



Lubricant Analysis Report

North America: +1-877-808-3750

0	1	2	3	4
NORMAL		MODERATE		CRITICAL

Overall report severity based on comments.

Account Information		Component Information		Sample Information	
Account Number: 228980-0000-0000 Company Name: DSX EQUIPMENT TECHNOLOGIES LLC Contact: LEE LIPPERT Address: 9216 HAYDEN ROAD JACKSONVILLE, FL 32218 US Phone Number: 904-744-3400		Component ID: LIPPERT-A1 E Secondary ID: Component Type: UNLEADED GASOLINE ENGINE Manufacturer: HYUNDAI Model: 3.8 L Application: AUTOMOTIVE Sump Capacity: 6 qt		Tracking Number: 15353B02412 Lab Number: I-745173 Lab Location: Indianapolis Data Analyst: RMF Sampled: 03-Apr-2018 Received: 09-Apr-2018 Completed: 11-Apr-2018	
Filter Information		Miscellaneous Information		Product Information	
Filter Type: FULLFLOW Micron Rating: 15				Product Manufacturer: PENNZOIL Product Name: CONVENTIONAL MOTOR OIL Viscosity Grade: SAE 5W20	
Comments	Flagged data does not indicate an immediate need for maintenance action. Continue to observe the trend and monitor equipment and fluid conditions. Base Number is MODERATELY LOW. As Base Number depletes, the ability to neutralize acids is diminished. Viscosity is SLIGHTLY HIGH. Causes include contamination, oxidation, incorrectly identified viscosity grade, or adding a different viscosity grade to the component. Lubricant and filter change acknowledged.				

Sample #	Wear Metals (ppm)										Contaminant Metals (ppm)			Multi-Source Metals (ppm)						Additive Metals (ppm)				
	Iron	Chromium	Nickel	Aluminum	Copper	Lead	Tin	Cadmium	Silver	Vanadium	Silicon	Sodium	Potassium	Titanium	Molybdenum	Antimony	Manganese	Lithium	Boron	Magnesium	Calcium	Barium	Phosphorus	Zinc
1	28	0	0	17	12	0	4	0	0	0	37	5	2	0	58	0	2	0	1	22	2371	0	592	758
2	14	0	0	11	4	0	1	0	0	0	19	3	1	0	191	0	1	0	13	12	2199	0	553	718
3	7	0	0	6	4	0	1	0	0	0	16	2	0	0	232	0	0	0	15	9	2050	0	567	693
4	6	0	0	6	2	0	0	0	0	0	12	2	1	0	226	0	0	0	14	7	1975	0	579	704
5	6	0	0	6	2	0	0	0	0	0	10	2	0	0	217	0	0	0	20	11	1929	0	525	666
6	7	0	0	7	2	0	0	0	0	0	16	3	2	0	248	2	0	0	15	8	2180	0	608	716
7	7	0	1	10	2	0	2	0	0	0	15	4	4	0	237	3	0	0	9	7	1991	1	521	686
8	6	0	0	9	2	0	0	0	0	0	13	2	0	0	197	0	0	0	13	5	1799	0	517	587
9	6	0	0	10	3	0	0	0	1	0	17	3	0	0	234	0	0	0	11	5	2109	0	579	755
10	6	0	0	8	2	0	0	0	1	0	18	3	3	0	177	0	0	0	15	6	2046	0	626	756
11	4	0	1	8	1	0	0	0	0	0	18	2	2	0	151	0	0	0	14	0	1744	0	586	712
12	7	0	1	13	2	0	0	0	0	0	29	3	1	0	158	0	0	0	15	1	1946	0	721	845
13	7	0	0	9	2	0	0	0	0	0	29	3	2	0	111	0	0	0	9	4	1515	0	549	634
14	9	0	0	18	2	0	0	0	0	0	19	2	2	0	132	0	0	0	10	7	1642	0	597	689

Sample #	Sample Information							Contaminants			Fluid Properties					
	Date Sampled	Date Received	Lube Time mi	Unit Time mi	Lube Change	Lube Added qt	Filter Change	Fuel Dilution % Vol	Soot % Vol	Water % Vol	Viscosity 40°C cSt	Viscosity 100 °C cSt	Acid Number mg KOH/g	Base Number mg KOH/g	Oxidation abs/cm	Nitration abs/0.1 mm
1	20-Jan-2013	22-Mar-2013	7670	36317	Yes	6	Yes	<1 - Estimate	<.1	<.1 - FTIR		9.4	5.62	1.54	23	16
2	01-Jun-2013	12-Jun-2013	7620	43937	Yes	0	Yes	<1 - Estimate	<.1	<.1 - FTIR		9.7	2.46	2.16	14	11
3	21-Sep-2013	26-Sep-2013	5562	49499	Yes	0	Yes	<1 - Estimate	<.1	<.1 - FTIR		9.0	2.39	2.07	12	10
4	05-Dec-2013	10-Dec-2013	7471	56970	Yes	0	Yes	<1 - Estimate	<.1	<.1 - FTIR		8.7	1.88	2.66	11	9
5	06-Mar-2014	10-Mar-2014	6150	63119	Yes	0	Yes	<1 - Estimate	<.1	<.1 - FTIR		8.9	2.78	3.22	10	8
6	25-Jul-2014	30-Jul-2014	7663	70782	Yes	0	Yes	<1 - Estimate	<.1	<.1 - FTIR		8.9	1.72	2.53	11	9
7	22-Jan-2015	27-Jan-2015	8972	79761	Yes	0	Yes	1.0 - GC	0.0 - E2412	<.1 - FTIR		9.0	2.50	2.78	12	10
8	04-Jun-2015	09-Jun-2015	7687	87448	Yes	0	Yes	<1 - Estimate	<.1	<.1 - FTIR		9.0	2.57	2.38	13	10
9	19-Oct-2015	21-Oct-2015	7460	94908	Yes	0	Yes	<1 - Estimate	<.1	<.1 - FTIR		9.2	2.35	3.04	13	10
10	14-Jan-2016	20-Jan-2016	7521	102429	Yes	0	Yes	<1 - Estimate	<.1	<.1 - FTIR		8.4	2.02	2.63	12	9
11	24-Jun-2016	29-Jun-2016	7589	110018	Yes	0	Yes	<1 - Estimate	<.1	<.1 - FTIR		8.7	1.87	2.44	12	9
12	20-Jan-2017	01-Feb-2017	9883	119901	Yes	0	Yes	<1 - Estimate	<.1	<.1 - FTIR		8.8	2.14	2.96	14	10
13	08-Sep-2017	12-Sep-2017	10227	130128	Yes	0	Yes	<1 - Estimate	0.1 - E2412	<.1 - FTIR		9.6	2.11	2.08	15	10
14	03-Apr-2018	09-Apr-2018	10039	140167	Yes	0	Yes	<1 - Estimate	<.1	<.1 - FTIR		9.5	2.14	1.88	16	11

Sample #	Particle Count (particles/mL)										Test Method
	ISO Code Based On 4/6/14	> 4 µm	> 6 µm	> 10 µm	> 14 µm	> 21 µm	> 38 µm	> 70 µm	> 100 µm		
1	//										
2	//										
3	//										
4	//										
5	//										
6	//										
7	//										
8	//										
9	//										
10	//										
11	//										
12	//										
13	//										
14	//										

Comments are advisory only and are based on the assumption that the sample and data submitted are valid. Missing fluid or component information limits the evaluation. No warranty is expressed or implied. Measurement uncertainty available upon request.

