

Technical Guidance Committee Report

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Denver, CO

Summary of Activity this Period

- Rating Task Force activity:
 - Pre-workshop conference call held April 10, 2019
 - Light Duty Workshop held week of May 6th in San Antonio
 - Working on LED lighting assessment on ratings
- Fuels Task Force very active this period:
 - Mike Lochte of SwRI has taken over chairman position
 - Work continues on refining the fuel specifications
 - Identified alternate procedure for D1319 due to dye unavailability
 - Reviewing Sequence VI and IIIH EEE w/DCA and EEE
 - PC-9HS and PC-10 fuel specs posted to the TMC website

Activity this Period (cont'd)

- The Sequence VI and IIIH Alternate Fuel Supplier Task Forces were formed during this reporting period.
 - The Sequence VI Task force is being led by Adrian Alfonso of Intertek.
 - The Sequence IIIH Task Force is being led by Ankit Chaudhry of Southwest Research.
 - Many conference calls held discussing potential requirements.
 - Stats group has been involved in the discussions.
 - Contemplating full interchangeability of fuel, i.e. multiple suppliers allowable at one time.
 - No final decisions have been made yet.







Rater Task Force Update to TGC

6/24/2019

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What we've been doing.....

-  **Conference call 4/10 (Pre-Workshop Discussion)**
-  **Light Duty Workshop week of 5/6**
-  **Post Workshop Call not held yet (target mid-late summer)**

-  **Next workshop (HD), week of 9/30 in San Antonio**

Spring Workshop update

New format continues to work well

- ▲ 2 sessions, 12 raters in session A (non-yellow from last LD workshop), 16 in session B

Improved Trainer visibility works well

- ▲ 2-3 local, 4 non-local Trainers worked second half

Workshop data available very quickly after workshop

Experienced Rater (rather than TMC) led opening discussion for both sessions

LED booths set up for parallel ratings

- ▲ Data not used for color codes but is very encouraging
- ▲ **Impacted panels please review (III, V, Cat, GMOD)**

CEC Manuals 20/21

 **Rater TF tasked with updating and “owning” them**

 **Will not be “D” number**

- ▲ ASTM Rating Manual 20
 - Information Letter system employed for updates

 **Manual review completed**

- ▲ Awaiting final LED decision before ASTM will reissue

Ongoing Actions

Conversion to LED lights

- ▶ Need input from panels (do we need more data or are we ok)

Continue to review parts availability and workshop protocols to ensure the industry are properly served

Ensure more interaction between rating community and surveillance panels

- ▶ Panel Chairs, please have discussions within your respective panels regarding rating, and raise any particular concerns to our group so they may be addressed either through the workshop or discussions.

Investigate combining LD/HD workshops to better serve standardized testing

- ▶ Test procedures may need modifications
- ▶ Potentially use vacant workshop as training placeholder or field test workshop

Fall HD Workshop

Expect larger-than-normal Fall attendance

- ▲ Many with limited experience
- ▲ Perhaps pull forward signup dates to gauge interest
 - Allow for contingency planning

TGC Fuels Task force Update

Michael Lochte, Chairman

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SCOPE

- The scope of this task force is to create a document including best practices for HD and PC test fuel monitoring, handling, storage, and supply. The task force also needs to establish mechanisms for single and multiple source supply.

OBJECTIVES

- Maintain a data depository for all test fuel data, located in the TMC website. This should include test fuel formulation details (similar to reference oils) and create a procedure to indicate when significant changes occur in a test fuel formulation.
- Develop test fuel monitoring plans, include what to analyze (what are key parameters) and how to determine what properties of the test fuel affect the parameters the lubricant test is evaluating. Define what a “batch” is.
- Establish best practices for test fuel transporting, handling, and storage at the suppliers and laboratories.
- Develop robust back up plans to account for lack of supply, natural disasters, raw material shortages, etc. From original supplier or alternative suppliers.
- Include test fuel as critical parameter and test fuel suppliers as partners at the start of test development. Start out with multiple supply scenarios in new procedures.

