

### **OIL ANALYSIS REPORT**

Sample Rating Trend



Machine Id

# CUMMINS ART VSI

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

#### DIAGNOSIS

#### 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	IATION	method	limit/base	current	nistory i	nistory2
Sample Number		Client Info		KL0013546	KL0013572	KL0013284
Sample Date		Client Info		01 May 2024	09 Apr 2024	26 Jan 2024
Machine Age	hrs	Client Info		0	0	0
Oil Age	hrs	Client Info		0	0	0
Oil Changed		Client Info		N/A	N/A	N/A
Sample Status				NORMAL	NORMAL	ABNORMAL
	_			-		
CONTAMINATION	١	method	limit/base	current	history1	history2
Fuel		WC Method	>3.0	<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	maa	ASTM D5185m	>90	23	13	48
Chromium	mag	ASTM D5185m	>20	3	2	6
Nickel	nad	ASTM D5185m	>2	0	<1	0
Titanium	ppm	ASTM D5185m	>2	0	0	<1
Silver	mag	ASTM D5185m	>2	0	0	0
Aluminum	mag	ASTM D5185m	>20	5	4	8
Lead	mag	ASTM D5185m	>40	۔ <1	<1	2
Copper	nom	ASTM D5185m	>330	2	0	<1
Tin	mag	ASTM D5185m	>15	- <1	<1	1
Vanadium	mag	ASTM D5185m		0	0	0
Cadmium	mag	ASTM D5185m		0	0	0
ADDITIVES		method	limit/base	current	historv1	historv2
ADDITIVES	0.0.00	method	limit/base	current	history1	history2
ADDITIVES Boron	ppm	method ASTM D5185m	limit/base 250	current 445	history1 448	history2 393
ADDITIVES Boron Barium	ppm ppm	method ASTM D5185m ASTM D5185m	limit/base 250 10	current 445 0	history1 448 0	history2 393 0
ADDITIVES Boron Barium Molybdenum	ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m	limit/base 250 10 100	current 445 0 87	history1 448 0 82	history2 393 0 84
ADDITIVES Boron Barium Molybdenum Manganese Maganese	ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	limit/base 250 10 100	current 445 0 87 <1	history1 448 0 82 <1 422	history2 393 0 84 <1
ADDITIVES Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	limit/base 250 10 100 450	current 445 0 87 <1 400 1257	history1 448 0 82 <1 423 1216	history2 393 0 84 <1 434
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium	ppm ppm ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	limit/base 250 10 100 450 3000	current 445 0 87 <1 400 1357 045	history1 448 0 82 <1 423 1316 245	history2 393 0 84 <1 434 1355
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus	ppm ppm ppm ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	limit/base 250 10 100 450 3000 1150 1250	current           445           0           87           <1           400           1357           945           1002	history1 448 0 82 <1 423 1316 945 1002	history2 393 0 84 <1 434 1355 912 1076
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur	ppm ppm ppm ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	limit/base 250 10 100 450 3000 1150 1350 4250	current           445           0           87           <1           400           1357           945           1092           2380	history1 448 0 82 <1 423 1316 945 1093 2725	history2 393 0 84 <1 434 1355 912 1076 2027
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur	ppm ppm ppm ppm ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	limit/base 250 10 100 450 3000 1150 1350 4250	current 445 0 87 <1 400 1357 945 1092 3389	history1 448 0 82 <1 423 1316 945 1093 3735	history2 393 0 84 <1 434 1355 912 1076 3027
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS	ppm ppm ppm ppm ppm ppm ppm ppm	method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	limit/base 250 10 100 450 3000 1150 1350 4250 limit/base	current           445           0           87           <1           400           1357           945           1092           3389           current	history1 448 0 82 <1 423 1316 945 1093 3735 history1	history2 393 0 84 <1 434 1355 912 1076 3027 history2
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon	ppm 1 ppm 2 ppm 2 ppm 2 ppm 3 ppm 4 ppm 4 ppm 4 ppm 4 ppm 4	method           ASTM D5185m	limit/base 250 10 100 450 3000 1150 1350 4250 limit/base >25	current           445           0           87           <1           400           1357           945           1092           3389           current           13	history1         448         0         82         <1         423         1316         945         1093         3735         history1         10	history2         393         0         84         <1         434         1355         912         1076         3027         history2         29
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium	ppm ppm ppm ppm ppm ppm ppm ppm ppm	method           ASTM D5185m	limit/base 250 10 100 450 3000 1150 1350 4250 limit/base >25 >158	current           445           0           87           <1           400           1357           945           1092           3389           current           13           3	history1         448         0         82         <1         423         1316         945         1093         3735         history1         10         2	history2         393         0         84         <1         434         1355         912         1076         3027         history2         29         2
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium	ppm 1 ppm 2 ppm 2 ppm 2 ppm 2 ppm 2 ppm 3 ppm 4 ppm 4 ppm 2 ppm 2 ppm 1 ppm 2 ppm 4	method           ASTM D5185m	limit/base 250 10 100 450 3000 1150 1350 4250 limit/base >25 >158 >20	current           445           0           87           <1           400           1357           945           1092           3389           current           13           3           2	history1         448         0         82         <1         423         1316         945         1093         3735         history1         10         2         2	history2 393 0 84 <1 434 1355 912 1076 3027 history2 29 2 <1
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium INFRA-RED	ppm ppm ppm ppm ppm ppm ppm ppm ppm	method           ASTM D5185m	limit/base 250 10 100 450 3000 1150 1350 4250 limit/base >25 >158 >20	current         445         0         87         <1         400         1357         945         1092         3389         current         13         2         current	history1         448         0         82         <1         423         1316         945         1093         3735         history1         10         2         2         history1	history2 393 0 84 <1 434 1355 912 1076 3027 history2 29 2 <1 history2
