

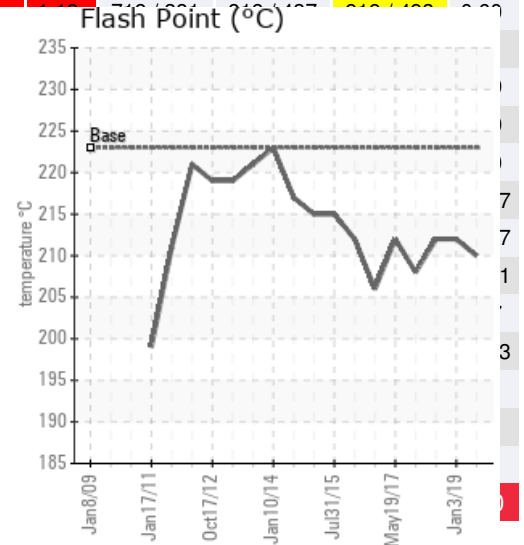
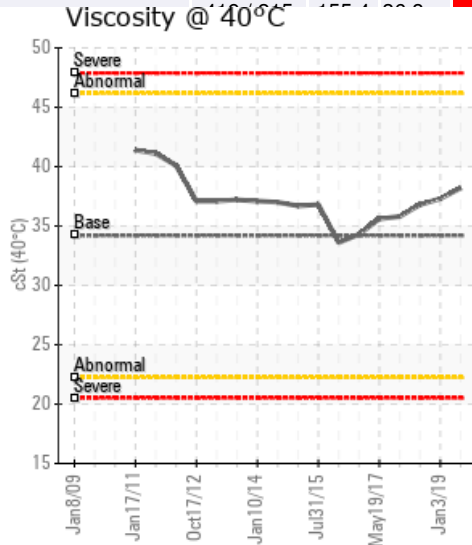
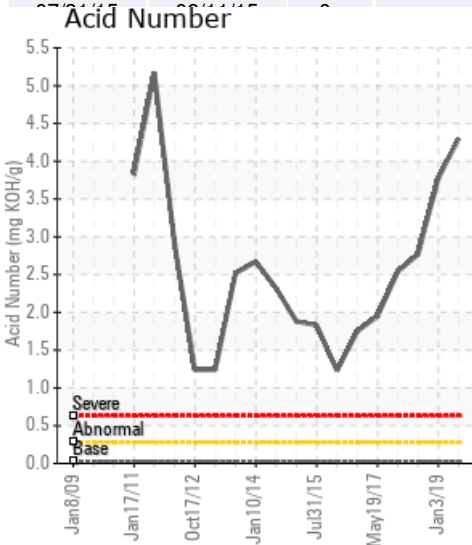
HOT WAX AREA

Customer: PTRHTF10102	System Information	Sample Information
METALSA INCORPORATED 301 BILL BRYAN BLVD HOPKINSVILLE, KY 42240 USA Attn: CHRIS HIGGINS Tel: (270)305-1347 E-Mail: chiggins@kimbrooil.com	System Volume: 4000 gal Bulk Operating Temp: 240F / 116C Heating Source: Blanket: Fluid: PETRO CANADA PETRO-THERM Make:	Lab No: 02286538 Analyst: Joe Goecke Sample Date: 05/21/19 Received Date: 05/22/19 Completed: 05/27/19

Recommendation: Acid number increased again but not as much as last jump. Oil does not show signs of degradation. Flash point, low boilers, and viscosity are all in very good range. Continue to use and resample at next scheduled interval.

Comments: Pentane Insolubles levels are severely high. Acid Number (AN) is severely 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	%
05/21/19	05/22/19	0y		410 / 210	44.8	38.2	4.30	0.580	698 / 370	798 / 426	910 / 488	1.61
01/03/19	01/10/19	4y		414 / 212	20.6	37.3	3.78	0.205	681 / 360	784 / 418	893 / 479	3.37
07/31/18	08/01/18	0y		414 / 212	39.8	36.8	2.77	0.236	703 / 373	786 / 419	867 / 464	0.00
02/07/18	02/08/18	0y		406 / 208	19.4	35.8	2.54	0.435	694 / 368	788 / 420	884 / 474	1.18
05/19/17	05/25/17	0y		414 / 212	33.7	35.6	1.95	0.642	695 / 368	810 / 432	918 / 492	3.25
07/23/16	07/25/16	0y	EXPANSION TANK	403 / 206	30.0	34.3	1.75	0.358	697 / 369	797 / 425	900 / 482	0.22
02/19/16	03/01/16	0y		414 / 212	16.3	33.6	1.23	0.384	681 / 361	806 / 430	916 / 491	4.29



03/19/15

01/10/14

System shows signs of contamination with increasing sulfur levels. Also seeing increase in TAN. Suggest partial exchange with new fluid to lower contamination level or filter/cleaning of current fluid. Pentane Insolubles levels are severely high. Acid Number (AN) is severely high.

