

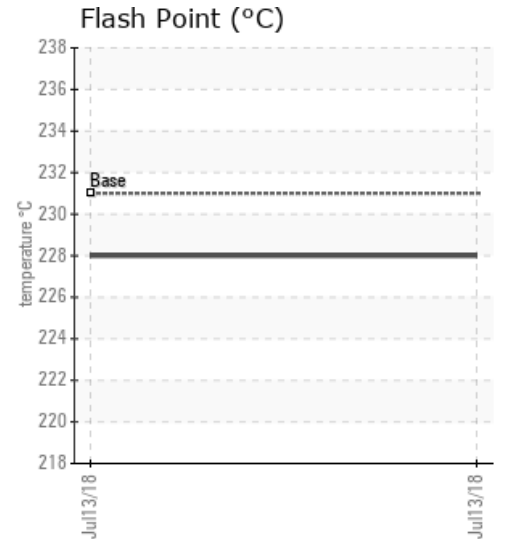
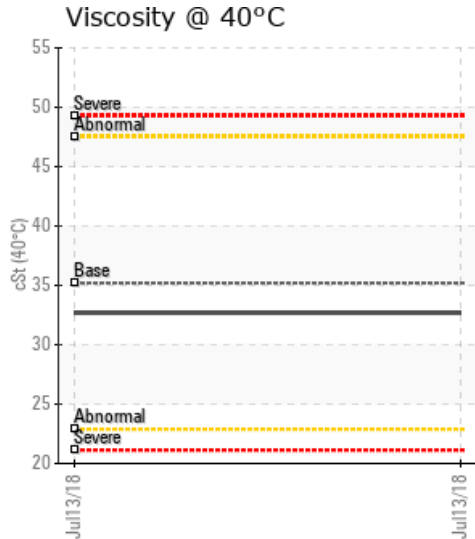
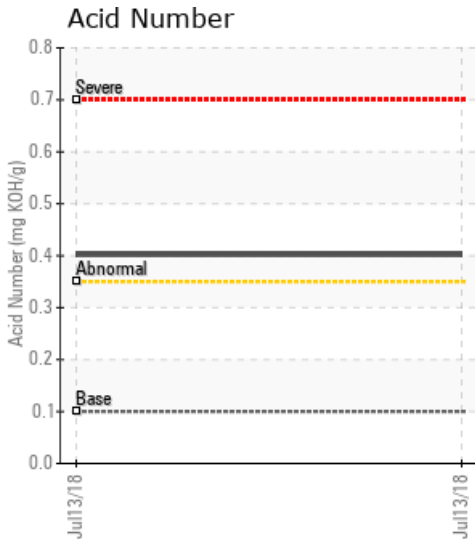
001-HE-100/PM4580

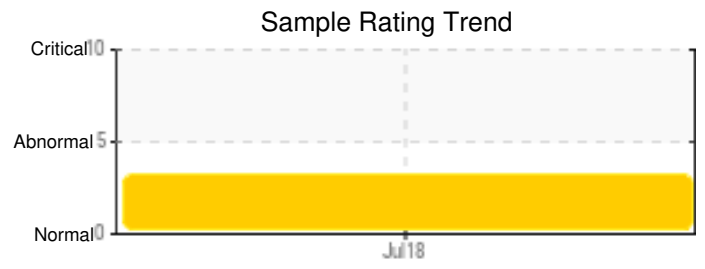
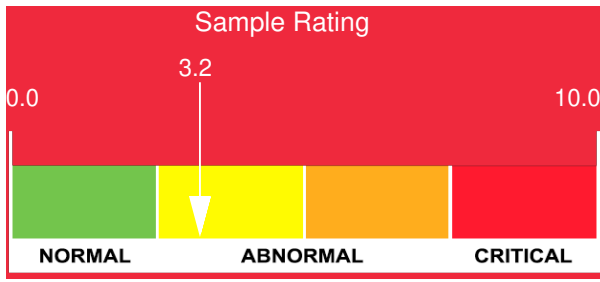
Customer: PTRHTF10177	System Information	Sample Information
Materia Inc 7629 State Hwy 75 South Huntsville, TX 77340 USA Attn: Kenny Nelson Tel: (936)295-4040 E-Mail: knelson@materia-inc.com	System Volume: 300 gal Bulk Operating Temp: 320F / 160C Heating Source: Blanket: Fluid: PETRO CANADA CALFLO HTF Make:	Lab No: 02229780 Analyst: Frank Hayes Sample Date: 07/13/18 Received Date: 07/23/18 Completed: 09/04/18 Frank Hayes frank.hayes@petrocanadalsp.com

