

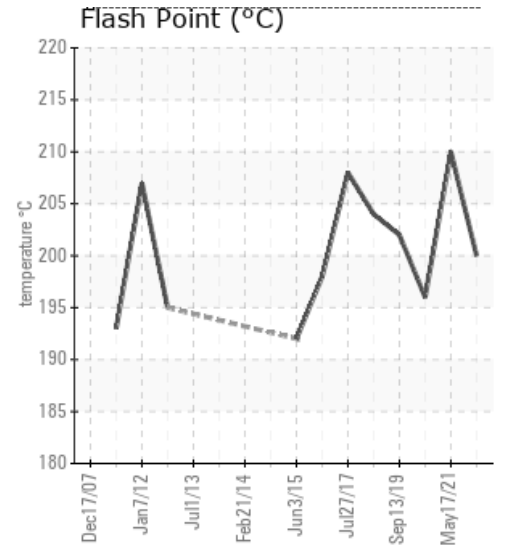
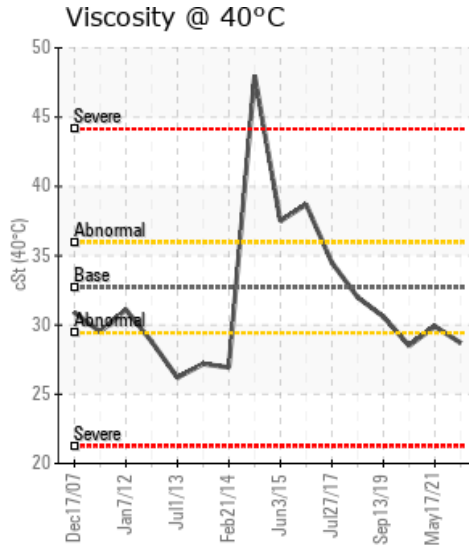
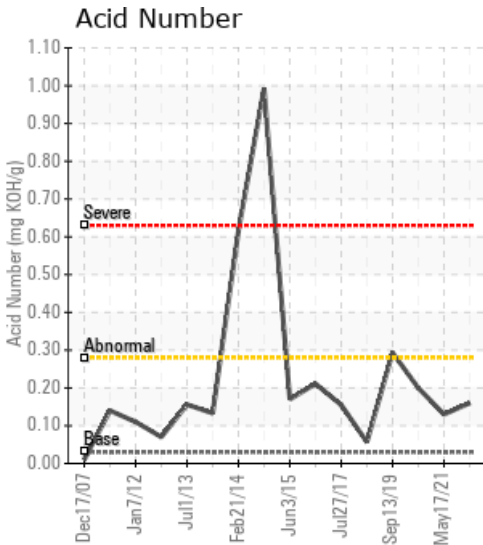
## BACK END

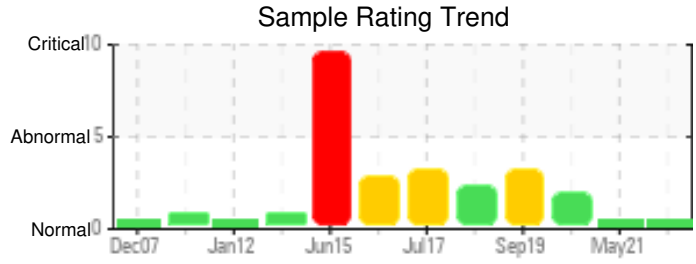
Customer: PTRHTF10037	System Information	Sample Information
CERTAINTEED ROOFING 200 SIERRA DR PEACHTREE CITY, GA 30269 US Attn: Ted Thompson Tel: E-Mail: Theodore.w.thompson@saint-gobain.com	System Volume: 1300 gal Bulk Operating Temp: 600F / 316C Heating Source: Blanket: Fluid: PETRO CANADA CALFLO AF Make: HEATEC	Lab No: 02574347 Analyst: Manny Garcia Sample Date: 07/28/23 Received Date: 08/04/23 Completed: 08/08/23 Manny Garcia manuel.garcia@HFSinclair.com

Recommendation: Oil is in satisfactory conditions. Please re-submit sample in July 2024,

Comments: Very light white metals visible in sample, but not affecting performance. Any system filters (if any) should be changed.