06/06/13

Sample shows lingering presence of wax contamination. Acid and solids high. Suggest partial exchange or recharge of system to prevent catastrophic failure in future. Pentane Insolubles levels are severely high. Acid Number (AN) is severely high. (GCD) 90% Distillation Point is marginally high.

10/17/12

Calcium and Zinc levels remain low. Acid number has gone back up to 2011 levels indicating either a continued process leak or increased oxidation of the fluid. The additive system also appears to be somewhat depleted. Insoluble solids remains somewhat high at 1.3%. We recommend a partial fluid changeout to improve the fluid condition and replenish additives in the oil to prevent corrosion problems in the system. Pentane Insolubles levels are severely high. Visual appearance is abnormal. Acid Number (AN) is severely high. (GCD) 90% Distillation Point is marginally high.

10/17/12

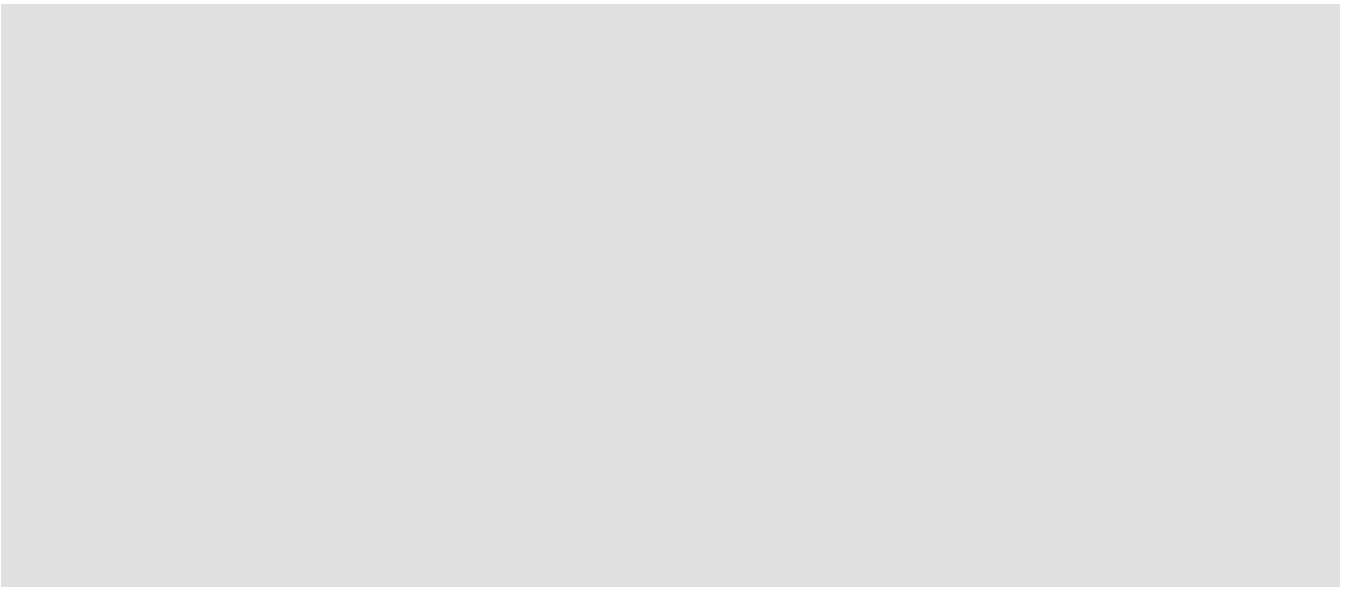
The oil condition has improved. The viscosity is getting closer to Petro-Therm, the residual metal/element contamination is lower, the GCD 90% data is slowly decreasing towards fresh Petro-Therm's distillation behavior. Overall we are encouraged by the

