

FUELS & LUBES TECHNOLOGIES, LLC

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To: AmberTech

AmberTech's commitment to the continued testing of the M99 oil additive is to be commended. So many companies come up with a good product and then simply stop doing research and development testing. They often opt for a minimal savings by cutting out the costs associated with testing. In so doing, they never really reach the full potential of the product.

We have continued our studies of your Amber Tech M99, biodegradable additive. Past testing has revealed that the additive has very good metal wear preventative potential. Whereas we wanted to see how well it would perform, we chose to do a series of tests that would measure the load-carrying properties of an ISO 32 Premium Grade hydraulic fluid; neat and additized. This test is an industry-accepted measurement of the extreme pressure properties of fluid lubricants. It is a test designated by ASTM (American Society of Testing Materials) as D 3233 (Falex Pin & Vee method).

We began by selecting a Premium Grade Iso 32 Hydraulic Fluid. A premium hydraulic fluid we would think was a top shelf lubricant, so we wanted to do our comparison with the best product available. Using this fluid as our base line, we next added the Amber Tech M99 at the prescribed treat rate to create a second sample. These samples were then submitted to an independent laboratory; Clark Laboratories, LLC, for D 3233 testing.

The sample testing results are as attached and designated as follows:

1. PremHyd32 untreated – 353429
2. PremHyd32 + Amber Tech - 353430

The hydraulic oil with Amber Tech added, produced tremendous results. If we compare the two samples, using the Run #1 and Run # 2 load stage data, we can see a 50% plus reduction in operating temperatures and torque loading values across the board. This essentially equates to an operational cost savings of over 50%. If we look a little further, we can also see that on Run #1, the oil treated with AmberTech achieved a 2000 lb. carrying capacity, while the premium oil only reached a 750 lb. carrying capacity. The Run #2 data also reflects clearly that the AmberTech treated oil is far superior to the supposed Premium Hydraulic 32 oil.

Bare in mind that metal wear is a function of temperature and pressure, so when you reduce either one or both of those, you dramatically reduce equipment failure and down

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time. Also, hydraulic systems operating at high temperatures are prone to have catastrophic failures that pose safety concerns.

In all of my years as a CLS (Certified Lubrication Specialist) I have seen and used many additives on a day-to-day basis. Very few of them do what they say they will. AmberTech M99 is the real deal.

Regards,

John Chovanes

Fuels & Lubes Technologies, LLC

Head Chemist

ASTM, STLE CLS, AISE, SAE, ILCP Technologies

AmberTech
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CLARK
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AmberTech
Todd Trenchard
Hydraulic Oil
2013

Test Group(s): D3233B

AmbTech
Trenchard
Hyd Oil
2013

Clark Lab # : 353429
Sample Date : 04/26/13

Customer Tracking #: PremiumHydraulic32
Purchase Order # : Trenchard

Falex EP D3233B	4/26/2013
Test 1 Direct Load (lbs)	765.0
Test 1 Reference Load (lbs)	1,000.0
Test 2 Direct Load (lbs)	2,015.0
Test 2 Reference Load (lbs)	3,000.0

Additional detail may be available if requested, at standard Clark consulting rates.

D3233B:

Run #1 Temp.°F Torque (Inch Lbs.)
500 lbs. 153.2 22.2
750 lbs. 162.3 50.3

Run #2 Temp.°F Torque (Inch Lbs.)
500 lbs. 165.9 24.2
750 lbs. 172.5 43.8
1000 lbs. 205.0 46.1
1250 lbs. 219.6 46.3
1500 lbs. 235.6 48.6
1750 lbs. 248.0 48.7
2000 lbs. 263.6 48.8
2250 lbs. 282.7 48.3
2500 lbs. 296.8 48.7
2750 lbs. 321.4 49.1

NOTE: Sample was analyzed as received and recommendations based on tests performed. Clark Laboratories LLC is not liable for any consequences resulting from use/abuse of the data and conclusions contained within this report. By receiving this report for services rendered, client accepts full responsibility and liability for all actions occurring from evaluation of this data. The reported test results relate only to the item(s) tested.

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Hydraulic Oil
2013

Test Group(s): D3233B

AmbTech
Trenchard
Hyd Oil
2013

Clark Lab # : 353430
Sample Date : 04/26/13

Customer Tracking #: PremHyd32-w-AmberTech
Purchase Order # : Trenchard

Falex EP D3233B	4/26/2013
Test 1 Direct Load (lbs)	1,410.0
Test 1 Reference Load (lbs)	2,000.0
Test 2 Direct Load (lbs)	1,555.0
Test 2 Reference Load (lbs)	2,250.0

Additional detail may be available if requested, at standard Clark consulting rates.

D3233B:

Run #1 Temp.°F Torque (Inch Lbs.)

500 lbs. 145.7 11.7
750 lbs. 147.5 15.0
1000 lbs. 151.0 17.0
1250 lbs. 164.2 18.4
1500 lbs. 169.4 19.1
1750 lbs. 174.0 20.3
2000 lbs. 178.0 20.9

Run #2 Temp.°F Torque (Inch Lbs.)

500 lbs. 159.0 12.1
750 lbs. 164.6 15.1
1000 lbs. 167.5 16.7
1250 lbs. 173.0 17.4
1500 lbs. 177.3 18.5
1750 lbs. 182.7 20.3
2000 lbs. 189.3 22.3
2250 lbs. 216.8 25.6

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