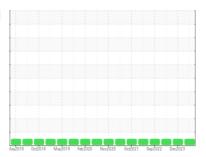


OIL ANALYSIS REPORT

Sample Rating Trend









CATERPILLAR 257D 138 (S/N FTL15241)

Component
Diesel Engine

DIESEL ENGINE OIL SAE 15W40 (3 GAL)

DIAGNOSIS

Recommendation

Resample at the next service interval to monitor.

Wear

All component wear rates are normal.

Contamination

There is no indication of any contamination in the oil

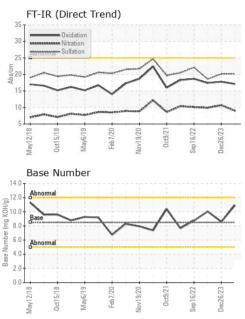
Fluid Condition

The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

CAMPLE INFORM	AATION		12 24 //			1:
SAMPLE INFORM	MATION	method	limit/base		history1	history2
Sample Number		Client Info		RW0005476	RW0004998	RW0004165
Sample Date		Client Info		07 May 2024	26 Dec 2023	15 Apr 2023
Machine Age	hrs	Client Info		5415	5019	4802
Oil Age	hrs	Client Info		396	217	325
Oil Changed		Client Info		Changed	Changed	Changed
Sample Status				NORMAL	NORMAL	NORMAL
CONTAMINATION	V	method	limit/base	current	history1	history2
Fuel		WC Method	>5	<1.0	<1.0	<1.0
Water		WC Method	>0.2	NEG	NEG	NEG
Glycol		WC Method		NEG	NEG	NEG
WEAR METALS		method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m	>100	8	11	9
Chromium	ppm	ASTM D5185m	>20	0	<1	0
Nickel	ppm	ASTM D5185m	>2	0	0	0
Titanium	ppm	ASTM D5185m	>2	0	0	0
Silver	ppm	ASTM D5185m	>2	0	0	0
Aluminum	ppm	ASTM D5185m	>25	1	2	1
Lead	ppm	ASTM D5185m	>40	0	<1	0
Copper	ppm	ASTM D5185m	>330	0	2	<1
Tin	ppm	ASTM D5185m	>15	<1	<1	0
Vanadium	ppm	ASTM D5185m		0	0	0
Cadmium	ppm	ASTM D5185m		0	0	0
ADDITIVES		method	limit/base	current	history1	history2
Boron	ppm	ASTM D5185m	250	18	6	<1
Barium	ppm	ASTM D5185m	10	<1	0	0
Molybdenum	ppm	ASTM D5185m	100	67	60	63
Manganese	ppm	ASTM D5185m		<1	<1	<1
Magnesium	ppm	ASTM D5185m	450	935	941	956
Calcium	ppm	ASTM D5185m	3000	1327	1054	1106
Phosphorus	ppm	ASTM D5185m	1150	1159	1014	981
Zinc	ppm	ASTM D5185m	1350	1318	1248	1269
Sulfur	ppm	ASTM D5185m	4250	3691	2823	3065
CONTAMINANTS		method	limit/base	current	history1	history2
Silicon	ppm	ASTM D5185m	>25	5	4	4
Sodium	ppm	ASTM D5185m	>158	1	2	<1
Potassium	ppm	ASTM D5185m	>20	0	<1	0
INFRA-RED		method	limit/base	current	history1	history2
Soot %	%	*ASTM D7844	>3	0.2	0.3	0.2
Nitration	Abs/cm	*ASTM D7624		9.0	10.7	9.9
Sulfation	Abs/.1mm	*ASTM D7415		20.2	20.1	18.6
FLUID DEGRADA	TION	method	limit/base	current	history1	history2
Oxidation	Abs/.1mm	*ASTM D7414	>25	17.1	17.8	17.4
CAIGUII	/100/.1111111	, 10 HW D/T/14	~		17.0	17T
Base Number (BN)	mg KOH/g	ASTM D2896	8.5	10.92	8.59	10.04



