

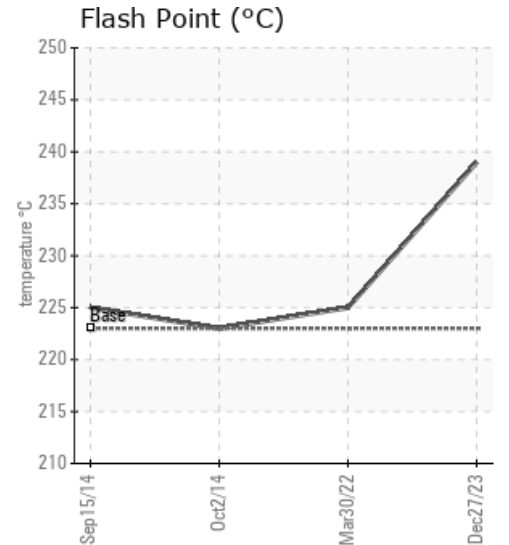
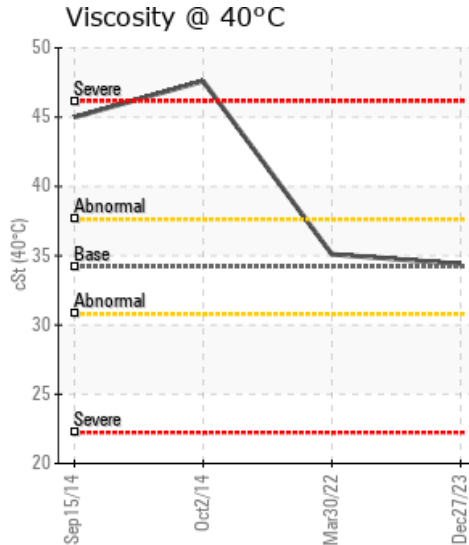
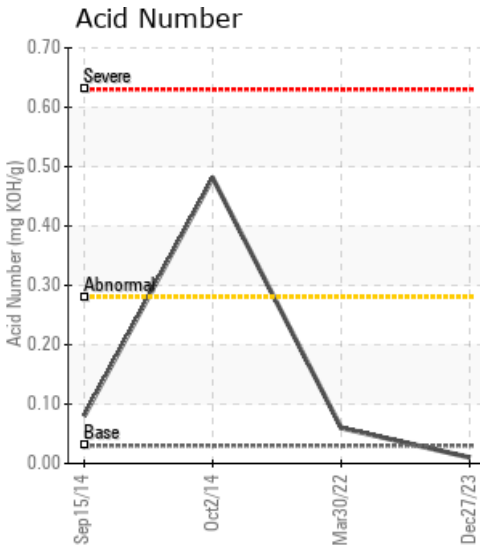
HEAT TRANSFER - Heatec 1 sample port

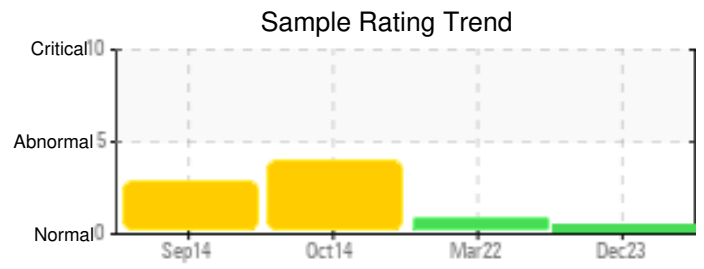
Customer: PTRHTF10140	System Information	Sample Information
PABCO ROOFING PRODUCTS 1718 THORNE RD TACOMA, WA 98421-3207 US Attn: Trevor Bingham Tel: (253)284-1228 E-Mail: trevor.bingham@pabcoroofing.com	System Volume: 2900 gal Bulk Operating Temp: 520F / 271C Heating Source: Blanket: Fluid: PETRO CANADA PETRO-THERM Make: HEATEC	Lab No: 02607633 Analyst: Ron LeBlanc Sample Date: 12/27/23 Received Date: 01/09/24 Completed: 01/16/24 Ron LeBlanc Ronald.LeBlancSr@HFSinclair.com

Recommendation: The sample results are acceptable with no alarms showing up. The Pentane insolubles have dropped significantly over the last 3 samples. Re-Sample in 6 months.

