

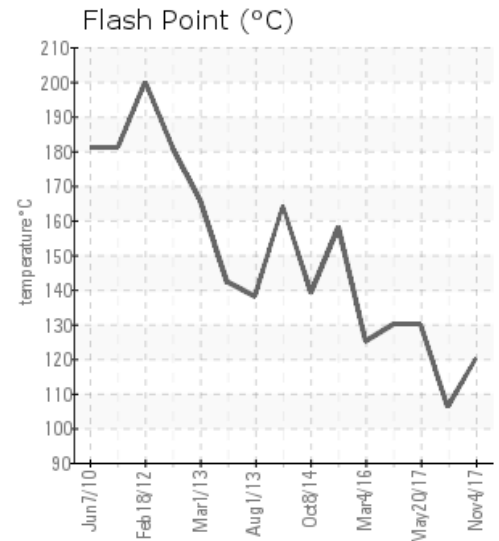
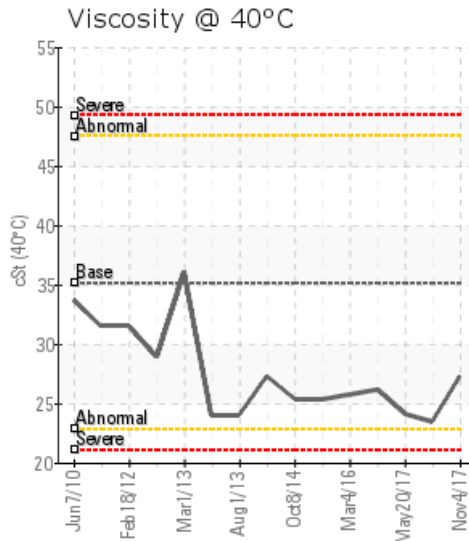
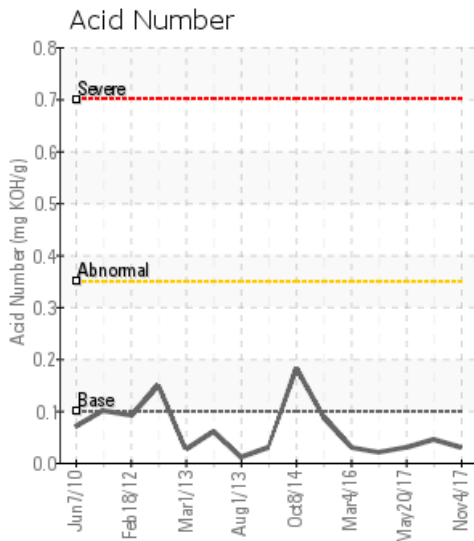
SOUTH HEATER

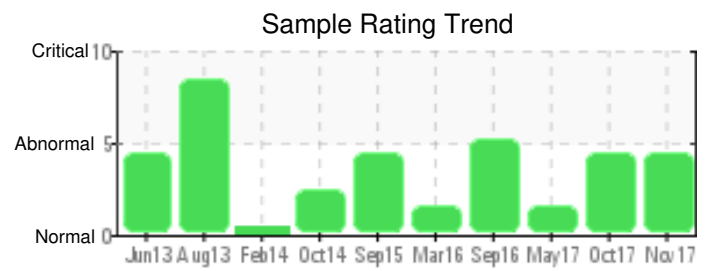
Customer: PTRHTF10043	System Information	Sample Information
MALARKY ROOFING PRODUCTS 3131 N. COLUMBIA BLVD PORTLAND, OR 97217 USA Attn: Jeff Tonn Tel: E-Mail: jtonn@malarkeyroofing.com	System Volume: 1200 gal Bulk Operating Temp: 620F / 327C Heating Source: Blanket: Fluid: PETRO CANADA CALFLO HTF Make: AMERICAN HEATING	Lab No: 02183587 Analyst: Ron LeBlanc Sample Date: 11/04/17 Received Date: 11/22/17 Completed: 11/28/17 To discuss this report contact Ron LeBlanc at (541)967-6499

Recommendation: Adding new oil could bring flash point up significantly. Check for heating consistency.

Comments: COC Flash Point is severely low. (GCD) 10% Distillation Point is abnormally low. (GCD) % < 335°C is marginally high.

