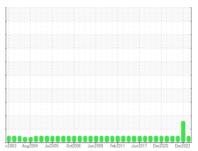


OIL ANALYSIS REPORT

Sample Rating Trend









VOLVO A25C 609 (S/N V61529)

Component

Diesel Engine

DIESEL ENGINE OIL SAE 15W40 (8 GAL)

DIAGNOSIS

Recommendation

No corrective action is recommended at this time. 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.

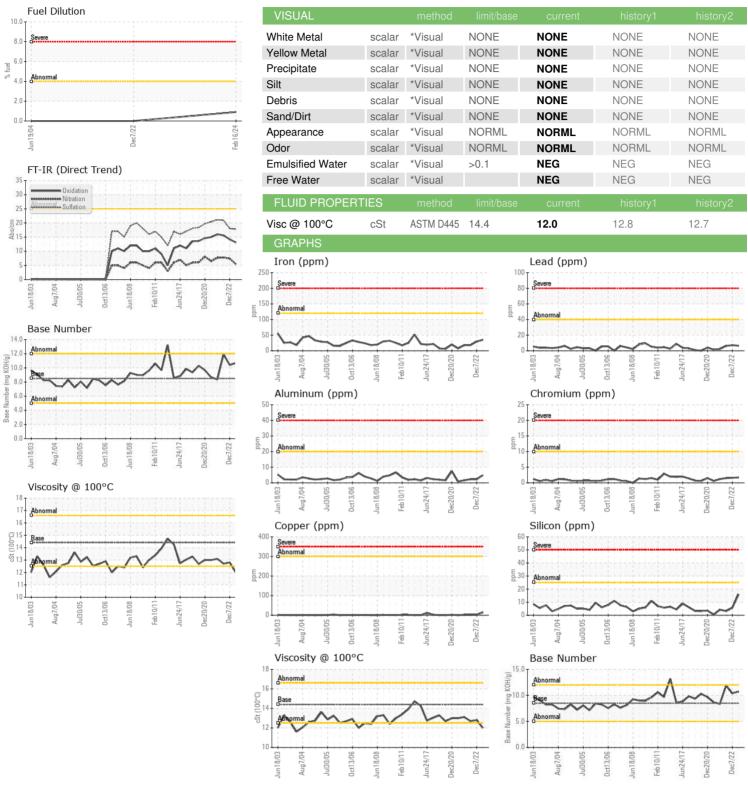
Fluid Condition

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

Sample Number Client Info RW0005011 RW0004883 RW000369 Sample Date Client Info 16 Feb 2024 07 Dec 2022 03 Sep 202	AE 15W40 (8 G <i>A</i>	AL)	n2003 Aug20	04 Jul2005 Oct2006 Ji	un2008 Feb2011 Jun2017 Dec2	020 Dec2022	
Client Info	SAMPLE INFORM	MATION	method	limit/base	current	history1	history2
Machine Age hrs Client Info 12684 12580 12298 1201 12498 12580 12298 1310 12498 1310 12498 1310 12498 1310 12498 1310 12498 1310 12498 1310 12498 1310 13	Sample Number		Client Info		RW0005011	RW0004083	RW0003698
Dil Changed	Sample Date		Client Info		16 Feb 2024	07 Dec 2022	03 Sep 2022
Changed Changed Changed NORMAL ABNORMAL NORMAL		hrs	Client Info		12684	12580	
NORMAL ABNORMAL NORMAL NORMAL CONTAMINATION method limit/base current history1 history1 history2 history3 NEG	Oil Age	hrs	Client Info		104	282	310
NORMAL ABNORMAL NORMAL NORMAL CONTAMINATION method imit/base current history1 history1 history2 history3 NEG N	Oil Changed		Client Info		Changed	Changed	Changed
Water WC Method NEG NEG NEG NEG Silycol WC Method NEG NEG NEG NEG WEAR METALS method limit/base current history1 history1 ron ppm ASTM D5185m >120 35 29 18 Chromium ppm ASTM D5185m >10 2 2 2 Vickel ppm ASTM D5185m >10 0 1 <1 Silver ppm ASTM D5185m >5 0 0 <1 Aluminum ppm ASTM D5185m >20 5 2 2 Lead ppm ASTM D5185m >20 5 2 2 Copper ppm ASTM D5185m >10 1 4 3 2 Tin ppm ASTM D5185m >10 1 4 3 2 Tin ppm ASTM D5185m >10 1 4 7	-				_	_	
WEAR METALS	CONTAMINATION	١	method	limit/base	current	history1	history2
WEAR METALS method limit/base current history1 history1 Iron ppm ASTM D5185m >120 35 29 18 Chromium ppm ASTM D5185m >10 2 2 2 Nickel ppm ASTM D5185m >5 0 <1	Water		WC Method	>0.1	NEG	NEG	NEG
Chromium	Glycol		WC Method		NEG	NEG	NEG
Description	WEAR METALS		method	limit/base	current	history1	history2
Sickel	ron	ppm	ASTM D5185m	>120	35	29	18
ASTM D5185m Silver Silve	Chromium	ppm	ASTM D5185m	>10	2	2	2
Saliver	Nickel	ppm	ASTM D5185m	>5	0	<1	<1
ASTM D5185m >20 5 2 2 2 2 2 2 2 2 2	Γitanium	ppm	ASTM D5185m		<1	0	0
