

OIL ANALYSIS REPORT

Sample Rating Trend



Machine Id

HYUNDAI 27350-010

Component

Gasoline Engine

{not provided} (--- GAL)

DIAGNOSIS

Recommendation

No corrective action is recommended at this time.

Moderate concentration of visible metal present. All component wear rates are normal.

Contamination

There is no indication of any contamination in the oil.

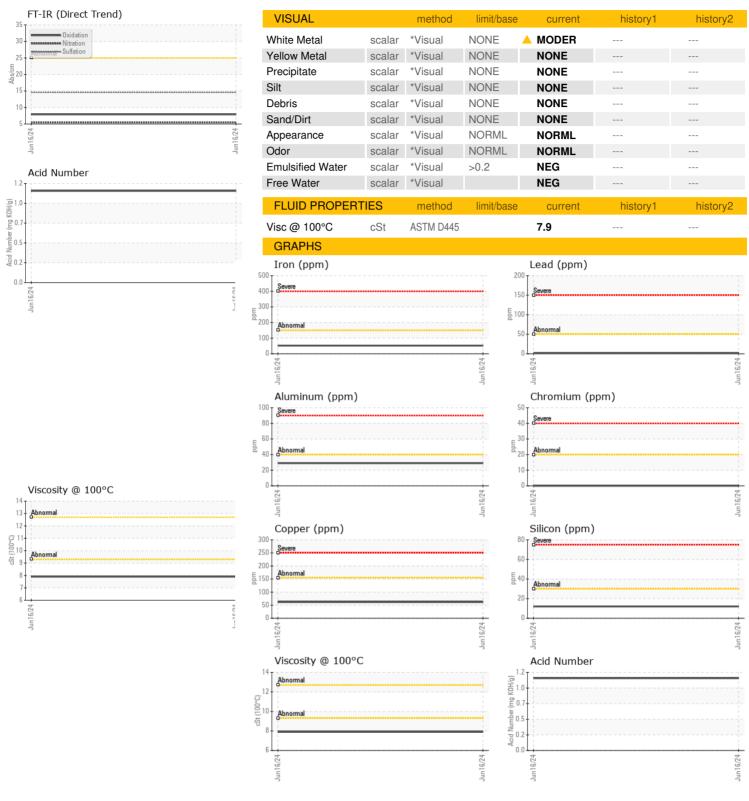
Fluid Condition

The AN level is acceptable for this fluid.

