

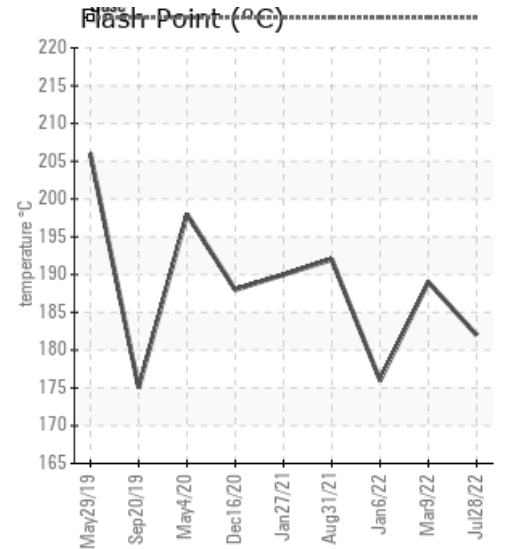
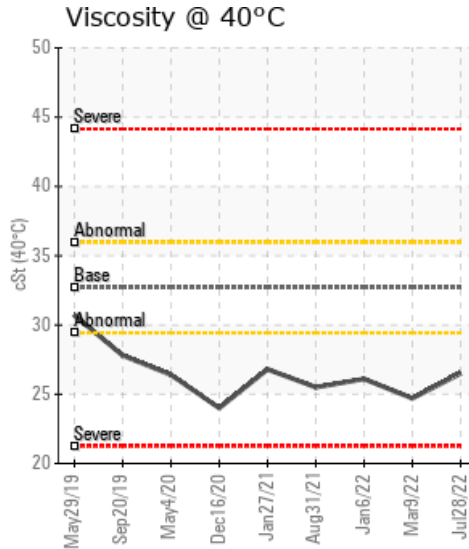
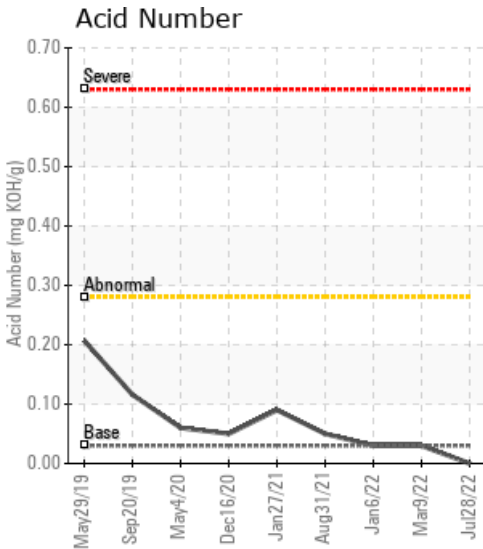
## FILLER HEATER

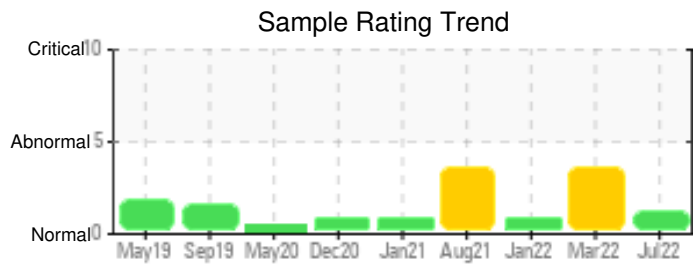
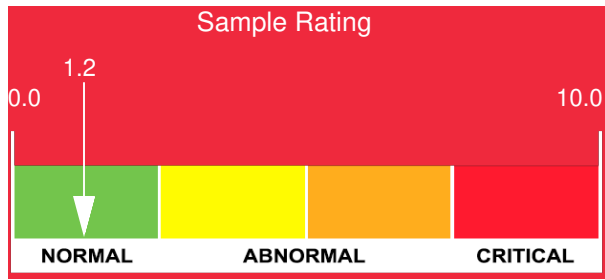
Customer: PTRHTF10068	System Information	Sample Information
Certainteed - Saint Gobain 1077 PLEASANT ST NORWOOD, MA 02062 USA Attn: David Fletcher Tel: (781)551-0656 E-Mail: david.r.fletcher@saint-gobain.com	System Volume: 2200 gal Bulk Operating Temp: 550F / 288C Heating Source: Blanket: Fluid: PETRO CANADA CALFLO AF Make: PERFORMANCE HEATING	Lab No: 02503402 Analyst: Gregory Fernandez Sample Date: 07/28/22 Received Date: 08/04/22 Completed: 08/16/22 Gregory Fernandez gregory.fernandez@hfsinclair.com

Recommendation: Overall sample condition looks good and appears to have some improvement over the previous sample. Low boilers have dropped per GCD % < 335C and perhaps indicate that the system has been vented since the previous sample. Pentane Insolubles have also increased significantly since the last sample. This could be related to a maintenance event, perhaps venting of the system. Continue operating the system as normal until the next sample interval.

Comments: Visc @ 40°C is abnormally low. COC Flash Point is marginally low.