December December	Silver	ppm	ASTM D5185m	>5	0	0	<1
Description	Aluminum	ppm	ASTM D5185m	>20	5	2	2
Trin	_ead	ppm	ASTM D5185m	>40	6	7	6
Antimony	Copper	ppm	ASTM D5185m	>300	14	3	2
Antimony	Γin	ppm	ASTM D5185m	>10	1	<1	<1
Vanadium ppm ASTM D5185m <1 0 0 Cadmium ppm ASTM D5185m 0 0 0 ADDITIVES method limit/base current history1 history1 Boron ppm ASTM D5185m 250 9 6 7 Barium ppm ASTM D5185m 10 <1 0 0 Molybdenum ppm ASTM D5185m 100 74 72 63 Manganese ppm ASTM D5185m 100 74 72 63 Manganesium ppm ASTM D5185m 450 1079 1009 903 Calcium ppm ASTM D5185m 3000 1440 1275 1226 Phosphorus ppm ASTM D5185m 1350 1568 1394 1305 Zilicon ppm ASTM D5185m 4250 4589 3862 3292 CONTAMINANTS method limit/base current history1	Antimony	ppm	ASTM D5185m				
Cadmium ppm ASTM D5185m 0 0 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 250 9 6 7 Barium ppm ASTM D5185m 10 <1	/anadium		ASTM D5185m		<1	0	0
Soron ppm ASTM D5185m 250 9 6 7	Cadmium		ASTM D5185m		0	0	0
Barium	ADDITIVES		method	limit/base	current	history1	history2
Molybdenum ppm ASTM D5185m 100 74 72 63 Manganese ppm ASTM D5185m <1 <1 <1 <1 Magnesium ppm ASTM D5185m 450 1079 1009 903 Calcium ppm ASTM D5185m 3000 1440 1275 1226 Phosphorus ppm ASTM D5185m 1150 1241 1106 1051 Zinc ppm ASTM D5185m 1350 1568 1394 1305 Sulfur ppm ASTM D5185m 4250 4589 3862 3292 CONTAMINANTS method limit/base current history1 history Silicon ppm ASTM D5185m >25 16 6 3 Sodium ppm ASTM D5185m >158 4 51 0 Potassium ppm ASTM D5185m >20 0 6 0 Fuel % ASTM D7844	Boron	ppm	ASTM D5185m	250	9	6	7
Manganese ppm ASTM D5185m <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <td>Barium</td> <td>ppm</td> <td>ASTM D5185m</td> <td>10</td> <td><1</td> <td>0</td> <td>0</td>	Barium	ppm	ASTM D5185m	10	<1	0	0
Manganese ppm ASTM D5185m <1 <1 <1 Magnesium ppm ASTM D5185m 450 1079 1009 903 Calcium ppm ASTM D5185m 3000 1440 1275 1226 Phosphorus ppm ASTM D5185m 1150 1241 1106 1051 Zinc ppm ASTM D5185m 1350 1568 1394 1305 Sulfur ppm ASTM D5185m 4250 4589 3862 3292 CONTAMINANTS method limit/base current history1 history1 Silicon ppm ASTM D5185m >25 16 6 3 Sodium ppm ASTM D5185m >25 4 51 0 Potassium ppm ASTM D5185m >20 0 6 0 Fuel % ASTM D5185m >20 0 6 0 INFRA-RED method limit/base current	Molybdenum	ppm	ASTM D5185m	100	74	72	63