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium INFRA-RED Soot %	ppm 1 ppm 2 ppm 2 ppm 2 ppm 2 ppm 2 ppm 3 ppm 4 ppm 4 ppm 2 ppm 2 ppm 4 ppm 2 ppm 4 ppm 4	method           ASTM D5185m	limit/base 250 10 100 450 3000 1150 1350 4250 limit/base >25 >158 >20 limit/base	current           445           0           87           <1           400           1357           945           1092           3389           current           13           2           current           0.2	history1         448         0         82         <1         423         1316         945         1093         3735         history1         10         2         history1         0.1	history2 393 0 84 <1 434 1355 912 1076 3027 history2 29 2 <1 history2 0.1
ADDITIVES 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	method           ASTM D5185m	limit/base 250 10 100 450 3000 1150 1350 4250 limit/base >25 >158 >20 limit/base >6 >20	current         445         0         87         <1         400         1357         945         1092         3389         current         13         2         current         0.2         7.0	history1         448         0         82         <1         423         1316         945         1093         3735         history1         10         2         history1         0.1         5.7	history2 393 0 84 <1 434 1355 912 1076 3027 bistory2 29 2 <1 history2 0.1 6.0
ADDITIVES 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	method           ASTM D5185m           ASTM D78444           *ASTM D7624	limit/base 250 10 100 450 3000 1150 1350 4250 limit/base >25 >158 >20 limit/base >20 limit/base >20	current         445         0         87         <1         400         1357         945         1092         3389         current         13         3         2         current         0.2         7.0         20.8	history1         448         0         82         <1         423         1316         945         1093         3735         history1         10         2         history1         0.1         5.7         20.2	history2         393         0         84         <1         434         1355         912         1076         3027         history2         29         2         <1         history2         0.1         6.0         20.5
ADDITIVES 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	method           ASTM D5185m	limit/base 250 10 100 450 3000 1150 1350 4250 limit/base >25 >158 >20 limit/base >6 >20 >30 limit/base	current         445         0         87         <1         400         1357         945         1092         3389         current         13         2         current         0.2         7.0         20.8	history1         448         0         82         <1         423         1316         945         1093         3735         history1         10         2         history1         0.1         5.7         20.2         history1	history2 393 0 84 <1 434 1355 912 1076 3027 bistory2 2 2 2 <1 bistory2 0.1 6.0 20.5 bistory2
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium INFRA-RED Soot % Nitration Sulfation FLUID DEGRADA	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	method           ASTM D5185m           ASTM D7844           *ASTM D7414	limit/base 250 10 100 450 3000 1150 1350 4250 limit/base >25 >158 >20 limit/base >6 >20 >30 limit/base >25	current         445         0         87         <1         400         1357         945         1092         3389         current         13         2         current         0.2         7.0         20.8         current         15.2	history1         448         0         82         <1         423         1316         945         1093         3735         history1         10         2         history1         0.1         5.7         20.2         history1         14.5	history2 393 0 84 <1 434 1355 912 1076 3027 bistory2 29 2 <1 history2 0.1 6.0 20.5 history2 14.6
ADDITIVES Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium INFRA-RED Soot % Nitration Sulfation FLUID DEGRADA Oxidation Base Number (BN)	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	method           ASTM D5185m           ASTM D7844           *ASTM D7415           Method           *ASTM D7414           ASTM D2896	<pre>limit/base 250 10 100 450 3000 1150 1350 4250 imit/base &gt;25 &gt;158 &gt;20 limit/base &gt;6 &gt;20 limit/base &gt;6 &gt;20 s30 limit/base</pre>	current         445         0         87         <1         400         1357         945         1092         3389         current         13         3         2         current         0.2         7.0         20.8         current         15.2         7.3	history1         448         0         82         <1         423         1316         945         1093         3735         history1         10         2         history1         0.1         5.7         20.2         history1         14.5         8.5	history2         393         0         84         <1         434         1355         912         1076         3027         history2         2  <



Jul14/21-

Mar4/77

## **OIL ANALYSIS REPORT**





lov11/22

an31/23

or21/23 ig23/23 ov15/23 an26/24

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 PROPERTIES		method	limit/base	current	historv1	historv2
Visc @ 100°C	cSt	ASTM D445	14.4	13.4	13.4	13.3
ODADUO						

Ferrous Alloys





Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513 **RAMIREZ & SONS** Sample No. : KL0013546 3404 N ENTERPRISE DR Received : 16 May 2024 Lab Number : 06182302 Tested : 18 May 2024 HOBBS, NM Unique Number : 11033628 Diagnosed : 18 May 2024 - Wes Davis US 88240 Test Package : FLEET Contact: Rick Davidson Certificate 12367 To discuss this sample report, contact Customer Service at 1-800-237-1369. rickdavidson.rsi@gmail.com \* - Denotes test methods that are outside of the ISO 17025 scope of accreditation. T: Statements of conformity to specifications are based on the simple acceptance decision rule (JCGM 106:2012)

Report Id: RAMHOB [WUSCAR] 06182302 (Generated: 05/18/2024 00:42:11) Rev: 1

Contact/Location: Rick Davidson - RAMHOB

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