

# **OIL ANALYSIS REPORT**

Sample Rating Trend

# VISCOSITY

# Machine Id

**KENWORTH 51** 

# Diesel Engine Fluid DIESEL ENGINE OIL SAE 15W40 (7 GAL)

### Recommendation

No corrective action is recommended at this time. Oil and filter change at the time of sampling has been noted. Resample at the next service interval to monitor.

# Wear

All component wear rates are normal.

### Contamination

Fuel content negligible. There is no indication of any contamination in the oil.

#### Fluid Condition

The oil viscosity is lower than normal. The BN result indicates that there is suitable alkalinity remaining in the oil. Confirm oil type.



SAMPLE INFORM	ATION					history2
Sample Number		Client Info		RW0005151	RW0004458	RW0003732
Sample Date		Client Info		02 May 2024	16 May 2023	15 Aug 2022
Machine Age	hrs	Client Info		6462	6166	5911
Oil Age	hrs	Client Info		296	255	223
Oil Changed		Client Info		Changed	Changed	Changed
Sample Status				ATTENTION	NORMAL	NORMAL
CONTAMINATION	J .	method	limit/base	current	history1	history2
Water		WC Method	>0.2	NEG	NEG	NEG
Glycol		WC Method		NEG	NEG	NEG
		method	limit/base	ourropt	biotorud	biotory ()
WEAR METALS		method	IIIIII/Dase	current	nistory i	nistory2
Iron	ppm	ASTM D5185m	>100	6	5	5
Chromium	ppm	ASTM D5185m	>20	0	<1	<1
Nickel	ppm	ASTM D5185m	>4	0	0	0
Titanium	ppm	ASTM D5185m		0	0	0
Silver	ppm	ASTM D5185m	>3	0	0	<1
Aluminum	ppm	ASTM D5185m	>20	<1	<1	2
Lead	ppm	ASTM D5185m	>40	0	0	<1
Copper	ppm	ASTM D5185m	>330	0	<1	<1
Tin	ppm	ASTM D5185m	>15	<1	0	<1
Antimony	ppm	ASTM D5185m				
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	13	7	19
Barium	ppm	ASTM D5185m	10	<1	0	0
Molybdenum	ppm	ASTM D5185m	100	67	61	64
Manganese	ppm	ASTM D5185m		<1	<1	<1
Magnesium	ppm	ASTM D5185m	4 - 0			
Calcium		AGTIM DOTODIT	450	927	961	866
	ppm	ASTM D5185m	450 3000	927 1184	961 1081	866 1261
Phosphorus	ppm ppm	ASTM D5185m ASTM D5185m	450 3000 1150	927 1184 1152	961 1081 1057	866 1261 1083
Phosphorus Zinc	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	450 3000 1150 1350	927 1184 1152 1258	961 1081 1057 1263	866 1261 1083 1307
Phosphorus Zinc Sulfur	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	450 3000 1150 1350 4250	927 1184 1152 1258 3697	961 1081 1057 1263 3808	866 1261 1083 1307 3506
Phosphorus Zinc Sulfur CONTAMINANTS	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m method	450 3000 1150 1350 4250 limit/base	927 1184 1152 1258 3697 current	961 1081 1057 1263 3808 history1	866 1261 1083 1307 3506 history2
Phosphorus Zinc Sulfur CONTAMINANTS Silicon	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m Method ASTM D5185m	450 3000 1150 1350 4250 limit/base >25	927 1184 1152 1258 3697 current 5	961 1081 1057 1263 3808 history1 6	866 1261 1083 1307 3506 history2 8
Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	450 3000 1150 1350 4250 limit/base >25 >158	927 1184 1152 1258 3697 <u>current</u> 5 2	961 1081 1057 1263 3808 history1 6 1	866 1261 1083 1307 3506 history2 8 0
Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium	ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	450 3000 1150 1350 4250 <b>limit/base</b> >25 >158 >20	927 1184 1152 1258 3697 current 5 2 0	961 1081 1057 1263 3808 history1 6 1 0	866 1261 1083 1307 3506 history2 8 0 0
Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium Fuel	ppm ppm ppm ppm ppm ppm %	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	450 3000 1150 1350 4250 <b>limit/base</b> >25 >158 >20 >5	927 1184 1152 1258 3697 current 5 2 0 0 0.2	961 1081 1057 1263 3808 history1 6 1 0 0 0.3	866 1261 1083 1307 3506 history2 8 0 0 0 <1.0
Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium Fuel INFRA-RED	ppm   ppm   ppm   ppm   ppm   %	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	450 3000 1150 1350 4250 <b>limit/base</b> >25 >158 >20 >5 <b>limit/base</b>	927 1184 1152 1258 3697 current 5 2 0 0 0.2 current	961 1081 1057 1263 3808 history1 6 1 0 0 0.3 history1	866 1261 1083 1307 3506 history2 8 0 0 <1.0 history2
Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium Fuel INFRA-RED Soot %	ppm   ppm   ppm   ppm   ppm   %	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D3524 method *ASTM D7844	450 3000 1150 1350 4250 <b>limit/base</b> >25 >158 >20 >5 <b>limit/base</b> >3	927 1184 1152 1258 3697 current 5 2 0 0 0.2 current 0.2	961 1081 1057 1263 3808 history1 6 1 0 0.3 history1 0.2	866 1261 1083 1307 3506 history2 8 0 0 <1.0 history2 0.2
Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium Fuel INFRA-RED Soot % Nitration	ppm ppm ppm ppm ppm ppm % %	ASTM D5185M ASTM D5185M ASTM D5185M ASTM D5185M ASTM D5185M ASTM D5185M ASTM D5185M ASTM D5185M ASTM D5185M ASTM D3524 *ASTM D7844 *ASTM D7824	450 3000 1150 1350 4250 <b>limit/base</b> >20 >5 <b>limit/base</b> >3 >20	927 1184 1152 1258 3697 <u>current</u> 5 2 0 0.2 0.2 <u>current</u> 0.2 6.1	961 1081 1057 1263 3808 history1 6 1 0 0.3 history1 0.2 5.9	866 1261 1083 1307 3506 history2 8 0 0 <1.0 history2 0.2 6.7
Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium Fuel INFRA-RED Soot % Nitration Sulfation	ppm ppm ppm ppm ppm ppm ppm % % % Abs/cm Abs/.1mm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D3524 ASTM D3524 *ASTM D7844 *ASTM D7844	450 3000 1150 1350 4250 <b>limit/base</b> >25 >158 >20 >5 <b>limit/base</b> >3 >20 >30	927 1184 1152 1258 3697 current 5 2 0 0.2 0 0.2 current 0.2 6.1 18.0	961 1081 1057 1263 3808 history1 6 1 0 0.3 history1 0.2 5.9 18.5	866 1261 1083 1307 3506 history2 8 0 0 <1.0 history2 0.2 6.7 19.5
Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium Fuel INFRA-RED Soot % Nitration Sulfation FLUID DEGRADA	ppm ppm ppm ppm ppm ppm % % % Abs/tmm <b>TION</b>	ASTM D5185M ASTM D5185M ASTM D5185M ASTM D5185M ASTM D5185M ASTM D5185M ASTM D5185M ASTM D5185M ASTM D5185M ASTM D3524 *ASTM D7844 *ASTM D7844 *ASTM D7415	450 3000 1150 1350 4250 <b>imit/base</b> >25 >158 >20 >5 <b>imit/base</b> >3 >20 >30 <b>imit/base</b>	927 1184 1152 1258 3697 <u>current</u> 5 2 0 0.2 0.2 0 0.2 0.2 6.1 18.0	961 1081 1057 1263 3808 history1 6 1 0 0.3 history1 0.2 5.9 18.5 history1	866 1261 1083 1307 3506 history2 8 0 0 <1.0 history2 0.2 6.7 19.5 history2
Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium Fuel INFRA-RED Soot % Nitration Sulfation FLUID DEGRADA Oxidation	ppm ppm ppm ppm ppm ppm ppm % % Abs/1mm Abs/.1mm	ASTM D5185M ASTM D7844 *ASTM D7844 *ASTM D7844 *ASTM D7415	450 3000 1150 1350 4250 imit/base >25 >158 >20 >5 imit/base >3 >20 >30 imit/base >20 >30	927 1184 1152 1258 3697 current 5 2 0 0.2 current 0.2 6.1 18.0 current 13.3	961 1081 1057 1263 3808 history1 6 1 0 0.3 history1 0.2 5.9 18.5 history1 13.9	866 1261 1083 1307 3506 history2 8 0 0 <1.0 history2 0.2 6.7 19.5 history2 14.6

