

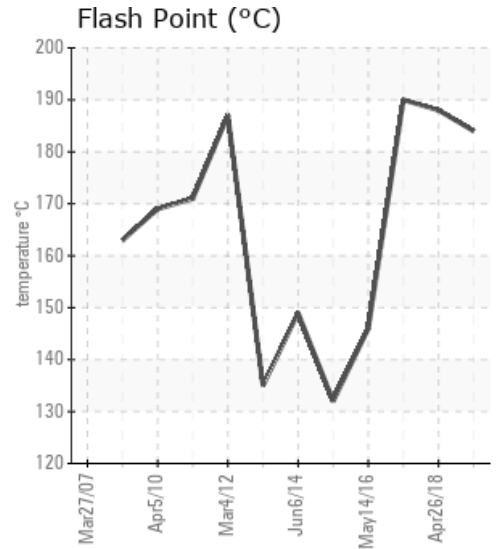
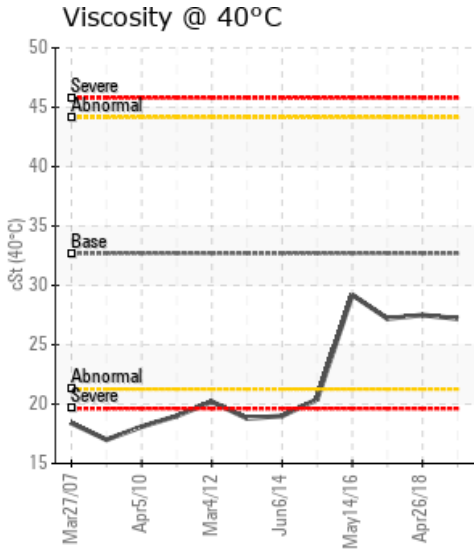
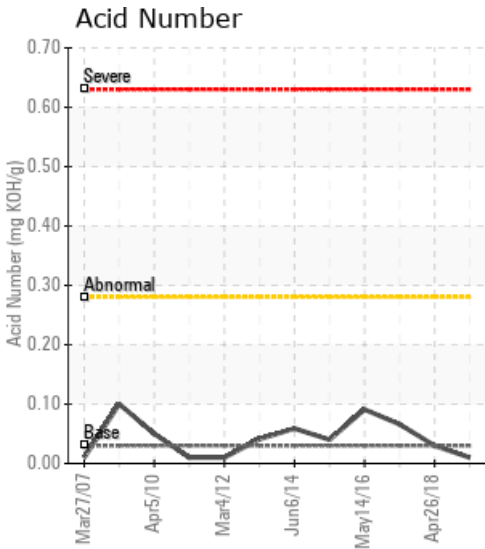
LINE 2 FILLED COATING CHROMALOX

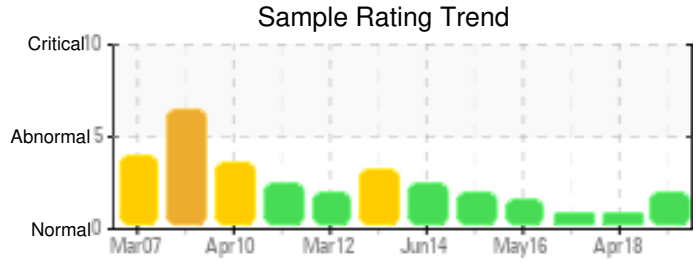
Customer: PTRHTF10069	System Information	Sample Information
CERTAINTEED - SAINT GOBAIN 3303 EAST 4TH AVENUE SHAKOPEE, MN 55379 USA Attn: Patrick Wallace Tel: E-Mail: patrick.wallace@saint-gobain.com	System Volume: 1890 gal Bulk Operating Temp: 474F / 246C Heating Source: Blanket: Fluid: PETRO CANADA CALFLO AF Make: CHROMALOX	Lab No: 02244123 Analyst: Gaston Arseneault Sample Date: 09/30/18 Received Date: 10/10/18 Completed: 10/23/18 Gaston Arseneault gaston.arseneault@hollyfrontier.com

Recommendation: The flash point is a bit low because of the reduced viscosity but it remains stable from year to year. Re-sample at next scheduled interval. No trace of contamination by asphalt or the elements or fluid degradation.

