

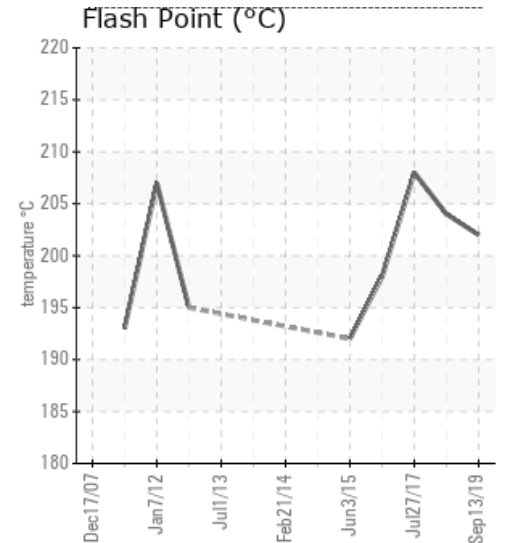
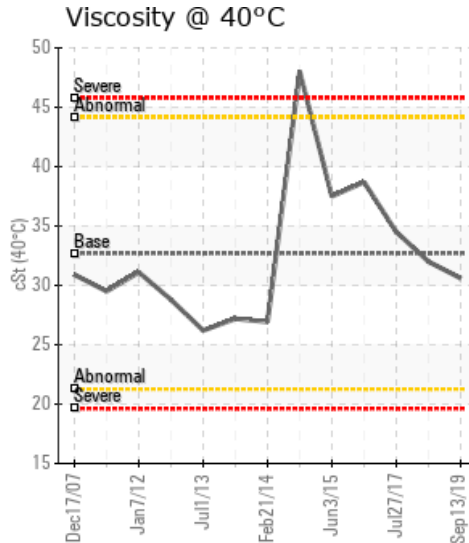
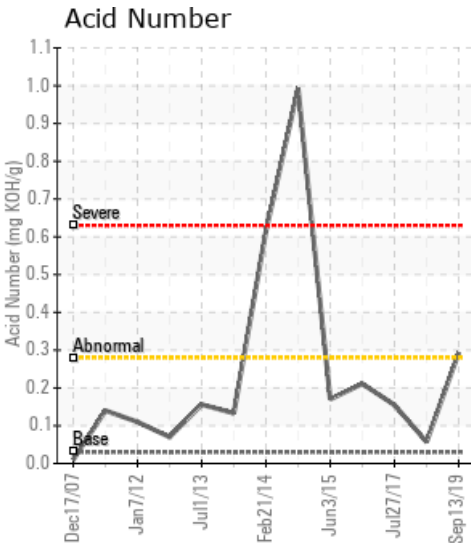
BACK END

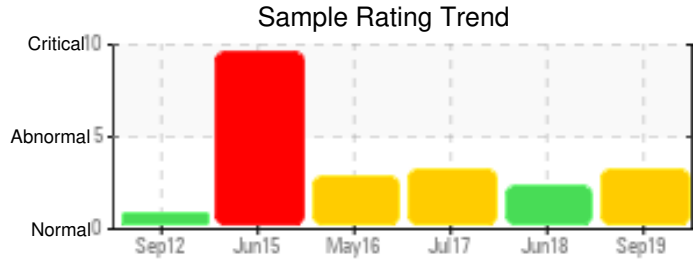
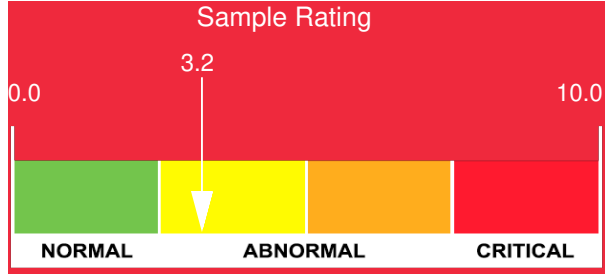
Customer: PTRHTF10037	System Information	Sample Information
CERTAINTEED ROOFING 200 SIERRA DR PEACHTREE CITY, GA 30269 USA Attn: Ted Thompson Tel: E-Mail: Theodore.w.thompson@saint-gobain.com	System Volume: 1300 gal Bulk Operating Temp: 600F / 316C Heating Source: Blanket: Fluid: PETRO CANADA CALFLO AF Make: HEATEC	Lab No: 02312794 Analyst: Gaston Arseneault Sample Date: 09/13/19 Received Date: 10/04/19 Completed: 10/16/19

Recommendation: 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.

Comments: (GCD) 90% Distillation Point is severely high. Acid Number (AN) is abnormally high.

