

PC-10 Ultra Low Sulfur Test Fuel Task Force

Reviewed with the
ASTM HDEOCP Meeting
February 19, 2003

Task Force Membership

- Pat Fetterman – Infineum, Chairman
- Frank Bondarowicz – International
- Don Burnett – Chevron Phillips Chemical
- Jim Carter – Haltermann
- David Venhaus – Ethyl
- Tom Franklin – PerkinElmer
- Greg Shank – Mack Volvo Powertrain
- Jim Wells – SwRI
- Lew Williams - Lubrizol

Proposed Fuel Task Force Mission Statement

- To develop an ultra low sulfur diesel fuel specification which can be used to define fuels for test engines for bid purchase for Heavy Duty engine oil categories after PC-9. This specification will be sufficiently detailed that fuels purchased against it will produce consistent results with regard to engine deposits, soot generation, wear and exhaust gas composition.

Task Force Status

- A Task Force teleconference was held on Monday, 2/17/03.
- Issues reviewed:
 - Mission statement
 - PC-9 fuel bid specification
 - Possible use as a core for new specification
 - What sulfur level?
 - What cetane number?
 - Need for lubricity?
 - Next steps

PC-10 Test Fuel Task Force
Teleconference 2.17.03
Minutes

CALL TO ORDER: 11:05

MEMBERSHIP REVIEW:

MEMBER	AFFILIATION	PRESENT
Pat Fetterman, Chairman	Infineum	X
Frank Bondarowicz	International	X
Don Burnett	Chevron/Phillips Chemical	X
Dennis Doerr		X
Jim Carter Joel Moreno	Haltermann	X
Tom Cousineau	Ethyl	
Tom Franklin	PerkinElmer	x
Greg Shank	Mack Volvo Powertrain	
Jim Wells	SwRI	X
Lew Williams	Lubrizol	X

SELECT SECRETARY: Tom Franklin “volunteered.”

REVIEW/AGREE MISSION STATEMENT: Accepted as proposed with a motion by Jim Wells, seconded by Joel Moreno.

DISCUSS PC-9 FUEL SPEC. AND HOW IT CAN BE MODIFIED FOR PC-10: Both Chevron/Phillips and Haltermann have produced ULS fuel and will send their specifications to the task force. (Note: these specifications are attached to the minutes) A number of comments were aired and using the Chevron/Phillips PC-9 Fuel Spec as a basis a tentative specification was developed. This is listed below as noted by the secretary, and therefore subject to hearing and understanding limitations!

REVIEW PRESENTATION TO HDEOCP:

The need for lubricity, as pointed out in the presentation was discussed. Frank Bondarowicz indicated that International have a lubricity specification. He suggested ASTM D 6078 as the test with a limit of 3100 grams minimum. He cautioned, however, that European engines with common rail fuel systems, may have more stringent requirements. The task force agreed to go with the 3100 grams as a straw-man. Both fuel suppliers agree that this limit is not a problem. A pending CARB decision on this matter will be reflected as we go forward.

Action: Mark up a new proposed specification and review in another teleconference. Frank Bondarowicz cautioned that going higher on cetane may be a problem, but the refiners expressed comfort with 47-49.

A.O.B. None.

NEXT MEETING: Mid next week for another teleconference. Wednesday, Feb 26th, 11:00 – 12:00 est.

Formerly Diesel PC-9 Test Fuel as altered 2.17.03

(I think!)

