	Laboratory Sample No. Laboratory Nacredited Laboratory To discuss this sample report, Test denoted (*) outside scope Validity of results and interpret	: 02577719 : 5630779 : IND 2 (Additional T contact Customer Serv e of accreditation, (m) m	Received Diagnose Diagnose ests: KF, ice at 1-8 bethod mo	d : 23 ed : 28 tician : Tat KV100, PQ 200-268-213 odified, (e) te	Aug 2023 Aug 2023 iana Sorkina , VI) 1. ested at exterr	nal lab.	Contact: T tsork T: (Solutions Ltd. Victoria Street Cobourg, ON CA K9A 5H5 atiana Sorkina ina@e360s.ca (800)263-3939 (905)373-4950

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