OIL ANALYSIS REPORT



VISUAL		method				history2
White Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	NONE
Precipitate	scalar	*Visual	NONE	NONE	NONE	NONE
Silt	scalar	*Visual	NONE	NONE	NONE	NONE
Debris	scalar	*Visual	NONE	NONE	NONE	NONE
Sand/Dirt	scalar	*Visual	NONE	NONE	NONE	NONE
Appearance	scalar	*Visual	NORML	NORML	NORML	NORML
Odor	scalar	*Visual	NORML	NORML	NORML	NORML
Emulsified Water	scalar	*Visual	>0.2	NEG	NEG	NEG
Free Water	scalar	*Visual		NEG	NEG	NEG
FLUID PROPERT	IFS	method	limit/base	current	history1	history2
TEGID I HOI EITH	ILO	memou	IIIIIII Dasc	ourront	Thotory	History
Visc @ 100°C	cSt	ASTM D445	14.4	12.6	12.9	12.7

Abnormal			
Base			
Abdormal			~
/			
May6/19	Feb7/20	Nov19/20	Sep16/22

isc @ 100°	Ü	cSt	AST	M D445	14.4	12	2.6		12.	9		12.7	
GRAPHS													
Iron (ppm))					Lea	ad (pp	m)					
Severe			1 1			80 Seve	ere						
						00							
Abnormal				-	_	40 Abn	ormal			-			
				1-1-1	+++	20							
81/8	61/9	ov19/20	Oct9/21	3/22	9/23	01	81/8	.61/9	Feb7/20	1/20	Oct9/21-	3/22	3/23
May12/18 0ct15/18	May6/19	reb //20 Nov19/20	Oct	Sep16/22	Dec26/23	May12/18	Oct15/18	May6/19	Feb	Nov19/20	Oct	Sep16/22	Dec26/23
Aluminum	(ppm)					Chi	romiu	m (pp	m)				
Severe			TT			50 T Seve	ere						
Abnormal						20							
						20 Abn	ormal						
	$\overline{}$			tetet		10							
Aay12/18 -	May6/19	ov19/20 -	Oct9/21	6/22	6/23	2/18	Oct15/18 -	May6/19 -	Feb7/20	9/20	Oct9/21-	6/22	6/73
May12/18 Oct15/18	May	reb //20	00	Sep16/22	Dec26/23	May12/18			Feb	Nov19/20	00	Sep16/22	Dec26/23
Copper (pp	om)					Sili 80 ⊤ Seve	con (p	pm)					
Severe						80 Sew	are						
						E 40							
						Abn	ormal						
			~			20		_/	<u> </u>	\			
May12/18	May6/19 -	reb //20 +	Oct9/21	Sep16/22 -	6/23	2/18	Oct15/18 -	May6/19 +	Feb7/20 +	Nov19/20 +	0ct9/21+	6/22	Dec26/23
Nay1 Oct1	May	lvo/	00	Sep1	Dec26/23	May12/18	Oct1	Мау	Feb	Nov1	00	Sep16/22	Dec.2
Viscosity @							se Nur	nber					
						15.0	se Nur	mber					
Viscosity @						15.0	ormal	mber			\wedge		\
Viscosity @			_			15.0	ormal	mber	\vee		\wedge		\
Viscosity @ Abnormal Base						Abnuse Mumber (mg KOH/N) 10.0	ormal	mber	<u> </u>		^		>
Viscosity @ Abnormal Base	100°0		0ct9/21	Sep 1 6/22	Dec26/23 +	15.0	ormal	mber Have/19	Feb7/20	Nov19/20	Oct9/21	Sep16/22	Dec26/23





Laboratory: WearCheck USA - 501 Madison Ave., Cary, NC 27513 **Sample No.** : RW0005476 Lab Number : 06176211

Unique Number : 11022264

Received Tested Diagnosed

: 10 May 2024 : 13 May 2024 : 13 May 2024 - Wes Davis

Contact: DAN HALLACK KARL BUTCHER

4223 W POLK HART, MI US 49420

Test Package : MOB 2 Certificate 12367 To discuss this sample report, contact Customer Service at 1-800-237-1369. * - Denotes test methods that are outside of the ISO 17025 scope of accreditation.

shop@hallackcontracting.com T: (231)873-5081

Statements of conformity to specifications are based on the simple acceptance decision rule (JCGM 106:2012) Report Id: HALHAR [WUSCAR] 06176211 (Generated: 05/13/2024 17:48:17) Rev: 1

Contact/Location: DAN HALLACK KARL BUTCHER - HALHAR

F: (231)873-2889