

OIL ANALYSIS REPORT

Sample Rating Trend

NORMAL



CATERPILLAR 2XR02241 Component

Diesel Engine Fluid

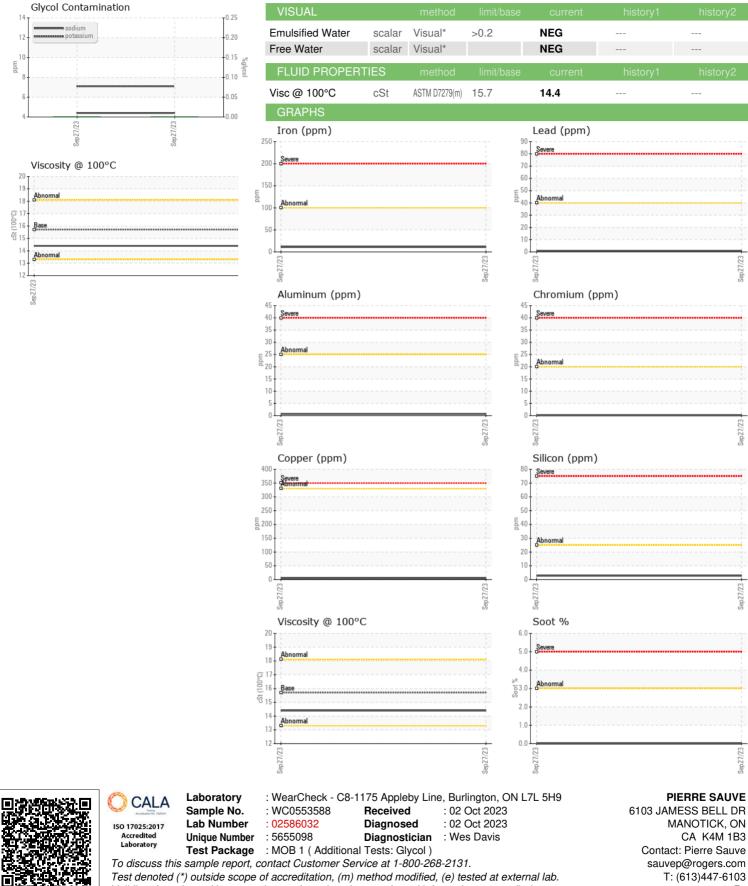
SHELL ROTELLA T 15W40 (--- LTR)

