

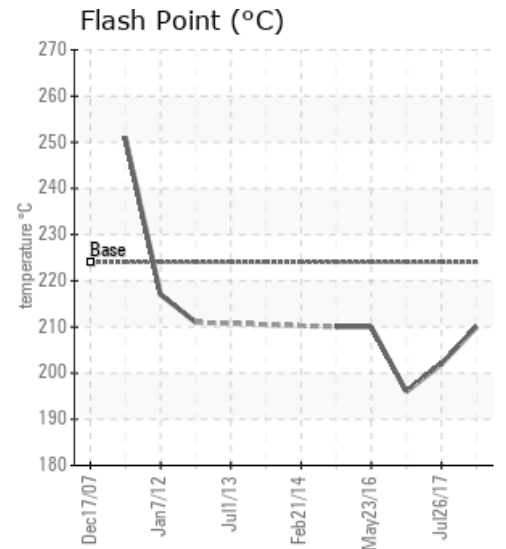
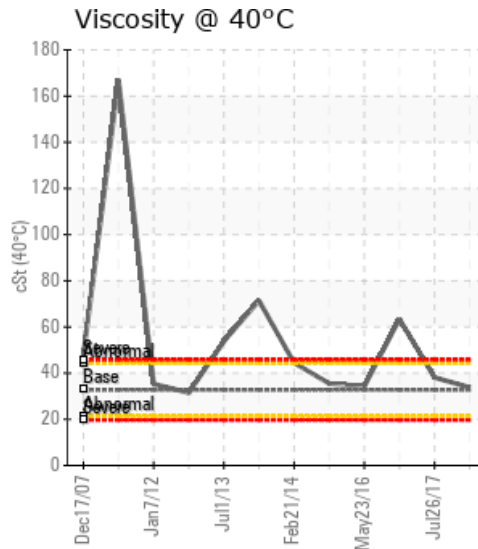
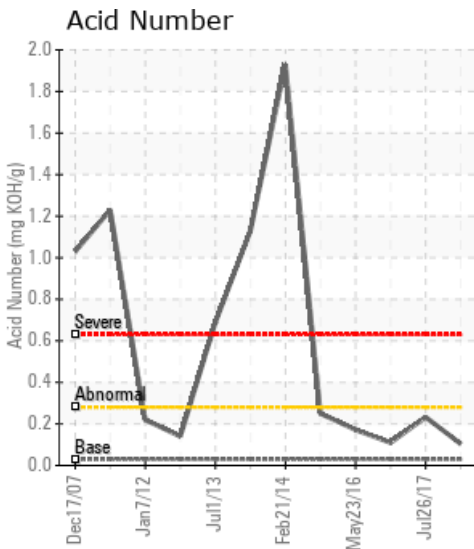
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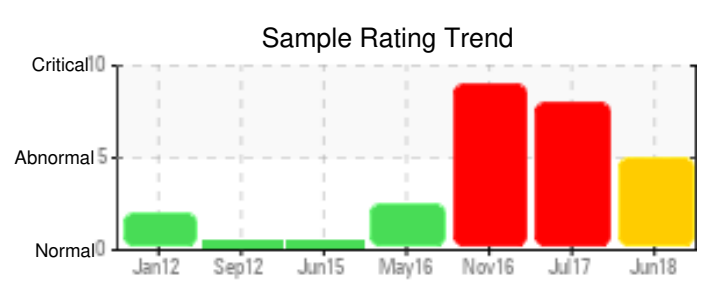
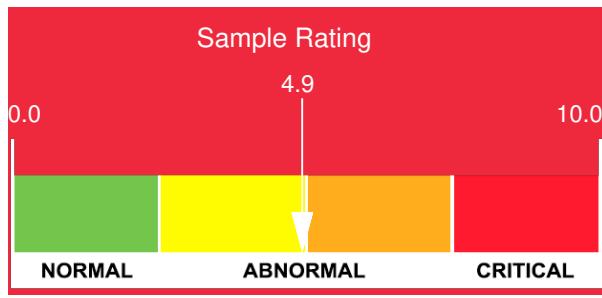
Customer: PTRHTF10037	System Information	Sample Information
CERTAINTEED ROOFING 200 SIERRA DR PEACHTREE CITY, GA 30269 USA Attn: Matthew Marsh Tel: (770)486-7839 E-Mail: matthew.marsh@saint-gobain.com	System Volume: 400 gal Bulk Operating Temp: 450F / 232C Heating Source: Blanket: Fluid: PETRO CANADA CALFLO AF Make: HEATEC	Lab No: 02223914 Analyst: Gaston Arseneault Sample Date: 06/21/18 Received Date: 06/22/18 Completed: 06/26/18

Recommendation: The presence of elements found in soaps and degreasers is reducing, which means that the steps taken to prevent contamination of the common storage system used for oil and cleaners has been effective. Oil results are improving over time but the amount of solids remain high. Watch for filters if there are any on the system, replace with finer ones if possible.