Comments: 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	%
09/30/18	10/10/18	0.0y		363 / 184	13.0	27.2	0.01	0.028	691 / 366	789 / 421	887 / 475	1.74
04/26/18	04/27/18	0.0y	MAIN SYSTEM FLOW	370 / 188	6.4	27.5	0.03	0.173	661 / 349	780 / 416	885 / 474	6.24
09/02/17	09/12/17	4.0y	MAIN SYSTEM FLOW	374 / 190	7.2	27.2	0.066	0.054	684 / 362	790 / 421	891 / 477	3.43
05/14/16	05/24/16	0.0y	MAIN SYSTEM FLOW	295 / 146	14.1	29.2	0.091	0.048	668 / 354	780 / 416	873 / 467	5.82
04/15/15	05/07/15	0.0y	MN FLOW/MN SYS PUMP	270 / 132	18.8	20.4	0.04	0.031	683 / 362	782 / 417	884 / 474	2.96
Baseline Data				435 / 224		32.7	0.03		693 / 367	790 / 421	887 / 475	2.5

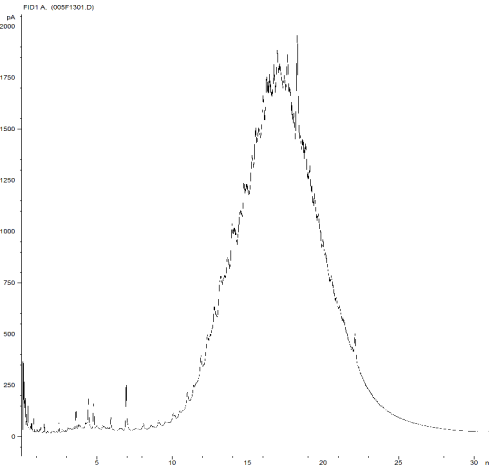




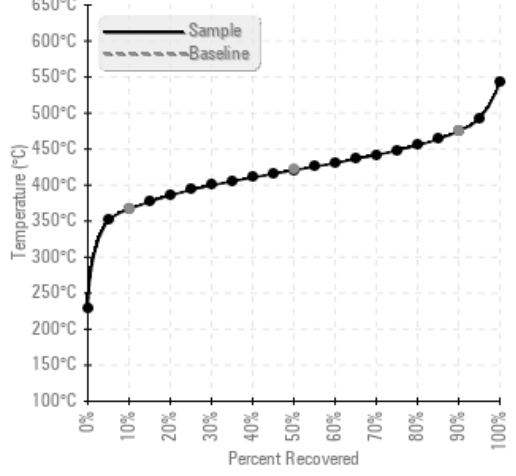
Sample Date	Iron	Chromium	Nickel	Aluminum	Copper	Lead	Tin	Cadmium	Silver	Vanadium	Silicon	Sodium	Potassium	Titanium	Molybdenum	Antimony	Manganese	Lithium	Boron	Magnesium	Calcium	Barium	Phosphorus	Zinc	
09/30/18	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	84	0	
04/26/18	6	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	95	0
09/02/17	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	90	0
05/14/16	6	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	115	0
04/15/15	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	60	0
Baseline Data			0	0						0		0	0					0					270		

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

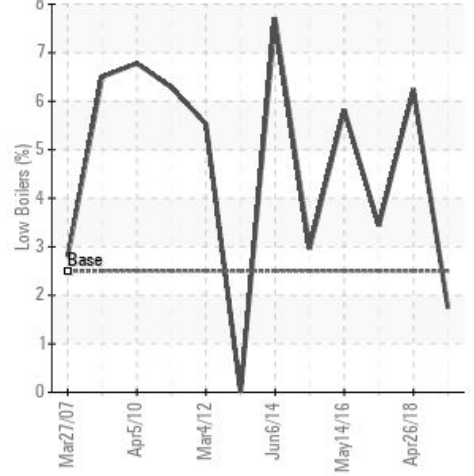
GCD Spectrum



Gas Chromatography Distillation



% Boiling < 335°C



Historical Comments	
04/26/18	The results look identical to the previous sample which was a good improvement over the previous years when the flash point and the viscosity had dropped significantly. keep up our strong maintenance program. COC Flash Point is marginally low.
09/02/17	The oil condition has improved over previous samples. The viscosity remains a little bit low. No immediate action is required at this time but you can vent the low boilers out and replace the lost volume with fresh oil as preventative measure. Re-sample at next normal interval. COC Flash Point is marginally low.
05/14/16	COC Flash Point is severely low. GCD % at <335C has increased to 5.8% and the presence of light ends can be seen in the GCD. IBP has also decreased to 164C. Recommend venting the system.
04/15/15	Flash point is severely low and system should be vented or fluid changed. Viscosity at 40C is substantially lower than new Calflo AF - investigate source. NOTE: Sample is more than 1 year old and was never completed. Closing out in LIMS system. COC Flash Point is severely low. Visc @ 40°C is abnormally low.

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