Comments:

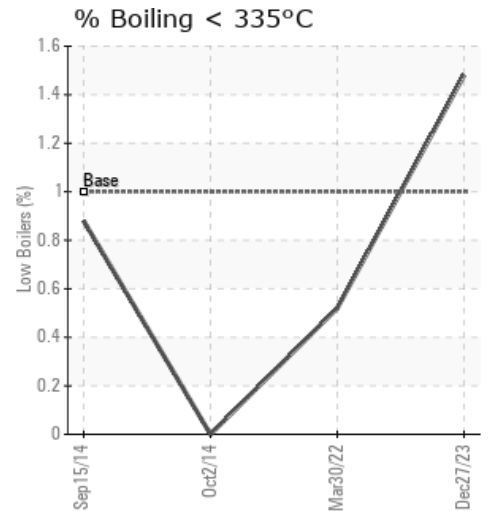
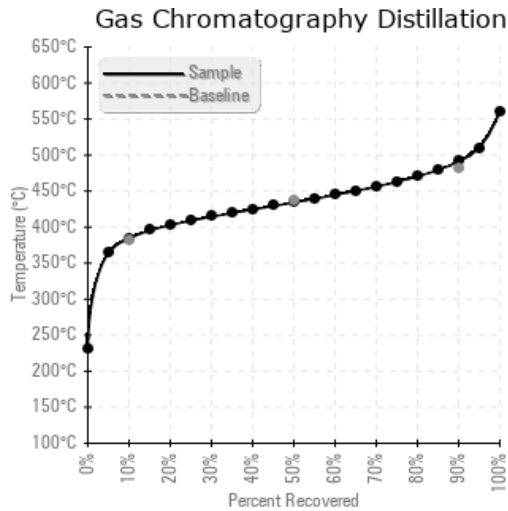
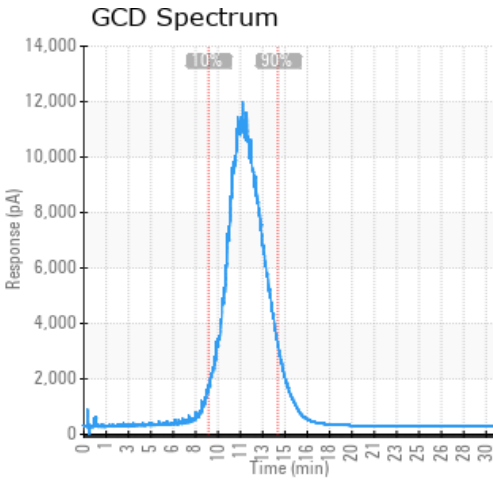
Sample Date	Received Date	Fluid Age	Sample Location	Flash Point (COC)	Water (KF)	Viscosity (40°C)	Acid Number	Solids	GCD 10%	GCD 50%	GCD 90%	GCD % < 335°C
	mm/dd/yy			°F/°C	ppm	cSt	mg/KOH/g	%wt	°F/°C	°F/°C	°F/°C	%
12/27/23	01/09/24	19.0m		462 / 239	54	34.4	0.01	0.053	723 / 384	814 / 434	916 / 491	1.48
03/30/22	04/07/22	3.0m	#1 RETURN	437 / 225	20.7	35.1	0.06	0.058	729 / 387	814 / 435	918 / 492	0.52
10/02/14	11/04/14	0.0m	ABOVE INLINE PIPEVEN	433 / 223	168.0	47.6	0.481	1.74	734 / 390	805 / 430	904 / 485	0.00
09/15/14	09/25/14	0.0m	HEATER COIL	437 / 225	49.1	45.0	0.08	1.46	705 / 374	802 / 428	930 / 499	0.88
Baseline Data				433 / 223		34.2	0.03		720 / 382	817 / 436	900 / 482	1.00





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
12/27/23	7	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0
03/30/22	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10/02/14	164	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	1	0	0	0	0	0	0	0
09/15/14	132	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0
Baseline Data			0	0						0			0	0					0				0	

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



Historical Comments

03/30/22	(GCD) 90% Distillation Point is elevated. Re-sample in 3 months. Visual appearance the oil has darkened since last sample. (GCD) 90% Distillation Point is marginally high. Re-sample in 3 months.
10/02/14	Acid Number is high and Pentane is elevating. System appears to have a process leak. Oil is increasing in Viscosity. Check heating element for proper heat value. Oxidation can cause increased viscosity and TAN to rise. Pentane Insolubles levels are severely high. Acid Number (AN) is abnormally high. Visc @ 40°C is abnormally high.
09/15/14	Pentane Insolubles levels are severely high. (GCD) 90% Distillation Point is abnormally high. Visc @ 40°C is abnormally high.

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