

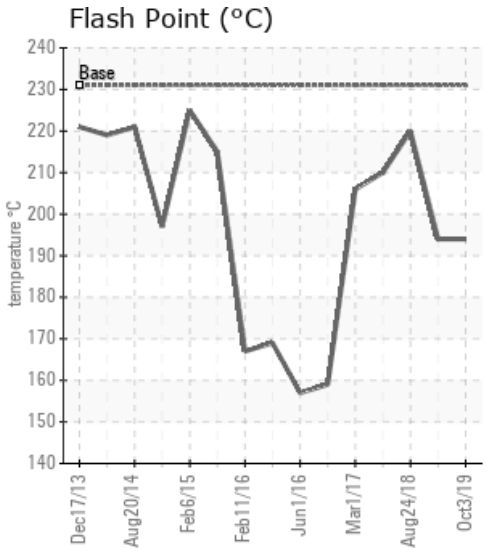
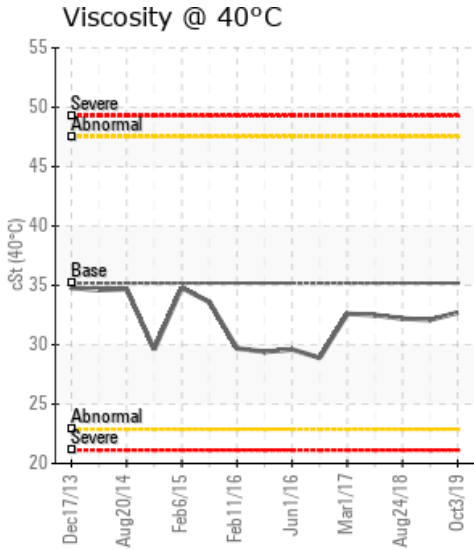
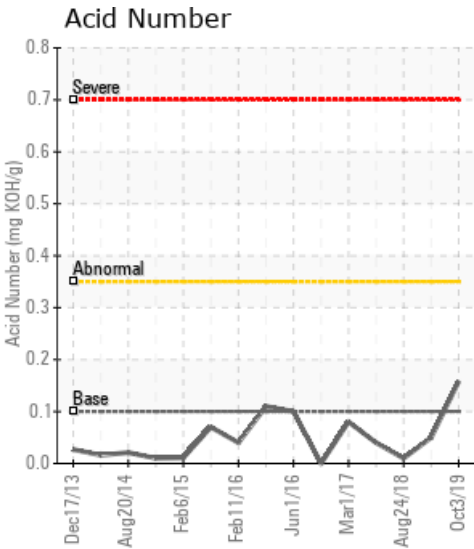
## LN02 Laminator Hot Oil System

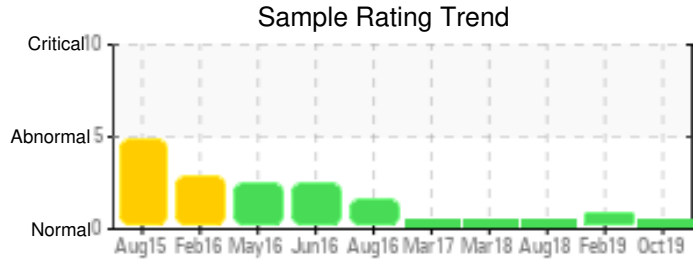
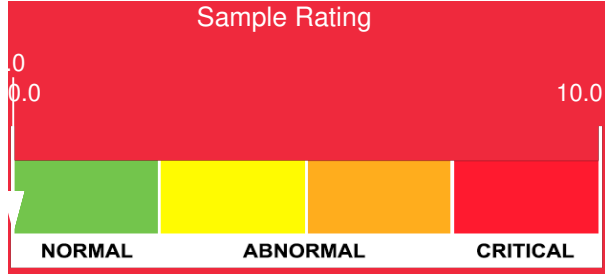
Customer: PTRHTF10141	System Information	Sample Information
TAMKO BUILDING PRODUCTS 2300 35TH ST TUSCALOOSA, AL 35401 USA Attn: Greg Colburn Tel: (205)752-3555 E-Mail: gregory_colburn@tamko.com	System Volume: 110 gal Bulk Operating Temp: 350F / 177C Heating Source: Blanket: Fluid: PETRO CANADA CALFLO HTF Make: Heat Exchanger And T	Lab No: 02314440 Analyst: Jake Finn Sample Date: 10/03/19 Received Date: 10/15/19 Completed: 11/08/19

Recommendation: Oil is suitable for continued use. Please resubmit sample in one year.

