

OIL ANALYSIS REPORT

Sample Rating Trend NORMAL





CATERPILLAR 336 8372 - CAT (S/N DKS20382) Component **Diesel Engine** Fluid

DIESEL ENGINE OIL SAE 40 (--- QTS)

Recommendation

Resample at the next service interval to monitor. Please specify the brand, type, and viscosity of the oil on your next sample.

Wear

All component wear rates are normal.

Contamination

There is no indication of any contamination in the oil.

Fluid Condition

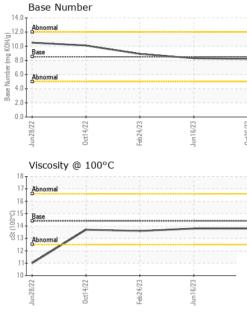
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

SAMPLE INFORM	ATION	method	limit/base	current	history1	history2
Sample Number		Client Info		WC0862964	WC0797738	WC0791056
Sample Date		Client Info		26 Oct 2023	16 Jun 2023	24 Feb 2023
Machine Age	hrs	Client Info		2355	1850	1409
Oil Age	hrs	Client Info		505	441	415
Oil Changed		Client Info		Changed	Changed	Changed
Sample Status				NORMAL	NORMAL	NORMAL
CONTAMINATION	N	method	limit/base	current	history1	history2
Fuel		WC Method	>5	<1.0	<1.0	<1.0
Glycol		WC Method		NEG	NEG	NEG
WEAR METALS		method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m	>100	12	11	10
Chromium	ppm	ASTM D5185m	>20	<1	<1	<1
Nickel	ppm	ASTM D5185m	>2	<1	0	0
Titanium	ppm	ASTM D5185m	>2	0	0	0
Silver	ppm	ASTM D5185m	>2	0	0	0
Aluminum	ppm	ASTM D5185m	>25	4	1	2
Lead	ppm	ASTM D5185m	>40	<1	<1	<1
Copper	ppm	ASTM D5185m	>330	4	1	2
Tin	ppm	ASTM D5185m	>15	<1	<1	1
Vanadium	ppm	ASTM D5185m		0	0	<1
Cadmium	ppm	ASTM D5185m		0	0	0
ADDITIVES		method	limit/base	current	history1	history2
Boron	ppm	method ASTM D5185m	limit/base	current 4	history1 8	history2 13
	ppm ppm					
Boron		ASTM D5185m	250	4	8	13
Boron Barium	ppm	ASTM D5185m ASTM D5185m	250 10	4 0	8	13 0
Boron Barium Molybdenum	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	250 10	4 0 57	8 0 60	13 0 53
Boron Barium Molybdenum Manganese	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	250 10 100	4 0 57 <1	8 0 60 <1	13 0 53 <1
Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	250 10 100 450	4 0 57 <1 939	8 0 60 <1 973	13 0 53 <1 847
Boron Barium Molybdenum Manganese Magnesium Calcium	ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	250 10 100 450 3000	4 0 57 <1 939 1089	8 0 60 <1 973 1103	13 0 53 <1 847 1078
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus	ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	250 10 100 450 3000 1150	4 0 57 <1 939 1089 1033	8 0 60 <1 973 1103 1040	13 0 53 <1 847 1078 910
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	250 10 100 450 3000 1150 1350	4 0 57 <1 939 1089 1033 1287	8 0 60 <1 973 1103 1040 1281	13 0 53 <1 847 1078 910 1186
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur	ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	250 10 100 450 3000 1150 1350 4250	4 0 57 <1 939 1089 1033 1287 3083	8 0 60 <1 973 1103 1040 1281 3761	13 0 53 <1 847 1078 910 1186 3455