Client Info							
Client Info	SAMPLE INFORM	ATION	method	limit/base	current	history1	history2
Machine Age mls Client Info 0	Sample Number		Client Info		WCM2308058		
Oil Changed	Sample Date		Client Info		16 Jun 2024		
Contamination	Machine Age	mls	Client Info		0		
ABNORMAL	Oil Age	mls	Client Info		0		
CONTAMINATION method limit/base current history1 history2 Water WC Method >0.2 NEG Glycol WC Method NEG WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >150 52 Chromium ppm ASTM D5185m >20 0 Nickel ppm ASTM D5185m >20 0 Silver ppm ASTM D5185m >2 0 Silver ppm ASTM D5185m >40 29 Silver ppm ASTM D5185m >50 2 Silver ppm ASTM D5185m >155 62 Silver ppm ASTM D5185m >10 7 <td>Oil Changed</td> <td></td> <td>Client Info</td> <td></td> <td>N/A</td> <td></td> <td></td>	Oil Changed		Client Info		N/A		
Water WC Method >0.2 NEG Glycol WC Method NEG WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >150 52 Chromium ppm ASTM D5185m >50 2 Nickel ppm ASTM D5185m >5 2 Sliver ppm ASTM D5185m >6 2 Sliver ppm ASTM D5185m >50 2 Aluminum ppm ASTM D5185m >50 2 Lead ppm ASTM D5185m >50 2 Copper ppm ASTM D5185m >10 7 Tin ppm ASTM D5185m 0	Sample Status				ABNORMAL		
WEAR METALS	CONTAMINATION		method	limit/base	current	history1	history2
WEAR METALS method limit/base current history1 history2 Iron ppm ASTM D5185m >150 52 Chromium ppm ASTM D5185m >20 0 Nickel ppm ASTM D5185m >5 2 Silver ppm ASTM D5185m >2 0 Aluminum ppm ASTM D5185m >2 0 Aluminum ppm ASTM D5185m >40 29 Lead ppm ASTM D5185m >50 2 Copper ppm ASTM D5185m >10 7 Tin ppm ASTM D5185m 0 7 Cadmium ppm ASTM D5185m 0 Boron ppm ASTM D5185m 0 <td>Water</td> <td></td> <td>WC Method</td> <td>>0.2</td> <td>NEG</td> <td></td> <td></td>	Water		WC Method	>0.2	NEG		
Concord Conc	Glycol		WC Method		NEG		
Chromium	WEAR METALS		method	limit/base	current	history1	history2
ASTM D5185m STM D5185m ST	Iron	ppm	ASTM D5185m	>150	52		
STIME	Chromium	ppm	ASTM D5185m	>20	0		
Silver	Nickel	ppm	ASTM D5185m	>5	2		
Aluminum	Titanium	ppm	ASTM D5185m		<1		
Lead	Silver	ppm	ASTM D5185m	>2	0		
Copper	Aluminum	ppm	ASTM D5185m	>40	29		
Tin	Lead	ppm	ASTM D5185m	>50	2		
Vanadium ppm ASTM D5185m <1 Cadmium ppm ASTM D5185m 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 80 Barium ppm ASTM D5185m 0 Molybdenum ppm ASTM D5185m 100 Manganese ppm ASTM D5185m 2 Magnesium ppm ASTM D5185m 536 Calcium ppm ASTM D5185m 595 Phosphorus ppm ASTM D5185m 704 Sulfur ppm ASTM D5185m 2250 CONTAMINANTS method limit/base current history1 history2 Solicon ppm ASTM D5185m >30 12 </td <td>Copper</td> <td>ppm</td> <td>ASTM D5185m</td> <td>>155</td> <td>62</td> <td></td> <td></td>	Copper	ppm	ASTM D5185m	>155	62		
Cadmium ppm ASTM D5185m 0 ADDITIVES method limit/base current history1 history2 Boron ppm ASTM D5185m 80 Barium ppm ASTM D5185m 0 Molybdenum ppm ASTM D5185m 100 Manganese ppm ASTM D5185m 2 Magnesium ppm ASTM D5185m 536 Calcium ppm ASTM D5185m 595 Phosphorus ppm ASTM D5185m 704 Sulfur ppm ASTM D5185m 2250 CONTAMINANTS method limit/base current history1 history2 Solicon ppm ASTM D5185m >30 12 Solicon ppm ASTM D5185m >20 </td <td>Tin</td> <td>ppm</td> <td>ASTM D5185m</td> <td>>10</td> <td>7</td> <td></td> <td></td>	Tin	ppm	ASTM D5185m	>10	7		
ADDITIVES	Vanadium	ppm	ASTM D5185m		<1		
Boron	Cadmium	ppm	ASTM D5185m		0		
Barium	ADDITIVES		method	limit/base	current	history1	history2
Molybdenum ppm ASTM D5185m 100 Manganese ppm ASTM D5185m 2 Magnesium ppm ASTM D5185m 536 Calcium ppm ASTM D5185m 1116 Phosphorus ppm ASTM D5185m 595 Zinc ppm ASTM D5185m 704 Sulfur ppm ASTM D5185m 2250 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >30 12 Sodium ppm ASTM D5185m >400 2 Potassium ppm ASTM D5185m >20 3 Fuel % ASTM D3524 >4.0 <1.0	Boron	ppm	ASTM D5185m		80		