10/10/11

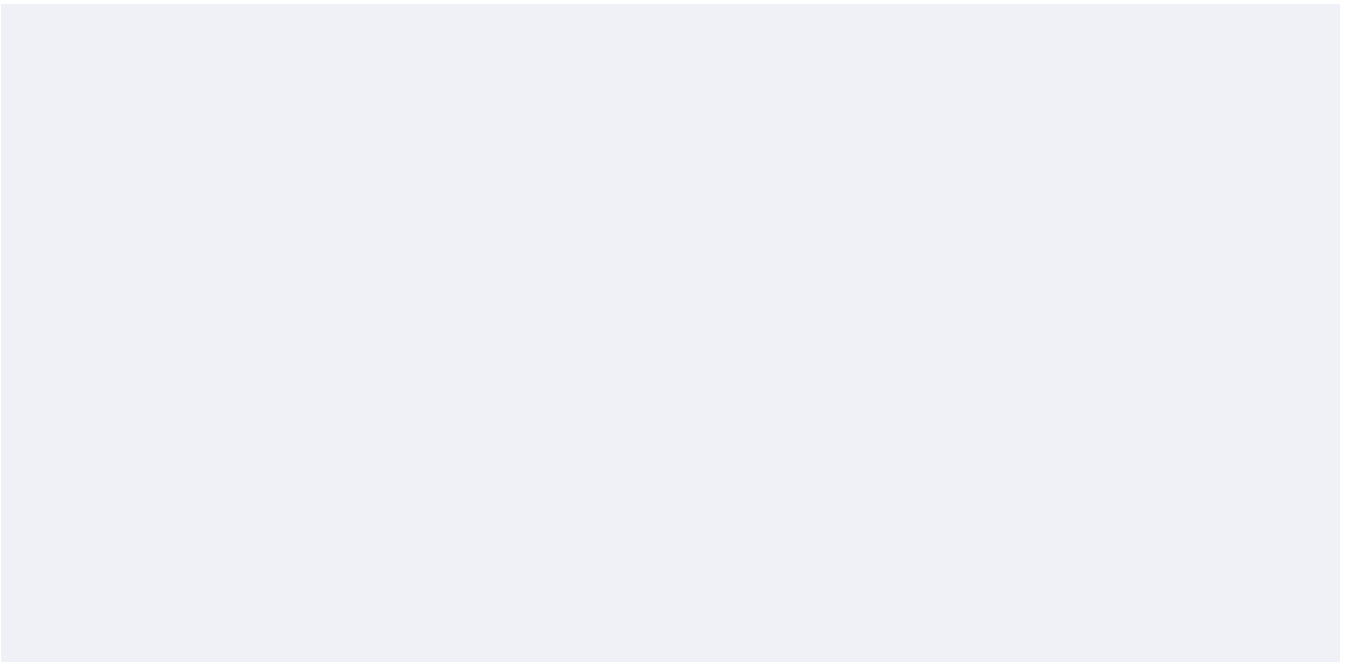
The oil condition has improved. The viscosity is getting closer to Petro-Therm, the residual metal/element contamination is lower, the GCD 90% data is slowly decreasing towards fresh Petro-Therm's distillation behavior. Overall we are encouraged by the trend of these results, Keep up the efforts and re-sample in 6 months.

