



# BESTLINE™

## MARINE LUBRICATION PRODUCTS TEST RESULTS

All developed with





# BestLine Engine Oil Treatment API License and Test Validity Statements

**Report Cover Sheet**  
Sequence VIII Engine Evaluation of Engine Oils  
Form 1

Version 20050927

Conducted For  
BestLine International Research

V	V = Valid I = Invalid
NR	NR = Non Reference Oil Test RO = Reference Oil Test

Test Stand	Power Section	Test Number	Total Runs on Power Section
1	08	1	106

Date Completed: 20060324  
Oil Code: BL-S100  
Formulation / Stand Code: N/A  
Alternate Codes: N/A

Completion Time: 09:55

In my opinion this test has been conducted in a valid manner in accordance with the Sequence VIII Test Method D6709 and the appropriate amendments through the Information Letter System. The remarks included in this report describe anomalies associated with this test.

Submitted By: PERKINELMER AUTOMOTIVE RESEARCH, INC.  
Testing Laboratory  
*Charlie Laverett*  
Signature  
Charlie Laverett  
Typed Name  
Sr. Engineering Technologist  
Title

energy **API** License No: 2263

### SCHEDULE A - LICENSE AGREEMENT

The marks referred to and licensed under the Agreement between API and  
BESTLINE INTERNATIONAL RESEARCH INC

**API SERVICE SYMBOL**

Licensee is authorized to display the API Service Symbol on the following products:

BRAND NAME: BESTLINE SYNTHETIC  
SAE VISCOSITY SERVICE CATEGORY GRADE: 10W-30 CF,CF-4/S\*

Engine Oil Licensing and Certification System  
20 L Street, NW • Washington, DC 20005-4070 • USA • www.api.org/eolcs  
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*Karen Ferrick*  
KOLCS Manager of Operations  
Date: 4/11/2008

Method D 6837 for Measurement of the Effects of Automotive Engine Oils on  
Fuel Economy of Passenger Cars and Light Trucks in the Sequence VIB Spark  
Ignition Engine  
Report Cover Sheet

Version 20041018

Conducted for  
BESTLINE INTERNATIONAL RESEARCH INC.

V	V = Valid I = Invalid N = Result cannot interpreted (refer to comment section)
NR	NR = Non-reference Oil Test RO = Reference Oil Test

Date Completed: 20050829  
Time Completed: 12:50

Runs On Stand	Test Number	Engine	Runs on
797	365	79	6

Code: BL-P0843787-B-2-VIB-01-SR-71

has been conducted in a valid manner in accordance with the Test Method D 6837 and the appropriate amendments through the Information Letter System. The remarks included in the report describe anomalies associated with this test.

Submitted by: Southwest Research Institute (R)  
Testing Laboratory  
*Guy Stubbs*  
Signature  
Guy Stubbs  
Typed Name  
Principal Engineer  
Title



# BestLine Engine Oil Additive Test Results



## Southwest Research Institute Sequence VIB Test Summary - ASTM-D 6837

Purpose of Test: Measure the Effect of Automotive Engine Oil of Fuel Economy

Reference Oil Test Grade GF-4 5W-30  
 Test Oil Grade GF-3 10W-30  
 Test Oil Viscosity New Oil @ 100C 9.07 cSt  
 Aged Oil Viscosity (80 Hrs) @ 100C 10.65 cSt

Test Data	Baseline Configuration (BC) Test Run		BESTLINE Performance Test Run	
	Baseline Test Run	Baseline After-Test	Phase I - 16 Hour Run	Phase II - 96 Hour Run
	GF-4 5W-30 Ref. Oil	GF-4 5W-30 Ref. Oil	GF-3 10W-30 Oil with 10% BestLine Engine Additive	
Test Date: 8-24 to 8-29-05		Note: Engine oil flushed to remove all BestLine treated oil		
Test Run Time:		16 Hours	16 Hours	96 Hours
Fuel Consumed: kg/kWh	1.499583	1.498754	1.479368	1.479441
Fuel Economy % Change:		0.06%	1.34%	1.29%
F.E.I. Severity Adjust %			0.15%	0.22%
Total Fuel Economy %	Improvement:	0.06%	1.49%	1.51%
Pass / Fail Criteria		Note: Efficiency improved after the flying oil flush procedure	1.10%	.08%
Pass / Fail Result:			Pass	Pass

Southwest Research verified a fuel economy improvement with BESTLINE Engine Oil Treatment.