Comments: COC Flash Point is marginally low. Venting the system may improve flash point. Iron levels have continued to improve over previous samples.

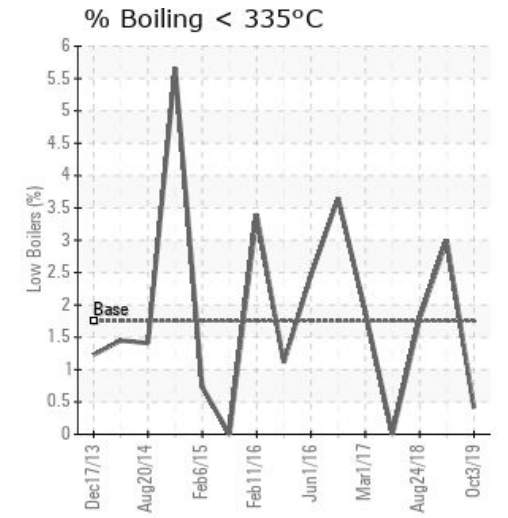
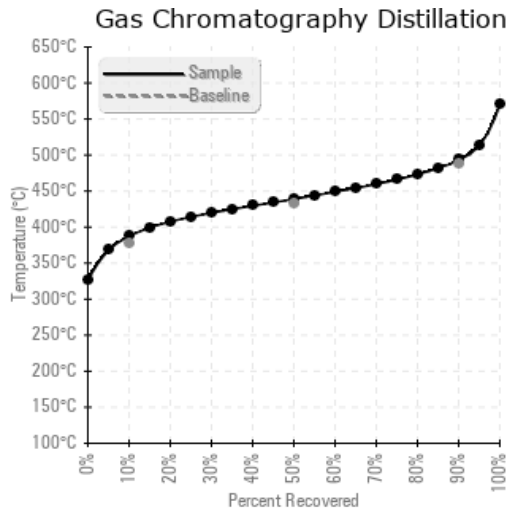
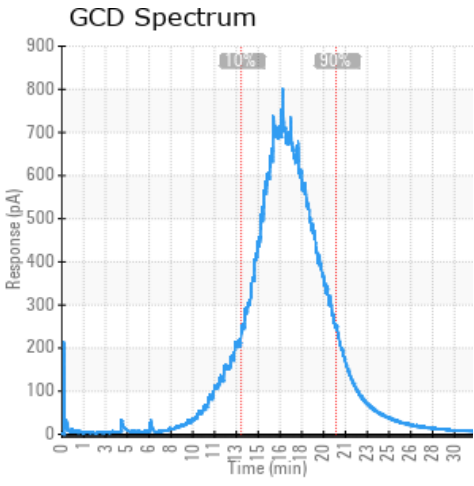
Sample Date	Received Date	Fluid Age	Sample Location	Flash Point (COC)	Water (KF)	Viscosity (40°C)	Acid Number	Solids	GCD 10%	GCD 50%	GCD 90%	GCD % < 335°C
	mm/dd/yy			°F/°C	ppm	cSt	mg/KOH/g	%wt	°F/°C	°F/°C	°F/°C	%
10/03/19	10/15/19	0m		381 / 194	27.2	32.7	0.158	0.081	729 / 387	822 / 439	919 / 493	0.41
02/25/19	03/06/19	18m	PORT	381 / 194	16.1	32.1	0.050	0.070	696 / 369	798 / 425	893 / 478	3.00
08/24/18	09/04/18	24m	PORT	428 / 220	17.1	32.2	0.01	0.052	710 / 377	808 / 431	903 / 484	1.78
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
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
10/03/19	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	30	0
02/25/19	18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	25	0
08/24/18	45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	44	0
03/02/18	71	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	60	0
03/01/17	2	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	106	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	
02/25/19	Fluid is suitable for continued use. Please re-sample and send to lab in 12 months. COC Flash Point is marginally low. Venting the system may improve flash point. Iron levels have continued to improve compared to previous two samples.
08/24/18	Fluid is suitable for continued use and sample from this 100-gal system should be re-submitted in August of 2019. All critical fluid parameters are in-line and free of contaminants. Some very lite debris was noticed by the lab technician. If system has any filters please change them. Furthermore, the fluid could be filtered using a kidney loop system during a safe shutdown period to obtain optimum cleanliness levels.
03/02/18	Fluid is suitable for continued use. Please re-sample and submit to the lab in 1-year. 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.
03/01/17	Please re-sample at normal interval. Wear 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

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