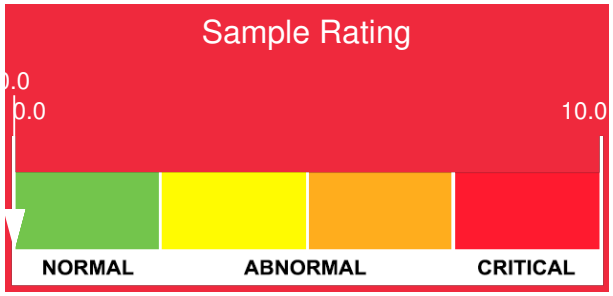
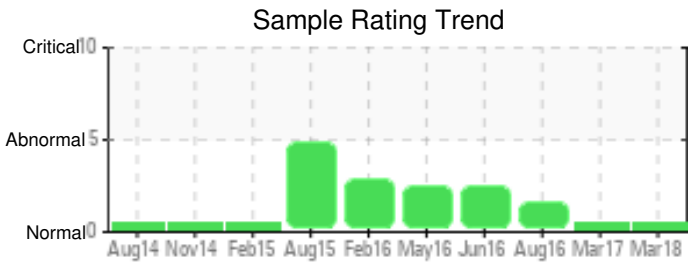




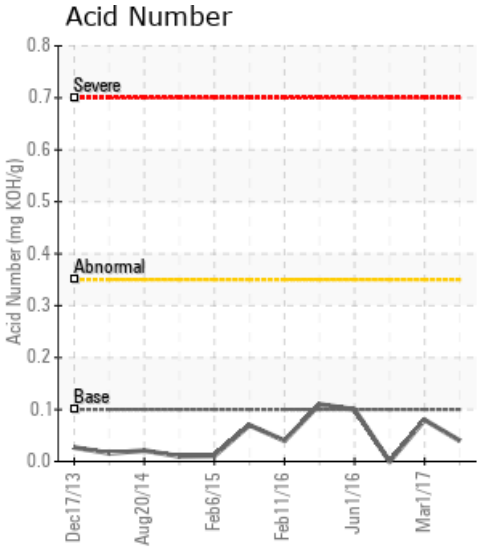
LN02 Laminator Hot Oil System

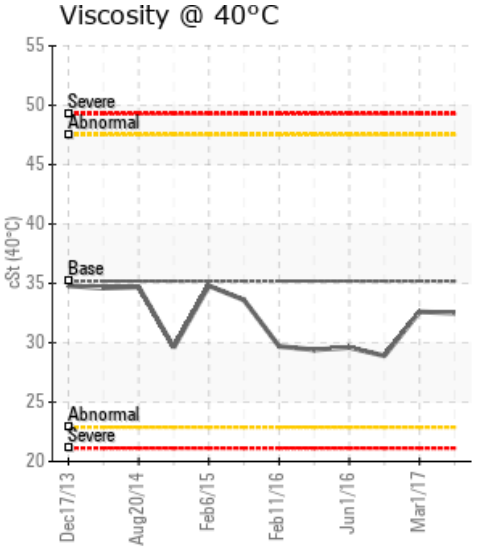
Customer: PTRHTF10141	System Information	Sample Information
TAMKO BUILDING PRODUCTS 2300 35TH ST TUSCALOOSA, AL 35401 USA Attn: Greg Colburn Tel: (205)752-3555 E-Mail: gregory_colburn@tamko.com	System Volume: 110 gal Bulk Operating Temp: 350F / 177C Heating Source: Blanket: Fluid: PETRO CANADA CALFLO HTF Make: Heat Exchanger And T	Lab No: 02203579 Analyst: Manny Garcia Sample Date: 03/02/18 Received Date: 03/13/18 Completed: 03/19/18 To discuss this report contact Manny Garcia at 954-384-7259

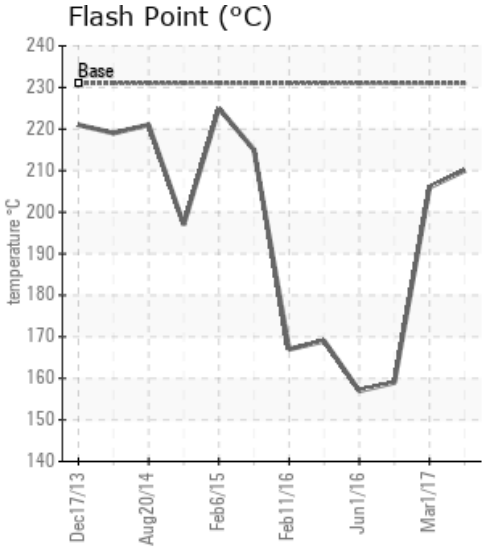
Recommendation: Fluid is suitable for continued use. Please re-sample and submit to the lab in 1-year.