04/26/11

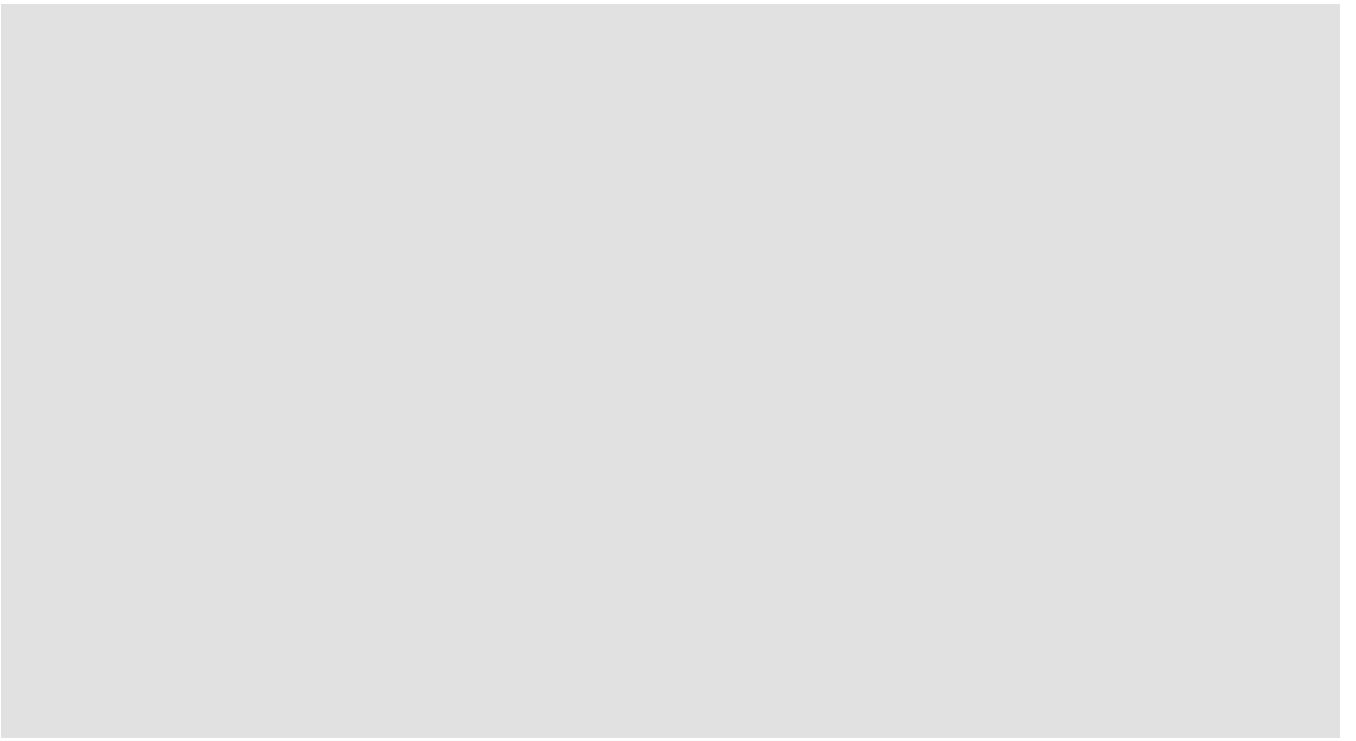
01/17/11



08/11/09

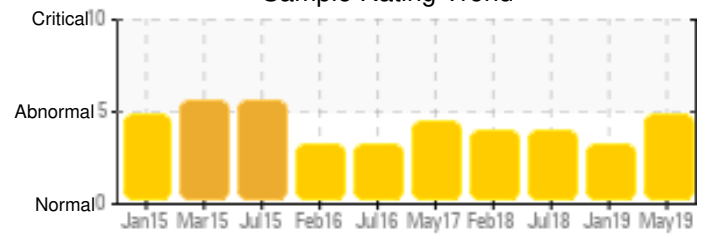


05/13/09

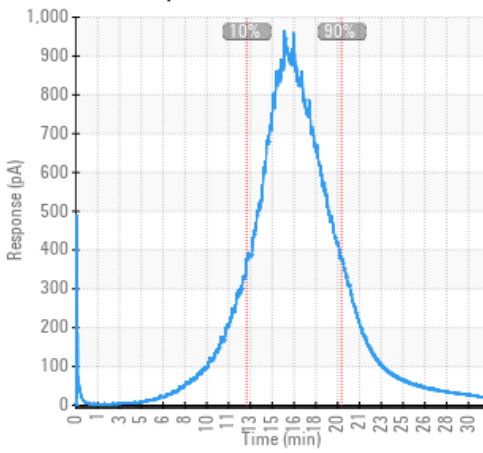


01/08/09

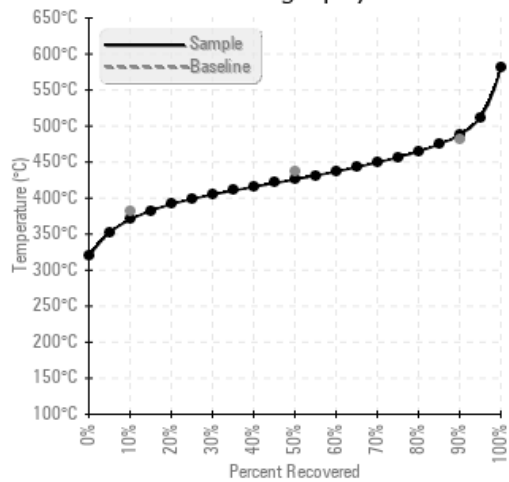
Sample Rating Trend



GCD Spectrum



Gas Chromatography Distillation



% Boiling < 335°C