Manganese ppm ASTM D5185m 2 Magnesium ppm ASTM D5185m 536 Calcium ppm ASTM D5185m 1116 Phosphorus ppm ASTM D5185m 595 Zinc ppm ASTM D5185m 2250 Sulfur ppm ASTM D5185m 2250 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >30 12 Sodium ppm ASTM D5185m >400 2 Potassium ppm ASTM D5185m >20 3 Fuel % ASTM D5185m >20 3 Fuel % ASTM D5185m >20 3 Fuel % <td>Barium</td> <td>ppm</td> <td>ASTM D5185m</td> <td></td> <td>0</td> <td></td> <td></td>	Barium	ppm	ASTM D5185m		0		
Magnesium ppm ASTM D5185m 536 Calcium ppm ASTM D5185m 1116 Phosphorus ppm ASTM D5185m 595 Zinc ppm ASTM D5185m 2250 Sulfur ppm ASTM D5185m 2250 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >30 12 Sodium ppm ASTM D5185m >400 2 Potassium ppm ASTM D5185m >20 3 Fuel % ASTM D5185m >20 3 Fuel % ASTM D5185m >20 3 Fuel % ASTM D5185m >20 3 Fuel	Molybdenum	ppm	ASTM D5185m		100		
Calcium ppm ASTM D5185m 1116 Phosphorus ppm ASTM D5185m 595 Zinc ppm ASTM D5185m 704 Sulfur ppm ASTM D5185m 2250 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >30 12 Sodium ppm ASTM D5185m >400 2 Potassium ppm ASTM D5185m >20 3 Fuel % ASTM D5185m >20 3 Fuel % ASTM D5185m >20 3 Fuel % ASTM D3524 >4.0 <1.0							
Phosphorus ppm ASTM D5185m 595 Zinc ppm ASTM D5185m 704 Sulfur ppm ASTM D5185m 2250 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >30 12 Sodium ppm ASTM D5185m >400 2 Potassium ppm ASTM D5185m >20 3 Fuel % ASTM D5185m >20 3 Fuel % ASTM D3524 >4.0 <1.0 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7624 >20 5.5 Sulfation Abs/.1mm *ASTM D7415 >30 14.6		ppm	ASTM D5185m		2		
Zinc					_		
Sulfur ppm ASTM D5185m 2250 CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >30 12 Sodium ppm ASTM D5185m >400 2 Potassium ppm ASTM D5185m >20 3 Fuel % ASTM D3524 >4.0 <1.0	Magnesium	ppm	ASTM D5185m		536		
CONTAMINANTS method limit/base current history1 history2 Silicon ppm ASTM D5185m >30 12 Sodium ppm ASTM D5185m >400 2 Potassium ppm ASTM D5185m >20 3 Fuel % ASTM D3524 >4.0 <1.0	Magnesium Calcium	ppm ppm	ASTM D5185m ASTM D5185m		536 1116		
Silicon ppm ASTM D5185m >30 12 Sodium ppm ASTM D5185m >400 2 Potassium ppm ASTM D5185m >20 3 Fuel % ASTM D3524 >4.0 <1.0 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 0.1 Nitration Abs/cm *ASTM D7624 >20 5.5 Sulfation Abs/.1mm *ASTM D7415 >30 14.6 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 7.9	Magnesium Calcium Phosphorus	ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m		536 1116 595		
Sodium	Magnesium Calcium Phosphorus Zinc	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m		536 1116 595 704		
Potassium ppm ASTM D5185m >20 3 Fuel % ASTM D3524 >4.0 <1.0 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 0.1 Nitration Abs/cm *ASTM D7624 >20 5.5 Sulfation Abs/.1mm *ASTM D7415 >30 14.6 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 7.9	Magnesium Calcium Phosphorus Zinc Sulfur	ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m	limit/base	536 1116 595 704 2250		
Fuel % ASTM D3524 >4.0 <1.0 INFRA-RED method limit/base current history1 history2 Soot % % *ASTM D7844 0.1 Nitration Abs/cm *ASTM D7624 >20 5.5 Sulfation Abs/.1mm *ASTM D7415 >30 14.6 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 7.9	Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS	ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m method		536 1116 595 704 2250 current		
INFRA-RED	Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon	ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m method ASTM D5185m	>30	536 1116 595 704 2250 current	 history1	 history2