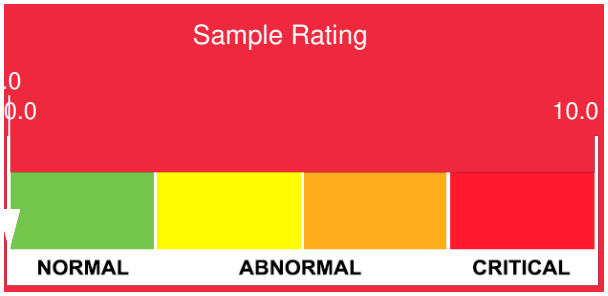
Comments: An increase in the iron level is noted. All other component wear rates are normal. Very light debris has been noticed visually. Changing system filters, if any, is recommended and/or using a portable filter cart during the next scheduled maintenance will clean the fluid.

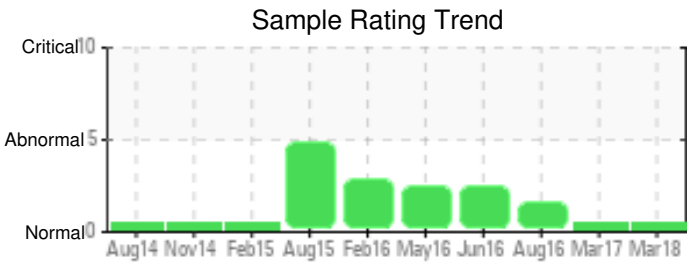
Sample Date	Received Date	Fluid Age	Sample Location	Flash Point (COC)	Water (KF)	Viscosity (40°C)	Acid Number	Solids	GCD 10%	GCD 50%	GCD 90%	GCD % < 335°C
	mm/dd/yy			°F/°C	ppm	cSt	mg/KOH/g	%wt	°F/°C	°F/°C	°F/°C	%
03/02/18	03/13/18	12m		410 / 210	15.9	32.5	0.04	0.184	717 / 381	792 / 422	902 / 483	0.00
03/01/17	03/07/17	13m	PORT	403 / 206	0.00	32.6	0.08	0.057	710 / 377	810 / 432	909 / 487	1.90
08/05/16	08/11/16	0m	SAMPLE PORT	318 / 159	9.2	28.9	0.000	0.034	703 / 373	810 / 432	902 / 483	3.65
06/01/16	06/09/16	0m	SAMPLE PORT	315 / 157	11.9	29.6	0.10	0.032	692 / 367	786 / 419	876 / 469	2.46
05/04/16	05/13/16	0m	SAMPLE PORT	336 / 169	9.2	29.4	0.11	0.011	752 / 400	824 / 440	934 / 501	1.11
02/11/16	02/12/16	0m	SAMPLE PORT	333 / 167	22.2	29.7	0.04	0.040	702 / 372	816 / 436	940 / 504	3.40
Baseline Data				448 / 231		35.20	.1		712 / 378	810 / 432	910 / 488	1.75