OBJECTIVES, cont'd

- Look to reduce the amount of industry test fuels and reduce storage complexity for labs.
- Develop alternative supplier standards for test fuel across lubricant testing procedures. (being handled by surveillance panels, recommend we remove this from the objectives)

Activity since last ASTM TGC meeting....

- Dye used for the D1319 “Standard Test Method for Hydrocarbon Types in Liquid Petroleum Products by Fluorescent Indicator Adsorption” test is no longer available. The D1319 is called out in every test fuel specification, gasoline and diesel. Alternative methods were adopted for PC-9HS, PC-10, Sequence III, and Sequence VI fuel.
- Olefins and Saturates were dropped as a reporting requirement for PC-9HS and PC-10 as there is no ASTM method to measure them.
- Revised PC-9HS and PC-10 fuel specifications were posted to the TMC website and forwarded to the various HD panels for discussion and approval.
- Addressed comments on proposed Sequence III and Sequence VI fuel specifications.
- D5769 “Standard Test Method for Determination of Benzene, Toluene, and Total Aromatics in Finished Gasolines by Gas Chromatography/Mass Spectrometry” will be used to measure aromatics per limits agreed upon for Sequence III and VI fuel.

Current proposed Sequence III fuel spec

Seq. III, IX, and X Lube Cert Gasolines					
TEST	METHOD	UNITS	Seq. III Specs		
			MIN	TARGET	MAX
			1-May-19		
Seq. III, IX, and X Lube Cert Gasolines					
1-May-19					
TEST	METHOD	UNITS	Seq. III Specs		
			MIN	TARGET	MAX
Distillation - IBP	ASTM D86	°C	23.9		35.0
5%		°C			
10%		°C	48.9		57.2
20%		°C			
30%		°C			
40%		°C			
50%		°C	93.3		110.0
60%		°C			
70%		°C			
80%		°C			
90%		°C	151.7		162.8
95%		°C			
Distillation - EP		°C			212.8
Recovery		vol %		Report	
Residue		vol %		Report	
Loss		vol %		Report	
Gravity @ 60°F/60°F	ASTM D4052	API	58.7		61.2
Density @ 15° C	ASTM D4052	kg/l	0.734		0.744
Dry Vapor Pressure Equivalent	ASTM D5181	kPa	60.1		63.4
Carbon	ASTM D3843	wt fraction		Report	
Carbon	ASTM D5231	wt fraction		Report	
Hydrogen	ASTM D5231	wt fraction		Report	
Hydrogen/Carbon ratio	ASTM D5231	mole/mole		Report	
Oxygen*	ASTM D4815	wt %			0.2
Oxygenates Ethanol	ASTM D4815	%		Report	
MTBE		%		Report	
ETBE		%		Report	
Methanol		%		Report	
Sulfur	ASTM D5453	mg/kg	3		15
Benzene	ASTM D3606	vol %			1
Composition, aromatics	ASTM D5769**	vol %	31.0		34.0
C6 aromatics (benzene)	ASTM D5769	vol %			1.0
C7 aromatics (toluene)	ASTM D5769	vol %		Report	
C8 aromatics	ASTM D5769	vol %		Report	
C9 aromatics	ASTM D5769	vol %		Report	
C10+ aromatics	ASTM D5769	vol %		Report	
Composition, olefins	ASTM D6550**	wt%			2.0
Lead*	ASTM D3237	mg/l			2.6
Manganese*	ASTM D3831	g/gal			0.01
Phosphorus*	ASTM D3231	mg/l			1.3
Silicon*	ASTM D5185	mg/kg			4
Particulate matter	ASTM D5452	mg/l			1
Oxidation Stability	ASTM D525	minutes	1000		
Copper Corrosion	ASTM D130				1
Gum content, washed	ASTM D381	mg/100mls			5.0
Gum content, unwashed	ASTM D381	mg/100mls			10.0
Research Octane Number	ASTM D2699		96.0		
Motor Octane Number	ASTM D2700			Report	
R+M/2	D2699/2700			Report	
Sensitivity			7.5		
Net Heating Value, btu/lb	ASTM D9338	btu/lb		Report	
Gross Heating Value, btu/lb	ASTM D240	btu/lb		Report	
Net Heating Value, btu/lb	ASTM D240	btu/lb		Report	
Water and Sediment	ASTM D2709	vol%			0.01
Color **	VISUAL	1.75 ptb		Red	

*no intentional addition of these elements permitted.