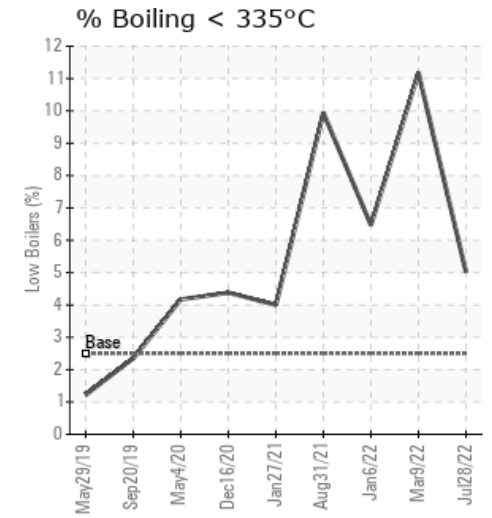
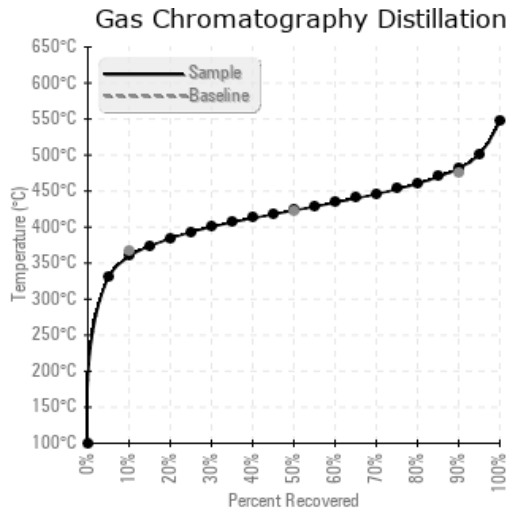
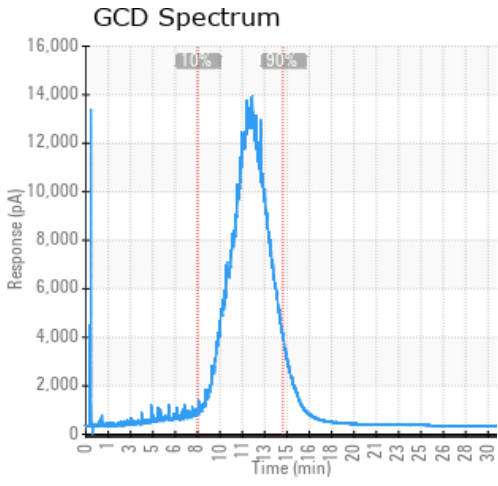
Sample Date	Received Date	Fluid Age	Sample Location	Flash Point (COC)	Water (KF)	Viscosity (40°C)	Acid Number	Solids	GCD 10%	GCD 50%	GCD 90%	GCD % < 335°C
	mm/dd/yy			°F/°C	ppm	cSt	mg/KOH/g	%wt	°F/°C	°F/°C	°F/°C	%
07/28/22	08/04/22	0.0m	duplex pump	360 / 182	23.6	26.5	0.00	0.288	679 / 359	794 / 423	899 / 481	5.02
03/09/22	03/25/22	36.0m	duplex pump	372 / 189	9.3	24.7	0.03	0.024	613 / 323	762 / 406	900 / 482	11.18
01/06/22	01/18/22	36.0m	duplex pump	349 / 176	14.5	26.1	0.03	0.044	667 / 353	789 / 421	901 / 483	6.47
08/31/21	09/10/21	0.0m	duplex pump	378 / 192	13.9	25.5	0.05	0.028	630 / 332	763 / 406	893 / 478	9.94
01/27/21	02/02/21	33.0m	Duplex pump	374 / 190	3.5	26.8	0.09	0.052	686 / 363	794 / 424	903 / 484	4.00
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
07/28/22	13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	10	0
03/09/22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	19	0
01/06/22	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	23	0
08/31/21	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	16	0
01/27/21	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	20	0
<b>Baseline Data</b>			0	0						0			0	0					0				270	

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



Historical Comments	
03/09/22	While the flash point remains consistent there is rise in low boilers above 10% and the viscosity has dropped to a 22 grade. I recommend planning to vent the system soon to improve these conditions. (GCD) 10% Distillation Point is abnormally low. (GCD) % < 335°C is marginally high. COC Flash Point is marginally low.
01/06/22	Flash point is trending lower at 176C. Viscosity is holding steady and light ends have dropped from previous sample but still over 5%. Oil is suitable for continued use and resample at next scheduled interval. COC Flash Point is abnormally low.
08/31/21	low boilers approaching 10%. Consider venting system to reduce impact on viscosity and flashpoint. resample at scheduled interval. (GCD) % < 335°C is marginally high. (GCD) 10% Distillation Point is marginally low. COC Flash Point is marginally low.
01/27/21	The sample results for the Filler Heater have shown slight improvements with Flash point from 188 to 190. Low boilers GCD 10% 363.4 have shown a slight increase whereas GCD 90% 483.7 have decrease slightly. Acid number has also increased from .05 to .09. Continue to monitor at planned intervals. COC Flash Point is marginally low.

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