The GF-3 Engine Oil would not pass this test on its own. But it did pass when BestLine Engine Oil Treatment was added to it. Based on these combined test results, American Petroleum Inst. has licensed BestLine to offer an "Energy Conserving" Engine Oil



# BestLine Engine Oil Additive Test Results

Sequence VIII Test Modified ASTM-D 5119 Test  
 Conducted by Intertek Automotive Research  
 San Antonio, TX March 24th, 2006

**Sequence VIII Test Purpose:** To evaluate the lubricants performance in combating Bearing Wear and to measure viscous shear stability

InterTek Test#	Maximum Allowable	BestLine Engine Oil Additive	<b>BESTLINE</b> <i>Advantage:</i>
1-66-1-106	Bearing Weight Loss	8% Solution In GF-3 Oil	
<b>Bearing Weight Loss</b> Top & Bottom Bearing	26.4 mg to Pass	<b>PASS</b> 23.7 mg / 40 run hours Note: 40 hours @ Full Load	★ Recorded an 11% Lower Bearing Weight Loss than the tested Reference Oil  'No Change' in Viscosity Numbers
<b>Viscosity</b>	New Oil Viscosity	Post Test Oil Viscosity	
<b>Centistokes @ 212F</b>	9.76 cSt	9.76 cSt After 40 hours of run time Engine Oil Test Temp 290 <sup>0</sup> F	

### Test Conditions:

- ◆ Single Cylinder test engine is operated for 40 Hours / Full Load at 3150 rpm
- ◆ Engine oil gallery temperature is increased to 290 Deg F through use of an external heater
- ◆ Once test is complete, engine is disassembled for inspection and connecting rods bearings are measured for weight loss and oil viscosity is also measured
- ◆ **Bestline Engine Oil Additive**, equaling 8% of total engine oil is added the 'Off-the-Shelf Group III oil for the Test. The oil manufacturer has made no claim that the oil will pass Sequence VIII testing.



Single Cylinder Test Engine



# BestLine Engine Oil Additive Test Results

Sequence VIII Test

Conducted by Intertek Automotive Research

San Antonio, TX March 24th, 2006

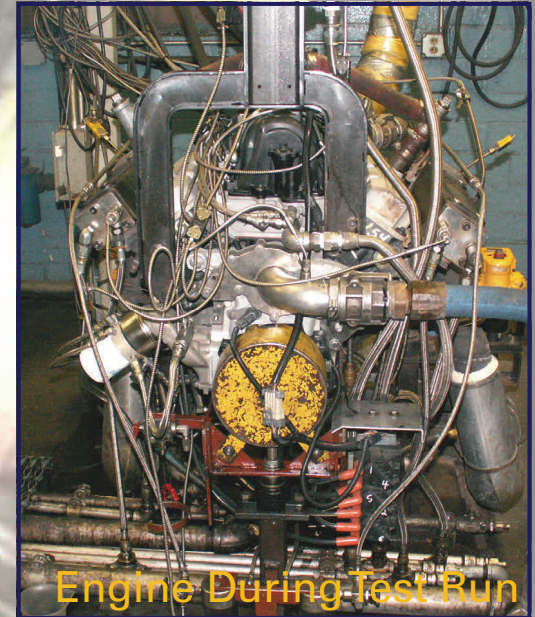
## TEST PHOTOS



Labeco Test Engine



Sequence VIII Test Stand



Engine During Test Run



Main Bearing After Test



Main Bearing Scale Weight



No Sludge / Varnish Build Up



# BestLine Engine Oil Additive Test Results

Evaluation of Sequence L-38 Test Engine ASTM-D5119  
 Performed by Perkin-Elmer EG & G  
 Fluid Science Center, San Antonio, TX

**Test Parameters:** Test Method ASTM 5119-90 Using a Single Cylinder CRC Labeco Test Engine - Four Issues are being considered:

1. Bearing Weight Loss
2. Oil Viscosity Changes
3. Oil Sludge
4. Varnish

**Test Data Notes:**

**Test Time: 53 hours**

**Eng. Oil Temp: 290F**

**Oil Consump: .009 lbs/hr**

Diesel Engine Test Data	Maximum Allowable Bearing Weight Loss	EG & G Reference Test Oil Oil Code: PL-1540-110	BestLine Engine Oil Additive 8% Solution in GF-3 Oil	<b>BESTLINE Advantage:</b>
<b>Bearing Weight Loss</b> Top & Bottom Bearing	<b>39.9 mg to pass</b> <i>Note: Diesel Engine Criteria</i>	27.7 mg / 13.25 run hours	<b>Pass</b> 22.3 mg / 53 run hours <i>Note: 40 hours @ Full Load</i>	<i>44.1% Better than Pass / Fail Criteria            20% Less Bearing Weight Loss than the Tested Reference Oil</i>
<b>Viscosity</b> Centistokes @ 104F Centistokes @ 212F	New Oil Viscosity 102.9 14.13		Post Test Oil Viscosity 102.10 / 40 hours of run time 13.84 / 40 hours of run time	
<b>Varnish:</b>	Highest Score Available		Varnish Scores after 40 Hour run time at Full Load	<i>Very little change in Viscosity Numbers</i>
Piston Skirt Rocker Arm Cover Push Rod Cover Cylinder Wall Oil Pan Crankcase Cover Plate Total Varnish :	10 10 10 10 10 10 60		9.70 9.70 9.80 9.60 9.70 9.80 <b>58.30</b>	
<b>Sludge:</b>			Sludge Scores after 40 Hours run time at Full Load	<i>No varnish build up</i>
Rocker Arms Rocker Arm Cover Push Rod Cover Oil Screen Oil Pan Crankcase Cover Plate Total Sludge:	10 10 10 10 10 10 60		9.80 9.70 9.80 10.00 9.70 9.80 <b>58.80</b>	