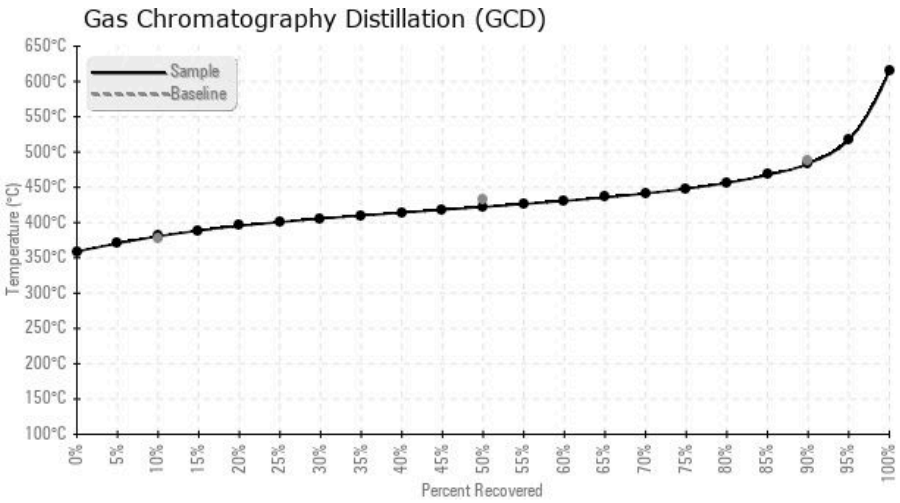


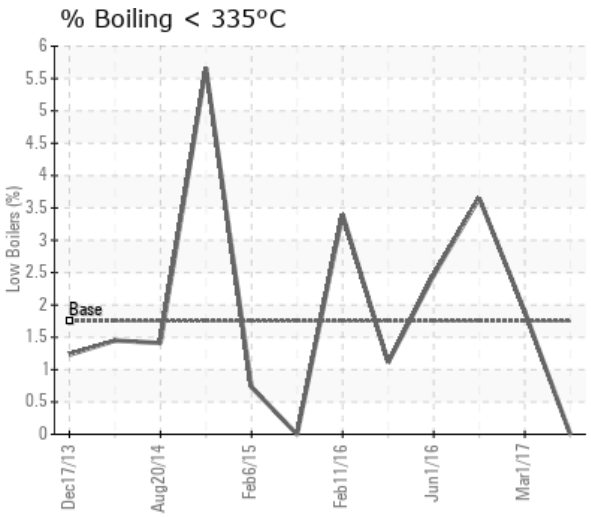




Sample Date	Iron	Chromium	Nickel	Aluminum	Copper	Lead	Tin	Cadmium	Silver	Vanadium	Silicon	Sodium	Potassium	Titanium	Molybdenum	Antimony	Manganese	Lithium	Boron	Magnesium	Calcium	Barium	Phosphorus	Zinc
03/02/18	71	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	60	1
03/01/17	2	0	0	0	0	0	1	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	106	0
08/05/16	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
06/01/16	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
05/04/16	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0
02/11/16	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
Baseline Data			0	0						0			0	0					0				280	

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





Historical Comments

03/01/17	Please re-sample at normal intervalWear metals are low/Contaminant levels are low/Additive pack appears to be satisfactory/Viscosity is satisfactory/COC Flash Point is good/Pentane insoluble are good/Very light debris seen in sample/no water
08/05/16	Samples have been received in increments of 2 months, 1 month, 3 months and 6 months historically for the last 5 samples. 4 samples received in 2016. Most heat transfer fluid (HTF) systems are annual sample recommendations, unless there is some sort of mitigation performed to improve on certain fault areas. Venting the system may help improve the low flash point. This system appears to be 110 gallon, hence taking out 10% of the used oil & replacing with virgin Petro-Therm will improve the oil condition. Please include the HTF System Unit Age and the time on the 110 gallon oil charge during the next routine oil samples.Wear metals are low; good/Contaminant is low/Water is low/Viscosity of the oil is in range/Flash Point is low at 159oC, but only 2oC improvement from last sample/Distillation curves are very good and improved from last 2 samples for the 90% distillation range. All distillation curves in check now.
06/01/16	'Vent' the system to mitigate the low 90% distillation value. Consider taking out 10% of the system volume and replace with virgin Petro-Therm to increase the Flash Point and this could assist in bringing up low distillation values at 90%. Please include the age of the oil and the system during the next scheduled oil sample submission.Wear metals are satisfactory; Contaminant levels are very low; Water is in an acceptable/low range; ISO Viscosity grade is good; COC Flash Point is severely low and has been trending this direction since February of 2016. All distillation points are acceptable except (GCD) 90% Distillation Point is marginally low. Very light debris visible.
05/04/16	Replacing no more than 10% of the oil in the system with virgin Petro-Therm may assist in increasing the low Flash Point figures. 'Venting' the system may assist in reducing the distillation curve numbers.Include the age of the oil and the age of the unit when the next annual sample is submitted, please.Wear metals are satisfactory; Contaminant levels are low; Water is nil; Acid levels are low; Viscosity of oil is good; Flash Point of the oil is low. 10% distillation curve is slightly high; 90% distillation curve is slightly high. Pentane solids are satisfactory; Very light debris found in oil sample;
02/11/16	Please include the age of the oil and the equipment during the next sample submission. If any recommended system 'venting' is completed, please re-submit another sample to verify the effectiveness of the work performed to bring down the distillation curve at 90%. Depending on the age of the 110 gallons in this reservoir it may be safer and more efficient to drain the system, flush and re-charge with fresh Petro-therm product.Wear metals are low; water is low; Total Acid number is low; COC Flash Point is Very Low by 56 degrees and this number has been in check historically; 90% Distillation Point is severely high; Pentane solids are low; Debris is visual and very light in the sample of oil received.