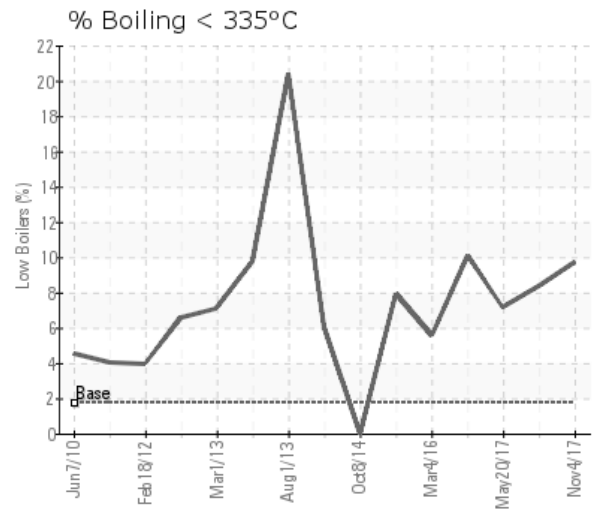
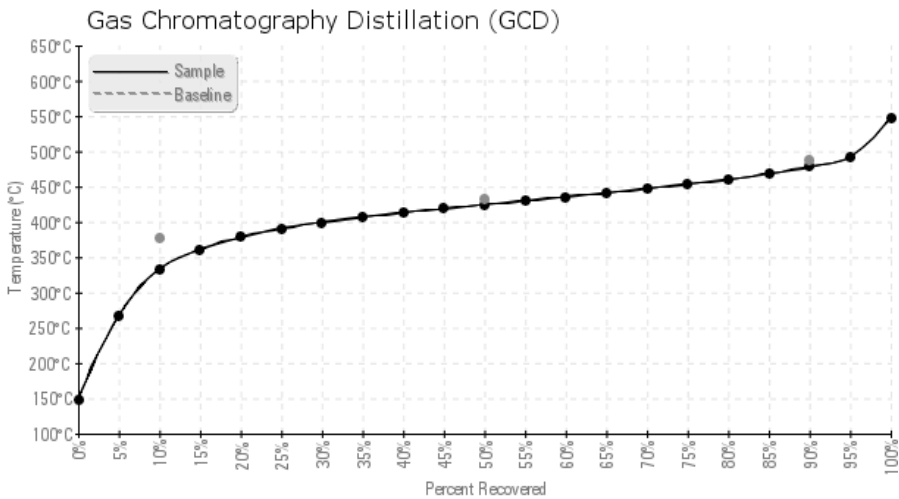
Sample Date	Received Date	Fluid Age	Sample Location	Flash Point (COC)	Water (KF)	Viscosity (40°C)	Acid Number	Solids	GCD 10%	GCD 50%	GCD 90%	GCD % < 335°C
	mm/dd/yy			°F/°C	ppm	cSt	mg/KOH/g	%wt	°F/°C	°F/°C	°F/°C	%
11/04/17	11/22/17	0m		248 / 120	9.1	27.3	0.03	0.031	632 / 333	796 / 424	893 / 478	9.74
10/04/17	10/17/17	0m		223 / 106	15.1	23.5	0.044	0.036	652 / 344	798 / 426	911 / 488	8.37
05/20/17	06/05/17	0m	NORTH HEAT EXCHANGER	266 / 130	29.5	24.1	0.028	0.061	666 / 352	802 / 428	915 / 490	7.16
09/22/16	10/04/16	0m	NORTH HEAT EXCHANGER	266 / 130	11.2	26.2	0.02	0.040	625 / 330	785 / 419	886 / 475	10.14
03/04/16	03/16/16	0m	NORTH HEAT EXCHANGER	257 / 125	6.7	25.8	0.03	0.051	681 / 361	805 / 430	918 / 492	5.56
09/24/15	10/13/15	0m	BY NORTH EXCHANGER	316 / 158	9.5	25.4	0.088	0.095	657 / 347	796 / 425	904 / 485	7.95
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
11/04/17	1	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	7	0
10/04/17	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	29	0
05/20/17	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	31	0
09/22/16	1	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	1	0	0	0	39	0
03/04/16	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	45	0
09/24/15	3	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	39	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

10/04/17	Resample to confirm results. Let about 1 gallon of oil purge before taking sample. COC Flash Point is severely low. (GCD) % < 335°C is marginally high. (GCD)
05/20/17	COC Flash Point is severely low. Water has increased. If some new oil can be added to the system it will help increase COC flash point. Make sure to let
09/22/16	COC Flash Point is severely low. (GCD) 10% Distillation Point is abnormally low. (GCD) % < 335°C is marginally high. (GCD) 90% Distillation Point is marginally low.
09/22/16	Resample in 3 months. COC Flash Point is severely low. (GCD) 10% Distillation Point is abnormally low. (GCD) % < 335°C is marginally high. (GCD) 90% Distillation Point is marginally low.
03/04/16	The flash point has dropped significantly. Determine if any process fluids have entered system. If system is low, add fresh oil to raise flash point. COC Flash
09/24/15	COC Flash Point is severely low. (GCD) % < 335°C is marginally high. (GCD) 10% Distillation Point is marginally low. Resample in 3 months to monitor