

## LN02 Laminator Hot Oil System

**Customer: PTRHTF10141**  
 TAMKO BUILDING PRODUCTS  
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 TUSCALOOSA, AL 35401 USA  
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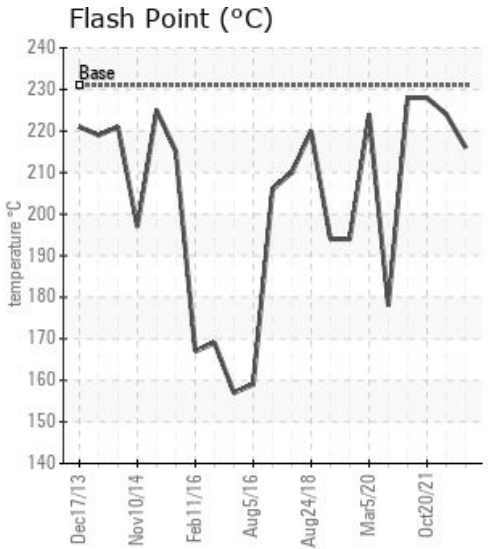
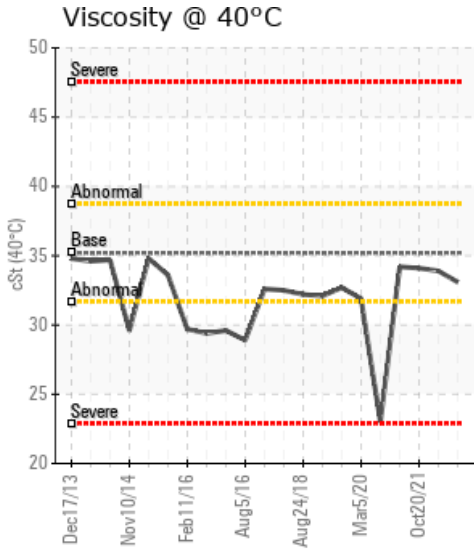
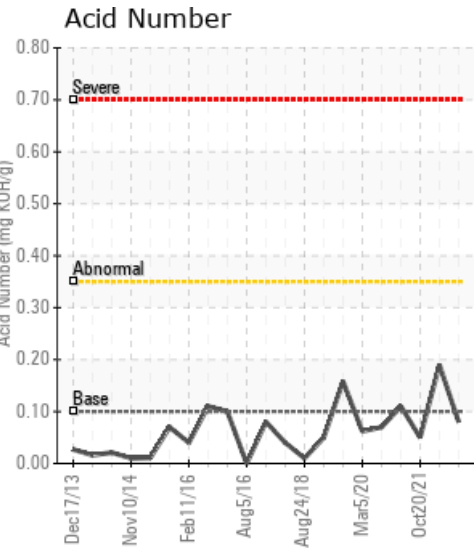
**System Information**  
 System Volume: 110 gal  
 Bulk Operating Temp: 350F / 177C  
 Heating Source:  
 Blanket:  
 Fluid: PETRO CANADA CALFLO HTF  
 Make: Heat Exchanger And T

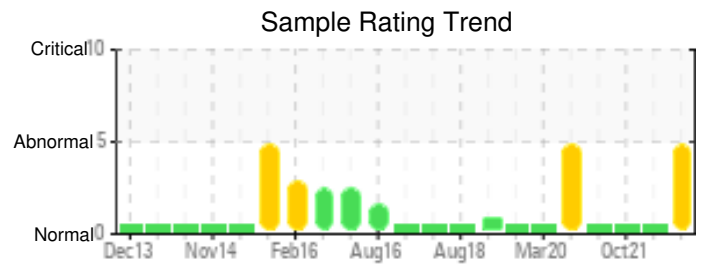
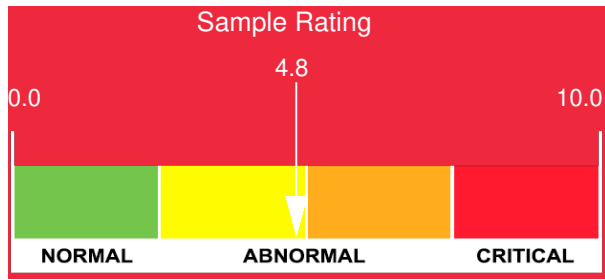
**Sample Information**  
 Lab No: 02515791  
 Analyst: Jake Finn  
 Sample Date: 09/30/22  
 Received Date: 10/12/22  
 Completed: 10/25/22  
 Jake Finn  
 jake.finn@HFSinclair.com

Recommendation: Sample contains very high levels of free water, which is inconsistent with previous samples. High levels of free water could result in safety risks and component risks, like pump cavitation. However, the rest of the tests that could be performed do not indicate any severe degradation or component wear at the time of sampling. Running the system above water boiling point and venting may help to remove water, or an external water removal system can be used to remove free water from sample. I recommend taking a second sample to eliminate possibility of a misrepresentative first sample. Depending on the condition of second sample, preventative measures may be necessary to remove water from the system fluid.