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS	ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	250 10 100 450 3000 1150 1350 4250 limit/base >25	4 0 57 <1 939 1089 1033 1287 3083 current	8 0 60 <1 973 1103 1040 1281 3761 history1	13 0 53 <1 847 1078 910 1186 3455 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m method ASTM D5185m	250 10 100 450 3000 1150 1350 4250 limit/base >25	4 0 57 <1 939 1089 1033 1287 3083 current 4	8 0 60 <1 973 1103 1040 1281 3761 history1 4	13 0 53 <1 847 1078 910 1186 3455 history2 6
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m method ASTM D5185m	250 10 100 450 3000 1150 1350 4250 limit/base >25 >216	4 0 57 <1 939 1089 1033 1287 3083 <u>current</u> 4 2	8 0 60 <1 973 1103 1040 1281 3761 history1 4 <	13 0 53 <1 847 1078 910 1186 3455 history2 6 0
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	250 10 100 450 3000 1150 1350 4250 imit/base >216 >216 >20	4 0 57 <1 939 1089 1033 1287 3083 current 4 2 5	8 0 60 <1 973 1103 1040 1281 3761 history1 4 <1 2	13 0 53 <1 847 1078 910 1186 3455 history2 6 0 2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium INFRA-RED	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	250 10 100 450 3000 1150 1350 4250 Imit/base >25 >216 >20 Imit/base >3	4 0 57 <1 939 1089 1033 1287 3083 current 4 2 5 5	8 0 60 <1 973 1103 1040 1281 3761 history1 4 <1 2 history1	13 0 53 <1 847 1078 910 1186 3455 history2 6 0 2 2 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium INFRA-RED Soot %	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	250 10 100 450 3000 1150 1350 4250 Imit/base >25 >216 >20 Imit/base >3	4 0 57 <1 939 1089 1033 1287 3083 <u>current</u> 4 2 5 <u>current</u> 0.7	8 0 60 <1 973 1103 1040 1281 3761 history1 4 <1 2 history1 0.5	13 0 53 <1 847 1078 910 1186 3455 history2 6 0 2 history2 0.3
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium INFRA-RED Soot % Nitration	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	250 10 100 450 3000 1150 1350 4250 Iimit/base >25 >216 >20 Iimit/base >3 >20	4 0 57 <1 939 1089 1033 1287 3083 <i>current</i> 4 2 5 <i>current</i> 0.7 7.4	8 0 60 <1 973 1103 1040 1281 3761 history1 4 <1 2 history1 0.5 7.0	13 0 53 <1 847 1078 910 1186 3455 history2 6 0 2 <u>history2</u> 0.3 6.6
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium INFRA-RED Soot % Nitration Sulfation	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	250 10 100 450 3000 1150 1350 4250 imit/base >25 >216 >20 imit/base >3 >20 >30	4 0 57 <1 939 1089 1033 1287 3083 <u>current</u> 4 2 5 <u>current</u> 0.7 7.4 18.7	8 0 60 <1 973 1103 1040 1281 3761 history1 4 <1 2 history1 0.5 7.0 19.3	13 0 53 <1 847 1078 910 1186 3455 history2 6 0 2 <u>history2</u> 0.3 6.6 18.5
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium INFRA-RED Soot % Nitration Sulfation	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D7844 *ASTM D7844	250 10 100 450 3000 1150 1350 4250 imit/base >25 >216 >20 imit/base >3 >20 >30 imit/base	4 0 57 <1 939 1089 1033 1287 3083 <i>current</i> 4 2 5 <i>current</i> 0.7 7.4 18.7	8 0 60 <1 973 1103 1040 1281 3761 history1 4 <1 2 history1 0.5 7.0 19.3 history1	13 0 53 <1 847 1078 910 1186 3455 history2 6 0 2 history2 0.3 6.6 18.5 history2