Comments: Pentane Insolubles levels are severely high. Sodium ppm levels are severely high. Calcium ppm levels are severely high.

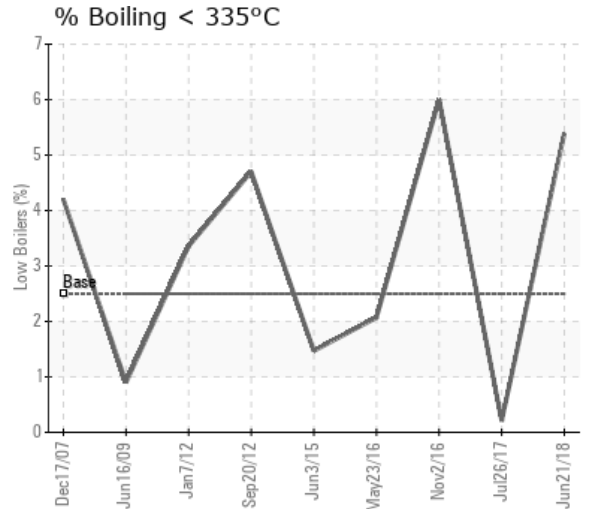
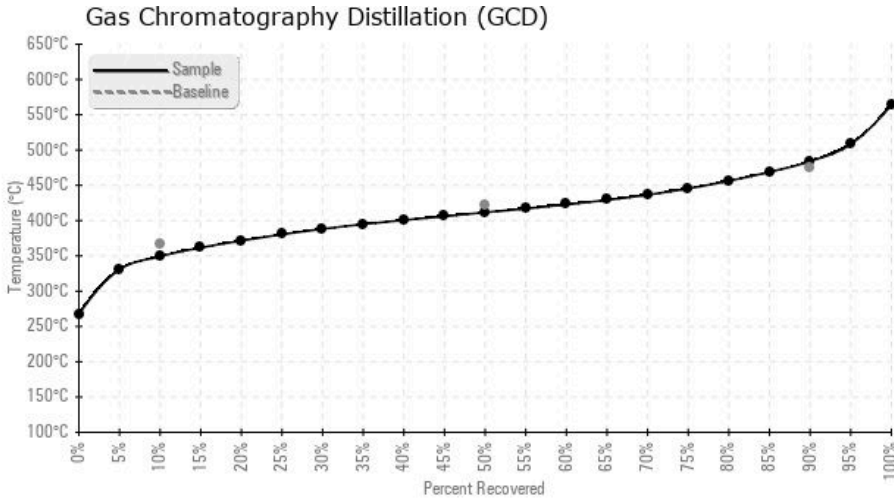
Sample Date	Received Date	Fluid Age	Sample Location	Flash Point (COC)	Water (KF)	Viscosity (40°C)	Acid Number	Solids	GCD 10%	GCD 50%	GCD 90%	GCD % < 335°C
	mm/dd/yy			°F/°C	ppm	cSt	mg/KOH/g	%wt	°F/°C	°F/°C	°F/°C	%
06/21/18	06/22/18	0y		410 / 210	125.7	33.8	0.104	1.05	661 / 349	773 / 412	903 / 484	5.39
07/26/17	08/08/17	3y	SUPPLY PUMP	396 / 202	214.9	38.1	0.233	2.16	736 / 391	807 / 431	904 / 485	0.21
11/02/16	11/11/16	3y	LAMINATO TANK LOOP	385 / 196	210.9	63.4	0.11	4.11	659 / 348	788 / 420	903 / 484	6.00
05/23/16	05/30/16	3y	LAMINATE TANK	410 / 210	16.7	34.3	0.172	1.24	695 / 368	803 / 428	917 / 492	2.07
06/03/15	06/15/15	6y	HEATER OUTLET	410 / 210	56.4	35.5	0.25	1.52	697 / 370	802 / 428	911 / 488	1.47
02/21/14	02/24/14	0y				44.48	1.93					
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
06/21/18	32	0	0	0	0	0	0	0	0	0	2	49	0	0	0	0	0	0	0	2	645	0	98	0
07/26/17	46	0	0	2	0	0	2	0	0	0	4	65	1	1	0	0	0	0	0	4	1292	0	137	1
11/02/16	121	0	0	3	0	0	2	0	0	0	8	120	1	0	0	1	2	0	0	13	5083	0	133	1
05/23/16	254	0	0	2	0	0	2	0	0	0	8	83	0	0	0	0	4	0	0	0	13	0	182	1
06/03/15	92	0	0	0	0	0	0	0	0	0	2	35	0	0	0	0	1	0	0	0	8	0	201	1
02/21/14	40	0	0	0	0	0	0	0	0	0	4	9	0	0	0	0	0	0	0	0	19	0	178	4
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	
07/26/17	The presence of foreign elements is still high but it is lower than the previous sample. Flash point is holding up well. The long term effect of the presence of calcium and sodium, which tends to be inorganic salts insoluble in oils that like to deposit inside the piping is not known. Considering the small size of the system, a partial oil replacement of 3 drums (40% of the system) every 6 months for the next year would help. Pentane Insolubles levels are severely high. Sodium ppm levels are severely high. Calcium ppm levels are severely high. (GCD) 10% Distillation Point is marginally high.