Soot % *ASTM D7844 0.1 Nitration Abs/cm *ASTM D7624 >20 5.5 Sulfation Abs/.1mm *ASTM D7415 >30 14.6 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 7.9	Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium	ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m Method ASTM D5185m ASTM D5185m	>30 >400	536 1116 595 704 2250 current 12	 history1	 history2
Nitration Abs/cm *ASTM D7624 >20 5.5 Sulfation Abs/.1mm *ASTM D7415 >30 14.6 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 7.9	Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium	ppm ppm ppm ppm ppm ppm	ASTM D5185m	>30 >400 >20	536 1116 595 704 2250 current 12 2	 history1 	 history2
Sulfation Abs/.1mm *ASTM D7415 >30 14.6 FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 7.9	Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium Fuel	ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m Method ASTM D5185m	>30 >400 >20 >4.0	536 1116 595 704 2250 current 12 2 3 <1.0	 history1 	 history2
FLUID DEGRADATION method limit/base current history1 history2 Oxidation Abs/.1mm *ASTM D7414 >25 7.9	Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium Fuel INFRA-RED	ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m	>30 >400 >20 >4.0	536 1116 595 704 2250 current 12 2 3 <1.0	history1 history1	history2 history2
Oxidation	Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium Fuel INFRA-RED Soot %	ppm ppm ppm ppm ppm ppm ppm ppm ppm ppm	ASTM D5185m ASTM D3524 method *ASTM D7844	>30 >400 >20 >4.0 limit/base	536 1116 595 704 2250	history1 history1 history1	history2 history2 history2
	Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium Fuel INFRA-RED Soot % Nitration	ppm ppm ppm ppm ppm ppm ppm ppm ppm %	ASTM D5185m ASTM D7824 method *ASTM D7844 *ASTM D7624	>30 >400 >20 >4.0 limit/base	536 1116 595 704 2250	history1 history1	history2 history2 history2
	Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium Fuel INFRA-RED Soot % Nitration Sulfation	ppm ppm ppm ppm ppm ppm ppm ppm % % Abs/cm Abs/.1mm	ASTM D5185m ASTM D3524 method *ASTM D7844 *ASTM D7624 *ASTM D7415	>30 >400 >20 >4.0 limit/base >20 >30	536 1116 595 704 2250	history1 history1 history1	history2 history2 history2
	Magnesium Calcium Phosphorus Zinc Sulfur CONTAMINANTS Silicon Sodium Potassium Fuel INFRA-RED Soot % Nitration Sulfation FLUID DEGRADAT	ppm ppm ppm ppm ppm ppm ppm ppm ppm % % Abs/cm Abs/.1mm	ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m Method ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D5185m ASTM D3524 method *ASTM D7844 *ASTM D7624 *ASTM D7415 method	>30 >400 >20 >4.0 limit/base >20 >30 limit/base	536 1116 595 704 2250	history1 history1 history1 history1	history2 history2 history2



OIL ANALYSIS REPORT







Report Id: NORLAD [WUSCAR] 06211921 (Generated: 06/20/2024 17:35:44) Rev: 1

Laboratory Sample No.

Lab Number : 06211921

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

: WCM2308058 Unique Number : 11084785

Received **Tested** Diagnosed

: 17 Jun 2024 : 18 Jun 2024 : 18 Jun 2024 - Jonathan Hester

PO BOX 2220 MISSION VIEJO, CA US 92690 Contact: CHAD TREDWAY

Test Package : MOB 2 (Additional Tests: FuelDilution) Certificate 12367 To discuss this sample report, contact Customer Service at 1-800-237-1369. * - Denotes test methods that are outside of the ISO 17025 scope of accreditation.

chad.nawest@gmail.com;northamericanwest@gmail.com T: (888)491-1080

NORTH AMERICAN WEST AUTOMOTIVE FORENSIC SERVICES

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

Contact/Location: CHAD TREDWAY - NORLAD

F: (949)271-2360