

OIL ANALYSIS REPORT

Sample Rating Trend



Machine Id

HITACHI HCMDHD60C0000010

Diesel Engine

Fluid JOHN DEERE ENGINE OIL PLUS 50 II 15W40 (--- GAL)

DIAGNOSIS

Recommendation

Resample at the next service interval to monitor.

Wear

Metal levels are typical for a new component breaking in.

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 acceptable for the time in service.

SAMPLE INFORM	IATION	method	limit/base	current	history1	history2
Sample Number		Client Info		JR0211840		
Sample Date		Client Info		20 Jun 2024		
Machine Age	hrs	Client Info		284		
Oil Age	hrs	Client Info		0		
Oil Changed		Client Info		Not Changd		
Sample Status				NORMAL		
CONTAMINATION	٧	method	limit/base	current	history1	history2
Water		WC Method	>0.2	NEG		
Glycol		WC Method		NEG		
			11 11 11			
WEAR METALS		method	limit/base	current	history1	history2
Iron	ppm	ASTM D5185m	>100	10		
Chromium	ppm	ASTM D5185m	>20	<1		
Nickel	ppm	ASTM D5185m	>4	<1		
Titanium	ppm	ASTM D5185m		<1		
Silver	ppm	ASTM D5185m	>3	0		
Aluminum	ppm	ASTM D5185m	>20	3		
Lead	ppm	ASTM D5185m	>40	0		
Copper	ppm	ASTM D5185m	>330	17		
Tin	ppm	ASTM D5185m	>15	0		
Vanadium	ppm	ASTM D5185m		0		
Cadmium	ppm	ASTM D5185m		0		
ADDITIVES		method	limit/base	current	history1	history2
ADDITIVES Boron	ppm	method ASTM D5185m	limit/base	current 178	history1	history2
	ppm ppm		limit/base		, in the second s	
Boron		ASTM D5185m	limit/base	178		
Boron Barium	ppm	ASTM D5185m ASTM D5185m	limit/base	178 1		
Boron Barium Molybdenum	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m	limit/base	178 1 7		
Boron Barium Molybdenum Manganese	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	limit/base	178 1 7 <1		
Boron Barium Molybdenum Manganese Magnesium	ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	limit/base	178 1 7 <1 40		
Boron Barium Molybdenum Manganese Magnesium Calcium	ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	limit/base	178 1 7 <1 40 2239	 	
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	limit/base	178 1 7 <1 40 2239 1045		
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	limit/base	178 1 7 <1 40 2239 1045 1277		
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	limit/base	178 1 7 <1 40 2239 1045 1277 2808		
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	limit/base	178 1 7 <1 40 2239 1045 1277 2808 current		
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon	ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m method	limit/base	178 1 7 <1 40 2239 1045 1277 2808 current 21	 history1 	 history2
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	limit/base >25 >20	178 1 7 <1 40 2239 1045 1277 2808 <u>current</u> 21 <1	 history1	 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium	ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	limit/base >25 >20	178 1 7 <1 40 2239 1045 1277 2808 <u>current</u> 21 <1 4	 history1	 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium Fuel	ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	limit/base >25 >20 >5	178 1 7 <1 40 2239 1045 1277 2808 <u>current</u> 21 <1 4 <1.0	 history1 	 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium Fuel INFRA-RED	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	limit/base >25 >20 >5 limit/base >3	178 1 7 <1 40 2239 1045 1277 2808 current 21 <1 4 <1.0 current	 history1 history1	 history2 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium Fuel INFRA-RED Soot %	ppm	ASTM D5185m ASTM D5185m	limit/base >25 >20 >5 limit/base >3	178 1 7 <1 40 2239 1045 1277 2808 <i>current</i> 21 <1 4 <1.0 <i>current</i>	 history1 history1 	 history2 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium Fuel INFRA-RED Soot % Nitration	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D3524 ASTM D3524	limit/base >25 >20 >5 limit/base >3 >20	178 1 7 <1 40 2239 1045 1277 2808 Current 21 <1 4 <1.0 Current 0.1 6.7	 history1 history1 	history2 history2 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium Fuel INFRA-RED Soot % Nitration Sulfation FLUID DEGRADA	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	limit/base >25 >20 >20 >3 limit/base	178 1 7 <1 40 2239 1045 1277 2808 Current 21 <1 4 <1.0 Current 0.1 6.7 15.5 Current	 history1 history1 history1 history1	 history2 history2 history2 history2 history2
Boron Barium Molybdenum Manganese Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium Fuel INFRA-RED Soot % Nitration Sulfation	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m	limit/base >25 >20 >20 >5 limit/base >3 >20 >3 >20 >3	178 1 7 <1 40 2239 1045 1277 2808 <u>current</u> 21 <1 4 <10 <u>current</u> 0.1 6.7 15.5	 history1 history1 history1	 history2 history2 history2



14.0 T Base

2.0 0.0 Jun20/24

19. 18-Abnorma 17 () 16 () 15 15 14 Base

Abnorm 13 12

OIL ANALYSIS REPORT

FT-IR (Direct Tre	end)		VISUAL		method	limit/base	current	history1	history2
Oxidation			White Metal	scalar	*Visual	NONE	NONE		
Sulfation			Yellow Metal	scalar	*Visual	NONE	NONE		
			Precipitate	scalar	*Visual	NONE	NONE		
			Silt	scalar	*Visual	NONE	NONE		
			Debris	scalar	*Visual	NONE	NONE		
			Sand/Dirt	scalar	*Visual	NONE	NONE		
0/24)/24 -	Appearance	scalar	*Visual	NORML	NORML		
Jun20/24		Jun20/24	Odor	scalar	*Visual	NORML	NORML		
			Emulsified Water	scalar	*Visual	>0.2	NEG		
Base Number			Free Water	scalar	*Visual		NEG		
)			FLUID PROPER	TIES	method	limit/base	current	history1	history2
)			Visc @ 100°C	cSt	ASTM D445	15.4	12.1		
)			GRAPHS						
1			Ferrous Alloys						
jL			¹⁰			-			
Jun20/24		Y CI U C ~	8 - iron 8 - iron						
		-	6-						
Viscosity @ 100°	ΥĊ		E dd.						
Abnormal									
Base			2						
Base			0						
Abnormal			Jun20/24			Jun20/24			
2 -				1-		лL			
14-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-		Υ. C	Non-ferrous Meta	lis					
Jun20/24		061	16 - copper						
			14 tin						
			12						
			d 8						
			6						
			4						
			20/24			120/24			
			nur			junf			
			Viscosity @ 100°			Base Number			
			18 - Abnormal			14.0	ų		
			17			12.0 ©) +		
						Hoy 10.0			
			0016 Base 15			(b)H0.0 8.0 9.0 Base Number 8.0 888 Base 4.0	+		
			³ 14			4 6.0	•		
			13 Abnormal			80 4.0) +		
			12 -			2.0			
			114						24
			Jun20/24			Jun20/24	Jun20/24		Jun20/24
		Lab Number Unique Number Test Package s sample report,		Recei Teste Diagr Tests: Fue vice at 1-8	ived : 21 ed : 24 nosed : 24 elDilution, TE 800-237-1368	I Jun 2024 I Jun 2024 Jun 2024 - Se SN) 9.		11047 LEA Contac ieg@jamesrivere	
12 A 19 A			are outside of the ISO T				rule (ICGM 10		(804)798-6001 (804)798-0292

Statements of conformity to specifications are based on the simple acceptance decision rule (JCGM 106:2012)

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