Property	Specification	Test Method
Distillation Range, °F		ASTM D 86
10%		
50%		
90%	560 – 630	
Endpoint		
Specific Gravity	0.845 – 0.852 (to be changed)	ASTM D 4052
API Gravity	34.5 – 36 (to be changed)	ASTM D 1298
Corrosion, 3 h at 50 °C	1 max	ASTM D 130
Sulfur, ppm	7 – 15	ASTM D 5453
Flash Point, °F, PM	130 min	ASTM D 93
Pour Point	0 max	ASTM D 97
Cloud Point, °F		ASTM D 2500
Viscosity at 40 °C, cSt	2.0 – 2.6	ASTM D 445
Ash, wt %	0.005 max	ASTM D 482
Carbon Residue on 10% Bottoms	0.35 max	ASTM D 524
Net Heat of Combustion		ASTM D 3338
Water and Sediment, vol %	0.05 max	ASTM D 2709
Total Acid Number	0.05 max	ASTM D 644
Strong Acid Number	0 max	ASTM D 644
Cetane Index		ASTM D 976
Cetane Number	47 – 49(probable)	ASTM D 613
Accelerated Stability, mg/100 mL	1.5 max	ASTM D 2274
Composition, vol %		ASTM D 5186
Aromatics	28 – 33	
Olefins		
Saturates		
Lubricity	3100 g min	ASTM D 6078

Chevron Phillips Chemical Company LP

Specialty Chemicals

Chevron Phillips Chemical Company LP
1301 McKinney Street
Houston, TX 77010
800-858-4327
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Diesel PC-10 Test Fuel (Developmental)

Property	Diesel 2007 Emission Cert. Fuel	Test Method
Specific Gravity, 60/60 °F	0.840 – 0.865	ASTM D 4052
API Gravity	32 – 37	ASTM D 1298
Corrosion, 3 h at 50 °C		ASTM D 130
Sulfur, ppm	7 – 15	ASTM D 5453
Flash Point, °F, PM	130 min	ASTM D 93
Pour Point, °F	0 max	ASTM D 97
Cloud Point, °F	Report	ASTM D 2500
Viscosity at 40 °C, cSt	2.0 – 2.6	ASTM D 445
Carbon, wt %	Report	Chevron Phillips
Hydrogen, wt %	Report	ASTM D 3343
Net Heat of Combustion, Btu/lb	Report	ASTM D 3338
Particulate Matter, mg/L	15 max	ASTM D 2276
Cetane Index	Report	ASTM D 976
Cetane Number	47 - 49	ASTM D 613
SLBOCLE, g	3100 min	ASTM D 6078
Distillation, °F		ASTM D 86
Initial Boiling Point	Report	
5%	Report	
10%	Report	
50%	Report	
90%	560 – 630	
End Point	Report	
Hydrocarbon Type, vol %		ASTM D 1319
Aromatics	27 – 32	
Olefins	Report	
Saturates	Report	
SFC Aromatics, wt %	27 min	ASTM D 5186
Polynuclear Aromatics, wt %	Report	ASTM D 5186

Revised: 02/17/03

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PRODUCT: Haltermann 2007 Certification Diesel

PRODUCT CODE: TR 732

TEST	METHOD	UNITS	SPECIFICATIONS			TYPICALS
			MIN	TARGET	MAX	
Distillation - IBP	ASTM D86	°F	340		400	396
5%		°F				417
10%		°F	400		460	424
20%		°F				433
30%		°F				445
40%		°F				460
50%		°F	470		540	478
60%		°F				496
70%		°F				516
80%		°F				540
90%		°F	560		630	571
95%		°F				595
Distillation - EP			°F	610		690
Recovery		vol %				98.4
Residue		vol %				1.6
Loss		vol %				0.0
Gravity	ASTM D4052	°API	32.0		37.0	33.4
Specific Gravity	ASTM D4052	kg/m ³	0.865		0.840	0.858
Flash Point	ASTM D93	°F	130			180
Viscosity, 40°C	ASTM D445	cSt	2.0		3.2	2.3
Sulfur	ASTM D5453	ppm	7		15	12
Composition, aromatics	ASTM D1319	vol %	27			28.8
Composition, olefins	ASTM D1319	vol %				1.2
Composition, saturates	ASTM D1319	vol %				70
Cetane Number	ASTM D613		40.0		50.0	44.3
Cetane Index	ASTM D976		40.0		50.0	40.2