OIL ANALYSIS REPORT

VISUAL



		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
Feb24/23	Jun16/23	Appearance	scalar	*Visual	NORML	NORML	NORML	NORML
Feb2	Jun1	Odor	scalar	*Visual	NORML	NORML	NORML	NORML
		Emulsified Water	scalar	*Visual	>0.2	NEG	NEG	NEG
		Free Water	scalar	*Visual		NEG	NEG	NEG
		FLUID PROPER	TIES	method	limit/base	current	history1	history2
		Visc @ 100°C	cSt	ASTM D445	14.4	13.8	13.8	13.6
		GRAPHS						
		Ferrous Alloys						
/23	//23 -	iron						
Feb24/23	Jun 16/23	20- nickel		· · · · · · · · · · · · · · · · · · ·				
		15						
		10-						
		5-						
		0		******				
		Jun28/22 . 0ct14/22 .	Feb 24/23 .	Jun16/23 -	0ct26/23 .			
		Jun2 Oct1	Feb 2	Junl	Octź			
		Non-ferrous Met	als					
		25 copper						
		20 - sessesses lead						
		15						
		10		 				
		5						
		Conversion of the owner own						
		0		23	/23			
		Jun28/22 0ct14/22	Feb24/23	Jun 16/23	0ct26/23			
		Viscosity @ 100°	C			Doco Numbor	-	
		¹⁸		1	14	Base Number		
		17						
		17 Abnormal			12	2.0 - Abnormal		
		16 -						
		16 -						
		16 ()-15 ()-00114 ()-15 ()-00114						
		16 5-00 14 35 13 Abnormal						
		16 ()-15 ()-00114 ()-15 ()-00114			ase Number (mg KOH/g)			
		Base Base Base Abnomal 12 11 10			Base Number (mg KOH(g)	Base Base Abnomal Control (1997)		
		Base Base Base Abnomal 12 11 10	24/23	16/23 -	Base Number (M)	Base Base Abnomal C.O.	24/23	16/23 20/23
		16 ()-00()14 31 12 11 Abnomal	Feb24/23	Jun16/23	Base Number (Mg)	Base Base Concernation Base Base Base Base Base Base Base Base	Feb24/23	Juni 6/23
	Laboratory	Base (3-0001) 43 13 12 11 10 22/82 unf			0ct26/23 +	Base Base Abnormal Action Base Abnormal CZUR CZUR Base CZUR CZUR DO CZUR CZUR DO C CZUR DO CZUR DO C CZUR DO C C CZUR DO C C CZUR DO C C C C C C C C C C C C C C C C C C	_	,
	Laboratory Sample No.	Base Base Base Abnomal 12 11 10		son Ave., Ca	0ct26/23 +	Base Base Abnormal Action Base Abnormal CZUR CZUR Base CZUR CZUR DO CZUR CZUR DO C CZUR DO CZUR DO C CZUR DO C C CZUR DO C C CZUR DO C C C C C C C C C C C C C C C C C C	RADER CONS	,
	Sample No. Lab Number	Base Base	501 Madia Received Diagnos	son Ave., Ca d : 31 (ed : 01	ry, NC 2751 Doct 2023 Nov 2023	Base Base Abnormal Action Base Abnormal CZUR CZUR Base CZUR CZUR DO CZUR CZUR DO C CZUR DO CZUR DO C CZUR DO C C CZUR DO C C CZUR DO C C C C C C C C C C C C C C C C C C	RADER CONS	TRUCTION CO DRAWER 157 NEW BERN, NO
	Sample No. Lab Number Unique Numbe	: WearCheck USA - : WC0862964 : 05994207 r : 10722567	501 Madis Received Diagnose Diagnost	son Ave., Ca d : 31 (ed : 01 l tician : We	(0,40) bul agent to the set of th	Base Base Abnormal Action Base Abnormal CZUR CZUR Base CZUR CZUR DO CZUR CZUR DO C CZUR DO CZUR DO C CZUR DO C C CZUR DO C C CZUR DO C C C C C C C C C C C C C C C C C C	RADER CONS PO	TRUCTION CO DRAWER 157 NEW BERN, NO US 2856
Certificate L2367 To discuss this	Sample No. Lab Number Unique Numbe Test Package	: WearCheck USA - : WC0862964 : 05994207 r : 10722567	501 Madis Received Diagnos Diagnost al Tests: T	son Ave., Ca d : 31 (ed : 01 l tician : We BN)	ry, NC 2751 Doct 2023 Nov 2023 s Davis	Base Abnormal Abnormal CO CO CO CO CO CO CO CO CO CO	RADER CONS PO	TRUCTION CO DRAWER 157 NEW BERN, NO US 2856 t: MIKE WYAT

Contact/Location: MIKE WYATT - TRANEW