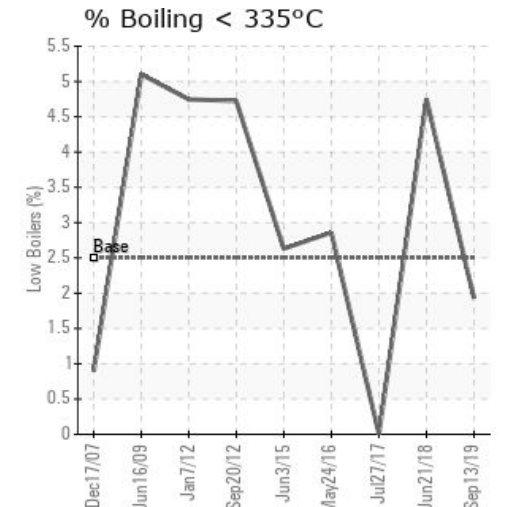
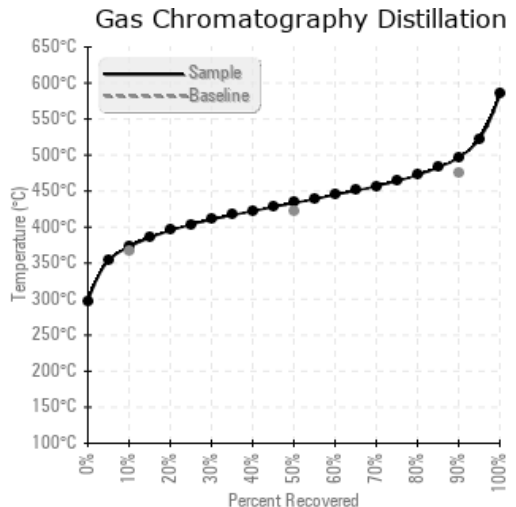
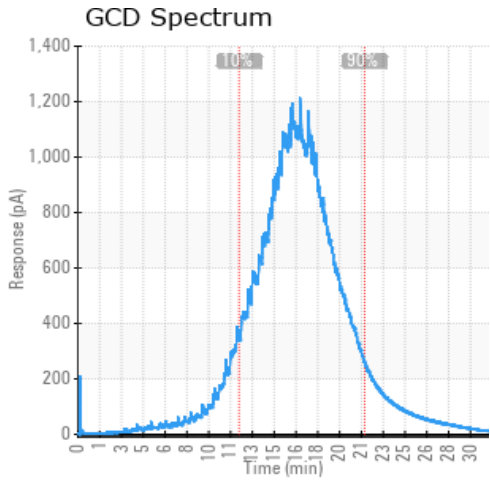
Sample Date	Received Date	Fluid Age	Sample Location	Flash Point (COC)	Water (KF)	Viscosity (40°C)	Acid Number	Solids	GCD 10%	GCD 50%	GCD 90%	GCD % < 335°C
	mm/dd/yy			°F/°C	ppm	cSt	mg/KOH/g	%wt	°F/°C	°F/°C	°F/°C	%
09/13/19	10/04/19	2y	MAIN RETURN	396 / 202	3.0	30.6	0.293	0.206	702 / 372	812 / 433	926 / 496	1.93
06/21/18	06/22/18	0y		399 / 204	13.9	32.0	0.057	0.304	662 / 350	766 / 408	905 / 485	4.75
07/27/17	08/08/17	3y	PUMP	406 / 208	24.3	34.5	0.155	0.471	736 / 391	807 / 431	909 / 487	0.01
05/24/16	05/30/16	2y	HEATER BYPASS	388 / 198	30.4	38.7	0.211	1.70	689 / 365	800 / 426	897 / 480	2.86
06/03/15	06/15/15	1y	HEATER BYPASS	378 / 192	97.4	37.5	0.17	1.65	692 / 367	803 / 428	911 / 488	2.63
11/06/14	11/07/14	60y				48.01	0.993					
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
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
07/27/17	2	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	11	0	49	0
05/24/16	10	0	1	0	2	0	0	0	0	5	2	3	0	0	0	0	0	0	0	0	219	0	121	0
06/03/15	124	0	2	0	1	0	0	0	0	5	4	4	0	0	0	0	2	0	0	1	298	0	161	7
11/06/14	2	0	4	0	0	0	0	0	0	12	1	0	2	0	0	0	0	0	0	0	66	0	173	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	
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.
07/27/17	Everything looks normal on this fluid. No action needed at this time. Re-sample at next scheduled interval. Pentane Insolubles levels are abnormally high.
05/24/16	Vanadium level is noticeable but steady or lower than previous samples, indicative of a previous leak, hopefully fixed. This may also explain the increase in calcium and solids in the fluid. Overall the viscosity, flash point and other properties look normal. Please re-sample in 12 months. Pentane Insolubles levels are severely high. Calcium ppm levels are severely high.
06/03/15	This oil was installed on approximately May 1st, 2015. PQ Levels are severe. Iron Levels are Abnormal. Pentane Insolubles are severely high. Calcium ppm levels are severely high. Visc @ 40°C is abnormally high. (GCD) 90% Distillation Point is marginally high. COC Flash Point is marginally low.
11/06/14	Resample at the next service interval to monitor. All component wear rates are normal. There is no indication of any contamination in the component. The AN level is acceptable for this fluid. The condition of the oil is suitable for further service.

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