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# **OIL ANALYSIS REPORT**









	VISUAL		method	limit/base	e current	history1	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	NORMI	NORMI	NORMI	NORMI				
	Emulsified Water	scalar	*Visual	>0.2	NEG	NEG	NEG				
	Free Water	scalar	*Visual	20.L	NEG	NEG	NEG				
÷,			Violati	1		INE G					
	FLUID PROPERT	IES	method	limit/base	current	history1	history2				
	Visc @ 100°C	cSt	ASTM D445	14.4	11.8	12.3	12.7				
	GRAPHS										
25	Iron (ppm)				Lead (ppm)						
20	Severe				Severe						
15	· · · · · · · · · · · · · · · · · · ·				60						
E 10	Abnormal			dd	40 - Abnormal						
5					20						
					0						
	3/07 2/10 2/12	3/14	6/19	2/24	2/10	5/12 3/14 	6/17 6/19 21/21				
	Api May1 Mar1	Feb Dec	Jun May	May	Api May1	Marl Feb Dec	Jun May Octô				
	Aluminum (ppm)				Chromium (p	pm)					
5		THE STREET			50 Common 1 1 1		1000000000				
4	0 - Severe				40 - Severe						
<u>ع</u> 3				E. E.	30						
2					20 - Annormal						
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	Apr3/ May2/ ay12/ Iar15/	Feb3/ Dec7/	Jun6/ May6/	May2/	Apr3/ May2/ ay12/	lar15/ Feb3/ Dec7/	Jun6, May6/ Dct21, May2/				
	$\sim \leq \geq$		2 0	~ <u>~</u>	- ≥ Silicon (nnm)	2					
40	<sup>0</sup> T Severe				80 T Severe						
30	Abromal				60						
E				E							
료 20	0-			bh	40 - Abnormal						
10	0 -				20 -		$\wedge$				
(		-									
	pr3/08 ay2/08 /12/10	sb3/14	1/6/15	3/2/24	pr3/0	r15/12 bb3/14 ec7/15	m6/1. ay6/19 t21/2				
	May Ma	De Fe	יר צ	Ň	A. Ma	De Fe	JL Ma				
	Viscosity @ 100°C				Base Number	C					
	Abnormal			(B/H	Abnormal		The second				
0 <sup>1</sup>	6			DY B1	0.0 Base	$\sim$	1 A				
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रह 1	Abaeroal		~~~	Num	5.0 - O		+ + + +				
1	0			Base	0.0						
1	3/07 2/08 2/10	3/14-	6/17 6/19	2/24	3/07 2/08	5/12 - 3/14 - 1/15 -	6/17 - 6/19 - 1/21 - 1/24 -				
	Apr. Mayi Mar15	Feb:	Juni Mayê	May	Apr. Mayž May12	Mar1. Feb3	Jun Mayf Oct2 May2				
	<b>-</b> -				5	40000041					
: W	WearCheck USA - 501 Madison Ave., Carv. NC 27513 HALLACK CONTRACTING INC.										



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Page 2 of 2