Magnesium ppm ASTM D5185m 450 1079 1009 903 Calcium ppm ASTM D5185m 3000 1440 1275 1226 Phosphorus ppm ASTM D5185m 1150 1241 1106 1051 Zinc ppm ASTM D5185m 1350 1568 1394 1305 Sulfur ppm ASTM D5185m 4250 4589 3862 3292 CONTAMINANTS method limit/base current history1 history1 Silicon ppm ASTM D5185m >25 16 6 3 Sodium ppm ASTM D5185m >158 4 51 0 Potassium ppm ASTM D5185m >20 0 6 0 Fuel % ASTM D5185m >20 0 6 0 Potassium ppm ASTM D5185m >20 0 6 0 Fuel % ASTM D585m >4 <td>•</td> <td></td> <td>ASTM D5185m</td> <td></td> <td><1</td> <td><1</td> <td><1</td>	•		ASTM D5185m		<1	<1	<1
Calcium ppm ASTM D5185m 3000 1440 1275 1226 Phosphorus ppm ASTM D5185m 1150 1241 1106 1051 Zinc ppm ASTM D5185m 1350 1568 1394 1305 Sulfur ppm ASTM D5185m 4250 4589 3862 3292 CONTAMINANTS method limit/base current history1 history Silicon ppm ASTM D5185m >25 16 6 3 Godium ppm ASTM D5185m >25 16 6 3 Potassium ppm ASTM D5185m >20 0 6 0 Fuel % ASTM D3524 >4.0 0.9 <1.0	~			450	1079		903
Phosphorus ppm ASTM D5185m 1150 1241 1106 1051 Zinc ppm ASTM D5185m 1350 1568 1394 1305 Sulfur ppm ASTM D5185m 4250 4589 3862 3292 CONTAMINANTS method limit/base current history1 history Silicon ppm ASTM D5185m >25 16 6 3 Sodium ppm ASTM D5185m >158 4 51 0 Potassium ppm ASTM D5185m >20 0 6 0 Fuel % ASTM D3524 >4.0 0.9 <1.0				3000			
Zinc ppm ASTM D5185m 1350 1568 1394 1305 3862 3292							
Sulfur ppm ASTM D5185m 4250 4589 3862 3292 CONTAMINANTS method limit/base current history1 history Silicon ppm ASTM D5185m >25 16 6 3 Sodium ppm ASTM D5185m >158 4 51 0 Potassium ppm ASTM D5185m >20 0 6 0 Fuel % ASTM D3524 >4.0 0.9 <1.0							
Silicon ppm ASTM D5185m >25 16 6 3 Sodium ppm ASTM D5185m >158 4 51 0 Potassium ppm ASTM D5185m >20 0 6 0 Fuel % ASTM D3524 >4.0 0.9 <1.0 <1.0 INFRA-RED method limit/base current history1 history Soot % % *ASTM D7844 0.2 0.4 0.5 Nitration Abs/cm *ASTM D7624 >20 5.4 7.4 7.8 Sulfation Abs/.1mm *ASTM D7415 >30 17.8 18 20.9 FLUID DEGRADATION method limit/base current history1 history Oxidation Abs/.1mm *ASTM D7414 >25 13.1 14.2 15.6							
Sodium ppm ASTM D5185m >158 4 51 0 Potassium ppm ASTM D5185m >20 0 6 0 Fuel % ASTM D3524 >4.0 0.9 <1.0	CONTAMINANTS		method	limit/base	current	history1	history2
Potassium ppm ASTM D5185m >20 0 6 0 Fuel % ASTM D3524 >4.0 0.9 <1.0 <1.0 INFRA-RED method limit/base current history1 history1 Soot % % *ASTM D7844 0.2 0.4 0.5 Vitration Abs/cm *ASTM D7624 >20 5.4 7.4 7.8 Gulfation Abs/.1mm *ASTM D7415 >30 17.8 18 20.9 FLUID DEGRADATION method limit/base current history1 history Oxidation Abs/.1mm *ASTM D7414 >25 13.1 14.2 15.6	Silicon	ppm	ASTM D5185m	>25	16	6	3