*44.1% Better than Pass / Fail Criteria  
 20% Less Bearing Weight Loss than the Tested Reference Oil*

*Very little change in Viscosity Numbers*

*No varnish build up*

*No Sludge build up*



# BestLine Diesel Fuel Additive Test Results

High Frequency Reciprocating Rig Scar Testing ASTM-D 6079  
 Conducted by Intertek - Caleb Brett  
 Los Angeles, CA Sept 8th, 2006



American Petroleum Institute  
 Certified HFRR Test Machine

**Intertek Caleb Brett**

## REPORT OF ANALYSIS

Vessel : LAB BLEND  
 Port/Terminal : BESTLINE INTERNATIONAL  
 Customer Reference : ---  
 Our Reference : 260-0005106  
 Date Sample Taken : ---  
 Date Submitted : 09/08/06  
 Date Tested : 09/08/06  
 Sample Designated As : Ultra Low Sulfur Diesel Fuel – As Is  
 Drawn By : AS SUBMITTED  
 Representing : **ULSD - AS SUBMITTED**  
 Lab Reference : 06-35950

TEST	METHOD	RESULT	UNITS
Lubricity (HFRR) @ 60°C	D 6079	<b>534</b>	Micron

**Standard API Lubricity HFRR  
 Rating for ULSD is 520 Microns**

**ULSD with No Additive Treatment**

**Intertek Caleb Brett**

## REPORT OF ANALYSIS

Vessel : LAB BLEND  
 Port/Terminal : BESTLINE INTERNATIONAL  
 Customer Reference : ---  
 Our Reference : 260-0005106  
 Date Sample Taken : ---  
 Date Submitted : 09/08/06  
 Date Tested : 09/08/06  
 Sample Designated As : Ultra Low Sulfur Diesel w / Bestline Fuel Add  
 Drawn By : AS SUBMITTED  
 Representing : **USLD w/ 1 OZ Fuel Treatment / 10 Gallons**  
 Lab Reference : 06-35951

TEST	METHOD	RESULT	UNITS
Lubricity (HFRR) @ 60°C	D 6079	<b>429</b>	Micron

**Intertek Caleb Brett**

## REPORT OF ANALYSIS

Vessel : LAB BLEND  
 Port/Terminal : BESTLINE INTERNATIONAL  
 Customer Reference : ---  
 Our Reference : 260-0005106  
 Date Sample Taken : ---  
 Date Submitted : 09/08/06  
 Date Tested : 09/08/06  
 Sample Designated As : Ultra Low Sulfur Diesel w / Bestline Fuel Add  
 Drawn By : AS SUBMITTED  
 Representing : **USLD w/ 2 OZ Fuel Treatment / 10 Gallons**  
 Lab Reference : 06-36290

TEST	METHOD	RESULT	UNITS
Lubricity (HFRR) @ 60°C	D 6079	<b>394</b>	Micron

**Intertek Caleb Brett**

## REPORT OF ANALYSIS

Vessel : LAB BLEND  
 Port/Terminal : BESTLINE INTERNATIONAL  
 Customer Reference : ---  
 Our Reference : 260-0005106  
 Date Sample Taken : ---  
 Date Submitted : 09/08/06  
 Date Tested : 09/08/06  
 Sample Designated As : Ultra Low Sulfur Diesel w / Bestline Fuel Add  
 Drawn By : AS SUBMITTED  
 Representing : **USLD w/ 3 OZ Fuel Treatment / 10 Gallons**  
 Lab Reference : 06-36296

TEST	METHOD	RESULT	UNITS
Lubricity (HFRR) @ 60°C	D 6079	<b>354</b>	Micron

**26% Improved Lubricity with BESTLINE Fuel Treatment  
 With a Standard Dose Application**



# E.P.A Renewable Fuel Standards

- RFS was created in 2005 under the Energy Policy Act  
Required 7.5 Billion gallons of Renewable Fuels (Ethanol) be blended into Gasoline.
- Energy Independence & Security Act of 2007 expanded the program to include Diesel Fuels and increased the volume of renewable fuels to be blended from 8 Billion gallons in 2008 to 36 Billion gallons by 2022
- Blending rate can be anywhere from 10% to 15% of Ethanol into fuel

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BestLine applauds the use of renewable fuels. ***However, our chief goal is to help you protect your equipment investment.*** Using today's ULSD Diesel Fuels, engine corrosion due to environmental factors such as water, chemicals and dirt, especially in marine and heavy industrial applications, can be minimized with the use of BestLine's unique blend of patented lubricating oil and fuel additives. In addition, BestLine products boost Cetane, reduce emissions, and reduce your operating costs.

Using **BESTLINE** products in your engine oil and fuel systems guarantees reduced downtime for repairs, better fuel efficiency, and longer engine life – thus protecting both your equipment and your investment.





# BestLine Diesel Engine Products

- Reduce Friction
- Reduce Heat
- Inhibit Water
- Reduce Wear
- Increase Power
- Conserve Energy
- Reduce Corrosion
- Improve Fuel Efficiency
- Extend Engine Life