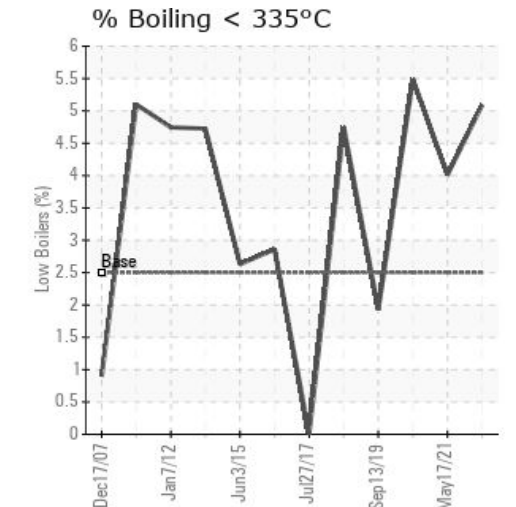
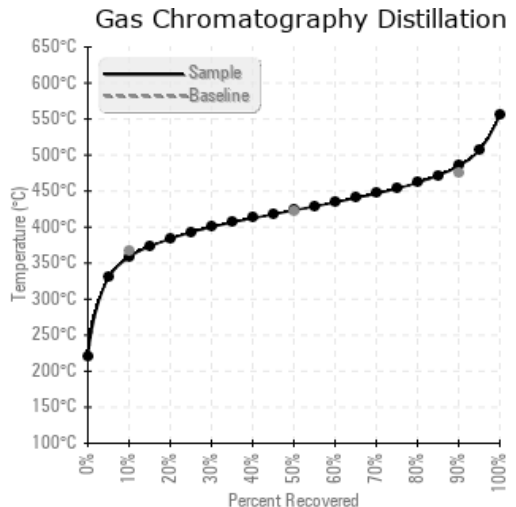
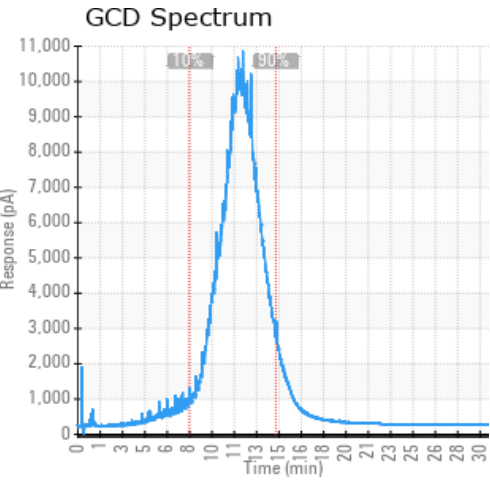
Sample Date	Received Date	Fluid Age	Sample Location	Flash Point (COC)	Water (KF)	Viscosity (40°C)	Acid Number	Solids	GCD 10%	GCD 50%	GCD 90%	GCD % < 335°C
	mm/dd/yy			°F/°C	ppm	cSt	mg/KOH/g	%wt	°F/°C	°F/°C	°F/°C	%
07/28/23	08/04/23	6.0y	back of heater	392 / 200	22.5	28.7	0.16	0.125	677 / 359	794 / 423	904 / 485	5.09
05/17/21	06/08/21	4.0y	Main return	410 / 210	21.2	29.9	0.13	0.106	681 / 361	782 / 417	891 / 477	4.01
07/26/20	08/13/20	3.0y	MAIN RETURN	385 / 196	17.4	28.5	0.20	0.264	676 / 358	793 / 423	904 / 484	5.49
09/13/19	10/04/19	2.0y	MAIN RETURN	396 / 202	3.0	30.6	0.293	0.206	702 / 372	812 / 433	926 / 496	1.93
06/21/18	06/22/18	0.0y		399 / 204	13.9	32.0	0.057	0.304	662 / 350	766 / 408	905 / 485	4.75
Baseline Data				435 / 224		32.7	0.03		693 / 367	790 / 421	887 / 475	2.5





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
07/28/23	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	59	1
05/17/21	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	50	0
07/26/20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	51	0
09/13/19	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	50	0
06/21/18	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	2	0	33	0
Baseline Data			0	0						0			0	0					0				270	

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



### Historical Comments

05/17/21	Fluid is suitable for continued use and in EXCELLENT condition after 4 years of use. Please re-submit sample mid-year 2022.
07/26/20	The results indicate no asphalt leak or contamination. The viscosity is getting a little low, so at some point during the year before the next sample, maybe do some venting of the light ends out of the system and replacing the volume lost with fresh fluid would help maintain fresh-oil like properties.
09/13/19	Despite its dark appearance, the oil properties are normal. Flash point is strong, water is barely detectable, metals analysis and the Vanadium (asphalt) we saw in previous years is disappearing. The acid number is noticeable so we suggest to re-sample in 6 months instead of waiting a whole year, just to monitor the situation. Acid Number normally means fluid oxidation, so check the nitrogen blanket to make sur the expansion tank contains no air. (GCD) 90% Distillation Point is severely high. Acid Number (AN) is abnormally high.
06/21/18	Vanadium is still dropping so the past asphalt leak remains in the past and the overall results are improving. No actions needed at this time based on the results, unless daily operations suggest that problems need to be addressed. (GCD) 90% Distillation Point is marginally high.

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