Fuel % ASTM D3524 >4.0 0.9 <1.0 <1.0 INFRA-RED method limit/base current history1 history Soot % % *ASTM D7844 0.2 0.4 0.5 Nitration Abs/cm *ASTM D7624 >20 5.4 7.4 7.8 Sulfation Abs/.1mm *ASTM D7415 >30 17.8 18 20.9 FLUID DEGRADATION method limit/base current history1 history Oxidation Abs/.1mm *ASTM D7414 >25 13.1 14.2 15.6	Sodium	ppm	ASTM D5185m	>158	4	51	0
INFRA-RED	Potassium	ppm	ASTM D5185m	>20	0	6	0
Soot % % *ASTM D7844 0.2 0.4 0.5 Nitration Abs/cm *ASTM D7624 >20 5.4 7.4 7.8 Sulfation Abs/.1mm *ASTM D7415 >30 17.8 18 20.9 FLUID DEGRADATION method limit/base current history1 history Oxidation Abs/.1mm *ASTM D7414 >25 13.1 14.2 15.6	-uel	%	ASTM D3524	>4.0	0.9	<1.0	<1.0
Nitration Abs/cm *ASTM D7624 > 20 5.4 7.4 7.8 Sulfation Abs/.1mm *ASTM D7615 > 30 17.8 18 20.9 FLUID DEGRADATION method limit/base current history Dxidation Abs/.1mm *ASTM D7414 > 25 13.1 14.2 15.6	INFRA-RED		method	limit/base	current	history1	history2
Sulfation Abs/.1mm *ASTM D7415 >30 17.8 18 20.9 FLUID DEGRADATION method limit/base current history1 history Oxidation Abs/.1mm *ASTM D7414 >25 13.1 14.2 15.6	Soot %	%	*ASTM D7844		0.2	0.4	0.5
Sulfation Abs/.1mm *ASTM D7415 >30 17.8 18 20.9 FLUID DEGRADATION method limit/base current history1 history Oxidation Abs/.1mm *ASTM D7414 >25 13.1 14.2 15.6	Vitration	Abs/cm	*ASTM D7624	>20	5.4	7.4	7.8
Oxidation							
	FLUID DEGRADA	TION	method	limit/base	current	history1	history2
Base Number (BN) mg KOH/g ASTM D2896 8.5 10.70 10.39 11.9	 Oxidation	Abs/.1mm	*ASTM D7414	>25	13.1	14.2	15.6
	Base Number (BN)	mg KOH/g	ASTM D2896	8.5	10.70	10.39	11.9



OIL ANALYSIS REPORT







Certificate 12367

Sample No.

Lab Number : 06146736 Unique Number : 10976814

: WearCheck USA - 501 Madison Ave., Cary, NC 27513 : RW0005011

Received **Tested** Diagnosed Test Package : MOB 2 (Additional Tests: FuelDilution, PercentFuel)

: 17 Apr 2024

: 17 Apr 2024 - Wes Davis

: 11 Apr 2024

Contact: DAN HALLACK KARL BUTCHER

To discuss this sample report, contact Customer Service at 1-800-237-1369. st - 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) F: (231)873-2889

HALLACK CONTRACTING, INC.

Report Id: HALHAR [WUSCAR] 06146736 (Generated: 04/17/2024 16:24:34) Rev: 1

Contact/Location: DAN HALLACK KARL BUTCHER - HALHAR

4223 W POLK

HART, MI

US 49420