

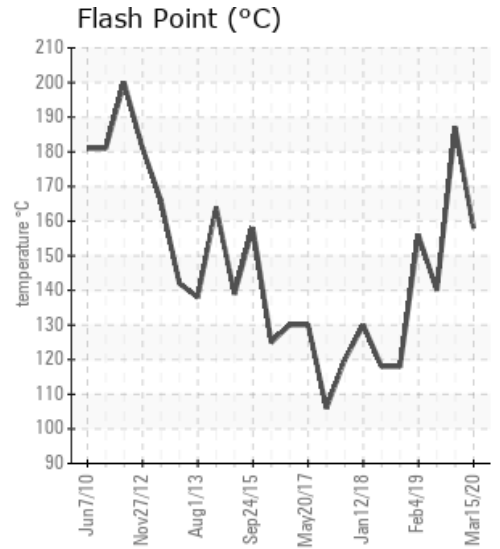
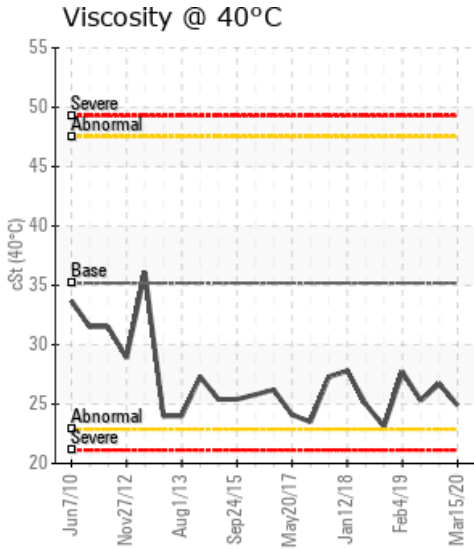
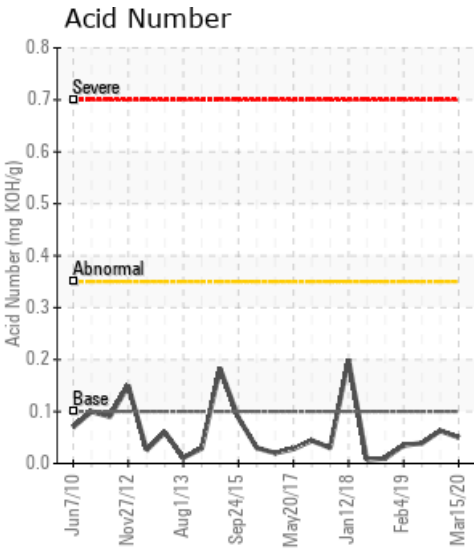
SOUTH HEATER

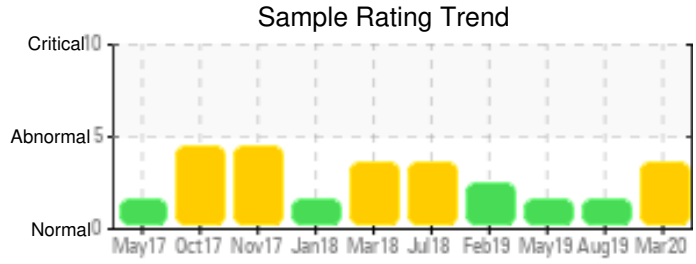
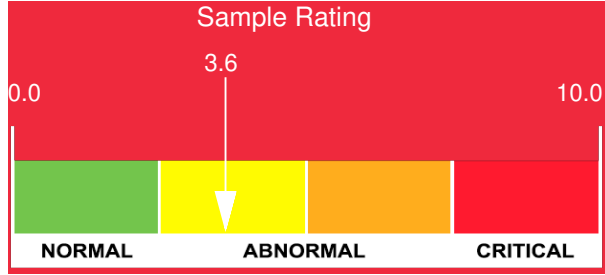
Customer: PTRHTF10043	System Information	Sample Information
MALARKY ROOFING PRODUCTS 3131 N. COLUMBIA BLVD PORTLAND, OR 97217 USA Attn: SCOTT MCDANIEL Tel: (503)283-1191 E-Mail: smcdaniel@malarkeyroofing.com	System Volume: 1200 gal Bulk Operating Temp: 620F / 327C Heating Source: Blanket: Fluid: PETRO CANADA CALFLO HTF Make: AMERICAN HEATING	Lab No: 02356544 Analyst: Ron LeBlanc Sample Date: 03/15/20 Received Date: 05/29/20 Completed: 06/01/20 Ron LeBlanc Ronald.LeBlancSr@petrocanadalsp.com

Recommendation: COC Flash Point is very low. A low flash point can indicate thermal degradation. Add new oil to bring up Flash Point. (GCD) % < 335°C is marginally high. Make sure the oil was purged before collection into the sample container to get the best sample.

Comments: COC Flash Point is severely low. (GCD) % < 335°C is marginally high.

