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1 January 2014

**Committee D2 on Petroleum Products and Lubricants
Subcommittee D02.08 on Volatility**

Research Report: D02-1772

**Study to Show Equivalency for ASTM D5188-14, Standard Test Method
for Vapor-Liquid Ratio Temperature Determination of Fuels
(Evacuated Chamber Method) using Vacuum Pump and Moveable
Piston to Create Vacuum**

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1. Introduction:

A Study was conducted to show the equivalency for the test results using a vacuum pump and moveable piston to create vacuum for the T(V/L) measurement of ASTM D5188 Standard Test Method for Vapor-Liquid Ratio Temperature Determination of Fuels (Evacuated Chamber Method).

2. Test Method:

The Test Method used for this study is D5188-10. To obtain a copy of D5188-10, go to ASTM's website, www.astm.org, or contact ASTM Customer Service by phone at **610-832-9585** (8:30 a.m. - 4:30 p.m. Eastern U.S. Standard Time, Monday through Friday) or by email at service@astm.org.

3. Participating Laboratories:

The following laboratories participated in this interlaboratory study:

Marathon Petroleum Co. Catlettsburg Certification Lab 11631 U.S. Route 23 Catlettsburg, KY 41129 USA Peg Broughton Advanced Chemist Tel: 606/921-6305 E-mail: pbroughton@marathonpetroleum.com	Eralytics GmbH Lohnergasse 3 1210 Vienna, Austria Andreas Schwarzmann Product Manager Tel: +43 1 890 50 335 E-mail: schwarzmann@eralytics.com
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4. Description of Samples:

There were 43 (39 gasoline, 3 pure compounds and 1 blend of two pure compounds) samples of varying targeted results used for this study.

Gasoline Type	Pure compounds	Blend
E0 - summer regular	Pentane	90%IPA / 10% Pentane
E10 - summer regular	Neohexane	
E0 - winter regular	Ethanol	
E10 - winter regular		
E0 - summer premium		
E10 - summer premium		
E0 - winter premium		
E10 - winter premium		
RBOB - summer regular		
RFG - summer regular		
RBOB - winter regular		
RFG - winter regular		
RFG - summer premium		
RFG - winter premium		

5. Study Instructions

The study was conducted in two laboratories where both types of instruments (Evacuated chamber and Piston based instrument) were available to perform test measurements with gasoline samples covering the temperature range as indicated in D5188.

6. Description of Equipment/Apparatus:

2 Grabner Minivol LVR V/L analyzers (Evacuated Chamber)

2 Eralytics Eravap V/L analyzers (piston based instruments)

7. Data Report Forms:

Each laboratory has provided lab generated data in an excel spread-sheet. A copy of the data is provided in Annex A.

8. Statistical Data Summary:

A summary of the statistics calculated from the data returned by the participating laboratories is provided in Annex B (the statistics was provided by Alex Lau).