Recommendation: Fluid drain and refill is recommended. The high level of zinc is most likely the result of acid attack on galvanized components.

Comments: Zinc ppm levels are severely high. Acid Number (AN) is abnormally high. (GCD) 90% Distillation Point is marginally low.

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	%
07/13/18	07/23/18	1h	500 GALLON	442 / 228	0.00	32.7	0.402	0.088	706 / 374	792 / 422	890 / 476	0.00
Baseline Data				448 / 231		35.20	.1		712 / 378	810 / 432	910 / 488	1.75

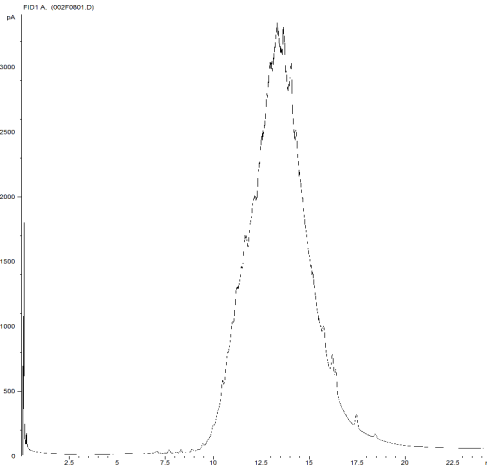




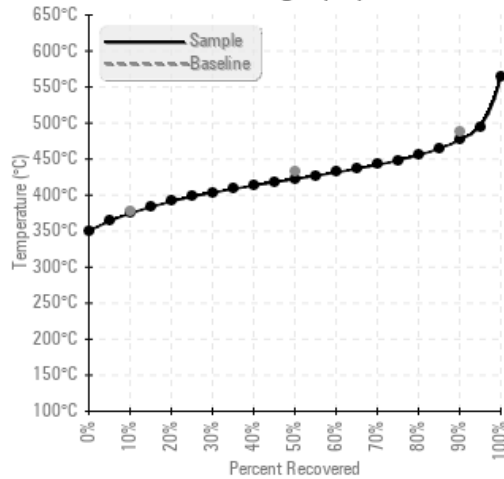
Sample Date	Iron	Chromium	Nickel	Aluminum	Copper	Lead	Tin	Cadmium	Silver	Vanadium	Silicon	Sodium	Potassium	Titanium	Molybdenum	Antimony	Manganese	Lithium	Boron	Magnesium	Calcium	Barium	Phosphorus	Zinc	
07/13/18	1	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	263	122
Baseline Data			0	0						0			0	0					0					280	

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

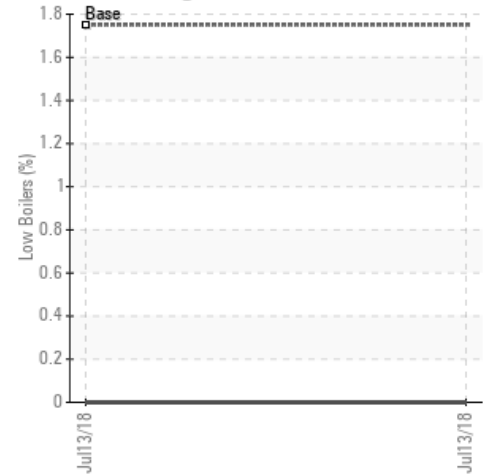
GCD Spectrum



Gas Chromatography Distillation



% Boiling < 335°C



Historical Comments