DIAGNOSIS	SAMPLE INFORM	IATION	method	limit/base	current	history1	history2
Recommendation	Sample Number		Client Info		WC0553588		
Resample at the next service interval to monitor.	Sample Date		Client Info		27 Sep 2023		
Wear	Machine Age	hrs	Client Info		1089		
All component wear rates are normal.	Oil Age	hrs	Client Info		16		
Contamination	Oil Changed		Client Info		Not Changd		
There is no indication of any contamination in the	Sample Status				NORMAL		
oil.	CONTAMINATION	1	method	limit/base		history1	history2
Fluid Condition	Fuel	N	WC Method		<1.0		
The condition of the oil is acceptable for the time in service.	WEAR METALS		method	limit/base		history1	history2
	Iron	nom	ASTM D5185(m)		11		
		ppm	. ,				
	Chromium	ppm	ASTM D5185(m)		<1		
	Nickel	ppm	ASTM D5185(m)		0		
	Titanium		ASTM D5185(m)		0		
	Silver	ppm	ASTM D5185(m)		<1		
	Aluminum	ppm	ASTM D5185(m)		<1		
	Lead	ppm			<1		
	Copper		ASTM D5185(m)		5		
	Tin	ppm	ASTM D5185(m)	>15	0		
	Antimony		ASTM D5185(m)		0		
	Vanadium	ppm	ASTM D5185(m)		0		
	Beryllium	ppm	ASTM D5185(m)		0		
	Cadmium	ppm	ASTM D5185(m)		0		
	ADDITIVES		method	limit/base	current	history1	history2
	ADDITIVES Boron	ppm	method ASTM D5185(m)		current 158	history1	history2
		ppm ppm		35			
	Boron		ASTM D5185(m)	35 0	158		
	Boron Barium	ppm	ASTM D5185(m) ASTM D5185(m)	35 0 0	158 <1		
	Boron Barium Molybdenum	ppm ppm	ASTM D5185(m) ASTM D5185(m) ASTM D5185(m)	35 0 0 0	158 <1 0		
	Boron Barium Molybdenum Manganese	ppm ppm ppm	ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m)	35 0 0 0 10	158 <1 0 0		
	Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm ppm	ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m)	35 0 0 0 10 2340	158 <1 0 0 11		
	Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	ppm ppm ppm ppm ppm	ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m)	35 0 0 0 10 2340 1110	158 <1 0 0 11 2011	 	
	Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus	ppm ppm ppm ppm ppm ppm	ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m)	35 0 0 10 2340 1110 1210	158 <1 0 11 2011 930	 	
	Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc	ppm ppm ppm ppm ppm ppm ppm	ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m)	35 0 0 10 2340 1110 1210	158 <1 0 0 11 2011 930 1069	 	
	Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur	ppm ppm ppm ppm ppm ppm ppm	ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m)	35 0 0 10 2340 1110 1210	158 <1 0 0 11 2011 930 1069 2836		
	Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium	ppm ppm ppm ppm ppm ppm ppm	ASTM D5185(m) ASTM D5185(m)	35 0 0 10 2340 1110 1210 3890	158 <1 0 0 11 2011 930 1069 2836 <1 current 3		
	Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINANTS	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m) ASTM D5185(m)	35 0 0 10 2340 1110 1210 3890	158 <1 0 0 11 2011 930 1069 2836 <1 2836 <1 2836 <1	 history1	 history2
	Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINANTS Silicon	ppm	ASTM D5185(m) ASTM D5185(m)	35 0 0 10 2340 1110 1210 3890 limit/base	158 <1 0 0 11 2011 930 1069 2836 <1 current 3 4 7	 history1	 history2
	Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINANTS Silicon Sodium	ppm	ASTM D5185(m) ASTM D5185(m)	35 0 0 10 2340 1110 1210 3890 limit/base	158 <1 0 0 11 2011 930 1069 2836 <1 2836 <1 2836 <1	 history1	 history2
	Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINANTS Silicon Sodium Potassium	ppm	ASTM D5185(m) ASTM D5185(m)	35 0 0 10 2340 1110 1210 3890 limit/base	158 <1 0 0 11 2011 930 1069 2836 <1 2836 <1 <i>current</i> 3 4 7 0.0	 history1	 history2
	Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINANTS Silicon Sodium Potassium Glycol	ppm	ASTM D5185(m) ASTM D5185(m)	35 0 0 10 2340 1110 1210 3890 Imit/base >25 >20	158 <1 0 0 11 2011 930 1069 2836 <1 2836 <1 <i>current</i> 3 4 7 0.0	 history1 	 history2
	Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINANTS Silicon Sodium Potassium Glycol INFRA-RED	ppm ppm %	ASTM D5185(m) ASTM D5185(m)	35 0 0 10 2340 1110 1210 3890 imit/base >25 >20 imit/base >3	158 <1 0 0 11 2011 930 1069 2836 <1 <i>current</i> 3 4 7 0.0 <i>current</i>	 history1 history1	 history2 history2
	Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINANTS Silicon Sodium Potassium Glycol INFRA-RED Soot %	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185(m) ASTM D7844 [*]	35 0 0 10 2340 1110 1210 3890 imit/base >25 >20 imit/base >3 >20	158 <1 0 0 11 2011 930 1069 2836 <1 <i>current</i> 3 4 7 0.0 <i>current</i> 0	 history1 history1	 history2 history2
	Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur Lithium CONTAMINANTS Silicon Sodium Potassium Glycol INFRA-RED Soot % Nitration	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185(m) ASTM D7844*	35 0 0 10 2340 1110 1210 3890 imit/base >25 >20 imit/base >3 >20	158 <1 0 0 11 2011 930 1069 2836 <1 current 3 4 7 0.0 current 0 5.7 20.4	 history1 history1	 history2 history2

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Validity of results and interpretation are based on the sample and information as supplied.

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