11/02/16	This sample is abnormal. The viscosity almost doubled for no apparent reason since the last sample 6 months ago. Oxidation does not appear to be happening therefore the drastic rise in viscosity could only be explained by either an asphalt leak (although we do not see Vanadium) or the addition of a significant amount of another oil, much heavier, into the system. The amount of insoluble solids rose from 1% to 4%. The sodium has been slowly rising as it is now at 120 ppm. Even more strange, the calcium has always been very low at 8-20ppm and it jumped to 5000ppm (0.5%wt). Sulfur jumped from 40-80ppm up to 1400 ppm in this last sample. It's difficult to predict what the impact of the foreign elements will be and what actions to take since the root cause of these abnormal results is not known. We recommend to investigate this system. Pentane Insolubles levels are severely high. Sodium ppm levels are severely high. Calcium and sulfur ppm levels are severely high. Visc @ 40°C is severely high.
05/23/16	The source of sodium is difficult to explain. This type of contamination may come from presence of detergents, degreasers or chemicals. Otherwise, the viscosity, flash point and other properties look normal. Please re-sample in 12 months. Iron ppm levels are abnormal. Pentane Insolubles levels are severely high. Sodium ppm levels are severely high. (GCD) 90% Distillation Point is abnormally high.
06/03/15	Pentane Insolubles are very high. 90% Distillation is High. Sodium Levels are high. Records show this oil is about 2+ years old TAN is in check. Wear metals are good. Water level is acceptable. Viscosity is 35.5 Kv @ 40oC. Flash Point is in good range.
02/21/14	No corrective action is recommended at this time. Resample at the next service interval to monitor. The iron level has decreased, but is still abnormal. 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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