Comments: \*\*\* SimDist could not be conducted due to the high water content of the sample \*\*\*

Sample Date	Received Date	Fluid Age	Sample Location	Flash Point (COC)	Water (KF)	Viscosity (40°C)	Acid Number	Solids	GCD 10%	GCD 50%	GCD 90%	GCD % < 335°C
	mm/dd/yy			°F/°C	ppm	cSt	mg/KOH/g	%wt	°F/°C	°F/°C	°F/°C	%
09/30/22	10/12/22	0.0m		421 / 216	0.9	33.1	0.08	0.234				
04/08/22	04/21/22	0.0m		435 / 224	64.8	33.9	0.19	0.073	723 / 384	817 / 436	927 / 497	1.47
10/20/21	11/02/21	0.0m		442 / 228	22.3	34.1	0.05	0.045	725 / 385	817 / 436	925 / 496	1.07
05/07/21	05/19/21	0.0m		442 / 228	5.9	34.2	0.11	0.060	716 / 380	803 / 428	902 / 484	1.44
09/29/20	10/07/20	0.0m		352 / 178	12.3	23.0	0.07	0.046	593 / 312	803 / 428	916 / 491	12.87
<b>Baseline Data</b>				448 / 231		35.20	.1		712 / 378	810 / 432	910 / 488	1.75

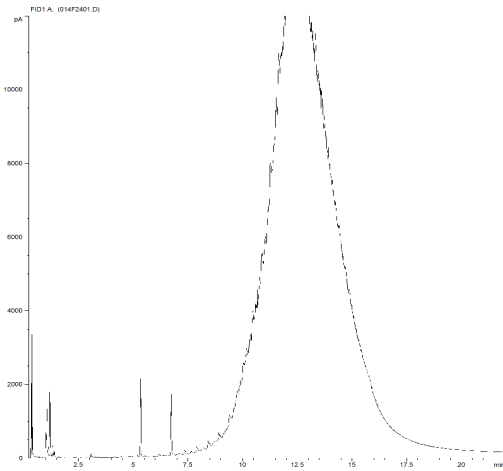




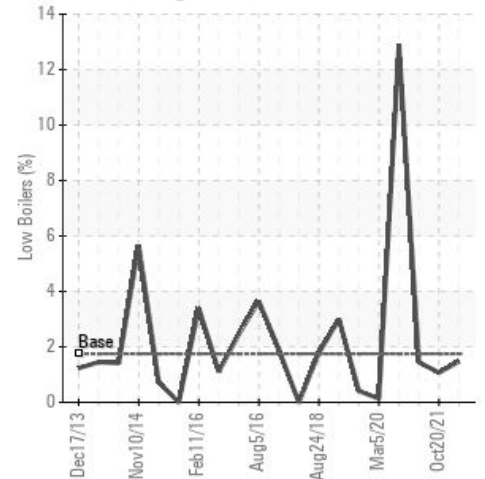
Sample Date	Iron	Chromium	Nickel	Aluminum	Copper	Lead	Tin	Cadmium	Silver	Vanadium	Silicon	Sodium	Potassium	Titanium	Molybdenum	Antimony	Manganese	Lithium	Boron	Magnesium	Calcium	Barium	Phosphorus	Zinc	
09/30/22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	18	0	
04/08/22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	17	0
10/20/21	15	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	1	0	0	0	109	0	
05/07/21	14	0	0	0	0	0	0	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	111	0	
09/29/20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	24	0	
<b>Baseline Data</b>			0	0						0			0	0				0	0					280	

Elemental analysis results (above) in parts per million (ppm). [10,000 ppm = 1.0%]

GCD Spectrum



% Boiling < 335°C



Historical Comments

04/08/22	Sample indicates no significant wear, contamination or fluid degradation. This fluid is suitable for continued use, please resample and submit for testing in 12 months.N/A
10/20/21	Sample indicates the system fluid is in great condition and is suitable for continued use.Very light debris noted by lab
05/07/21	Analysis indicates the current fluid has significantly improved, is in great condition and is suitable for continued use. Please resample and submit for testing in one year.N/A
09/29/20	This sample is showing signs of severe thermal degradation. GCD 10% distillation is severely low, COC flash point is 53°C below normal, and viscosity grade has dropped from an ISO 32 to ISO 22. Our system information shows that the capacity for this system is 110 gallons which is not large enough to consider 'sweetening' or venting to improve fluid condition. There are no signs of system wear or contamination in this sample, but the current fluid condition requires this fluid be replaced with new Calflo HTF as soon as possible.(GCD) 10% Distillation Point is severely low. (GCD) % < 335°C is abnormally high. COC Flash Point is abnormally low.

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