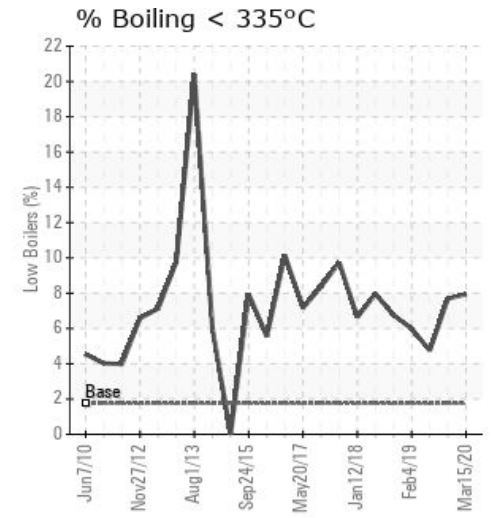
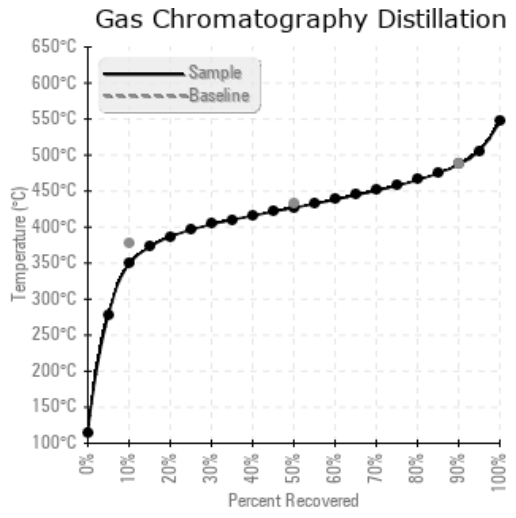
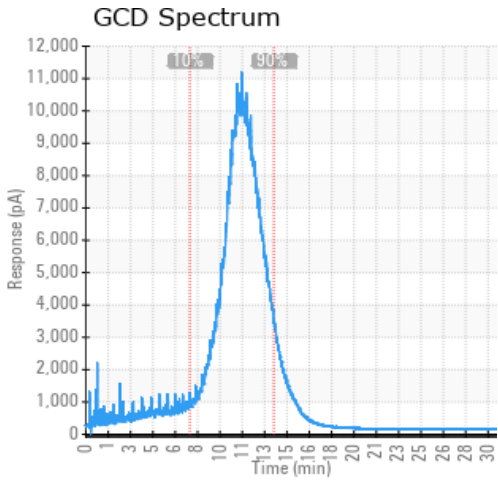
Sample Date	Received Date	Fluid Age	Sample Location	Flash Point (COC)	Water (KF)	Viscosity (40°C)	Acid Number	Solids	GCD 10%	GCD 50%	GCD 90%	GCD % < 335°C
	mm/dd/yy			°F/°C	ppm	cSt	mg/KOH/g	%wt	°F/°C	°F/°C	°F/°C	%
03/15/20	05/29/20	24m	north heat exchange	316 / 158	26.6	24.9	0.05	0.165	660 / 349	800 / 427	908 / 487	7.94
08/09/19	09/06/19	8m	NORTH HEAT EXC	369 / 187	20.2	26.7	0.063	0.094	661 / 349	790 / 421	886 / 475	7.69
05/09/19	05/22/19	5m	PREHEAT TANKS	284 / 140	18.0	25.3	0.039	0.057	690 / 366	804 / 429	914 / 490	4.76
02/04/19	02/15/19	0m	SOUTH HEAT EXCHANGE	313 / 156	16.9	27.7	0.035	0.016	669 / 354	782 / 417	892 / 478	5.99
07/26/18	08/08/18	0m	NORTH HEAT EXCHANGE	244 / 118	4.9	23.1	0.01	0.098	662 / 350	775 / 413	865 / 463	6.76
Baseline Data				448 / 231		35.20	.1		712 / 378	810 / 432	910 / 488	1.75





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
03/15/20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	13	0
08/09/19	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	16	0
05/09/19	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	17	0
02/04/19	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	18	0
07/26/18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	25	0
Baseline Data			0	0						0			0	0					0				280	

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



Historical Comments

08/09/19	COC Flash point came up from the previous sample. (GCD) 90% point is marginally low. Resample in 3 months. COC Flash Point is marginally low. (GCD) 90% Distillation Point is marginally low.
05/09/19	Flash point is lower than normal. If possible add new oil to bring flash point up. COC Flash Point is severely low.
02/04/19	COC Flash Point is elevated. Re-sample in 3 months to check results again. Purge 1/2 gallon of oil before sample is drawn. COC Flash Point is severely low. (GCD) 90% Distillation Point is marginally low.
07/26/18	Viscosity has dropped from ISO 32 to ISO 22. COC flash point has lowered significantly to a point that should be corrected. Determine what is affecting viscosity. Has there been a heater issue of late causing oil to overheat severely. New oil might need to be added to bring COC flash point up if no other issue is found. (GCD) 90% Distillation Point is severely low. COC Flash Point is severely low.

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