** Innospec Oil Red B4 Liquid Dye

Current proposed Sequence VI fuel spec

Seq. VI Labs Certification Fuel					
TEST	METHOD	UNITS	1-May-19		
			Seq. VI Specs		
			MIN	TARGET	MAX
Distillation - IBP	ASTM D86	°C	23.9		35.0
5%		°C			
10%		°C	48.9		57.2
20%		°C			
30%		°C			
40%		°C			
50%		°C	93.3		110.0
60%		°C			
70%		°C			
80%		°C			
90%		°C	151.7		162.8
95%		°C			
Distillation - EP		°C			212.8
Recovery		vol %		Report	
Residue		vol %		Report	
Loss		vol %		Report	
Gravity @ 60°F/60°F	ASTM D4052	°API	58.7		61.2
Density @ 15° C	ASTM D4052	kg/l	0.734		0.744
Dry Vapor Pressure Equivalent	ASTM D5191	kPa	60.1		63.4
Carbon	ASTM D6843	wt fraction		Report	
Carbon	ASTM D5291	wt fraction		Report	
Hydrogen	ASTM D5291	wt fraction		Report	
Hydrogen/Carbon ratio	ASTM D5291	mole/mole		Report	
Oxygen*	ASTM D4815	wt %			0.2
Oxygenates Ethanol	ASTM D4815	%		Report	
MTBE		%		Report	
ETBE		%		Report	
Methanol		%		Report	
Sulfur	ASTM D5453	mg/kg	3		15
Composition, aromatics	ASTM D5769***	vol %	31.0		34.0
C6 aromatics (benzene)	ASTM D5769	vol %			1.00
C7 aromatics (toluene)	ASTM D5769	vol %		Report	
C8 aromatics	ASTM D5769	vol %		Report	
C9 aromatics	ASTM D5769	vol %		Report	
C10+ aromatics	ASTM D5769	vol %		Report	
Composition, olefins	ASTM D6550 ***	wt%			2.0
Lead*	ASTM D3237	mg/l			2.6
Manganese*	ASTM D3831	g/gal			0.01
Phosphorus*	ASTM D3231	mg/l			1.3
Silicon *	ASTM D5185	mg/kg			4
Particulate matter	ASTM D5452	mg/l			1
Oxidation Stability	ASTM D525	minutes	1000		
Copper Corrosion	ASTM D130				1
Gum content, washed	ASTM D381	mg/100mls			5.0
Gum content, unwashed	ASTM D381	mg/100mls	7.0		20.0
Research Octane Number	ASTM D2699		96.0		
Motor Octane Number	ASTM D2100			Report	
R+M/2	D2699/2700			Report	
Sensitivity			7.5		
Net Heating Value, btu/lb	ASTM D3338	btu/lb		Report	
Gross Heating Value, btu/lb	ASTM D240	btu/lb		Report	
Net Heating Value, btu/lb	ASTM D240	btu/lb		Report	
Water and Sediment	ASTM D2703	vol%			0.01
Color **	VISUAL	1.75 ptb		Red	
Top Tier Additive***		63.3 ptb		Report	

* no intentional addition of these elements

** Inospec Oil Red B4 Liquid Dye

*** top tier additive product

**** or use D6839 for everything measured by D5769 and D6550



On the to-do list for TGC fuels task force....

- Discuss D6839 “Standard Test Method for Hydrocarbon Types, Oxygenated Compounds, and Benzene in Spark Ignition Engine Fuels by Gas Chromatography” as an alternative to D5769 and D6550 “Standard Test Method for Determination of Olefin Content of Gasolines by Supercritical-Fluid Chromatography” for the Sequence III and Sequence VI fuel.
- Do final revision of the Sequence III and Sequence VI fuel specs for final vote before submission to the Sequence III, VI, IX, and X surveillance panels.
- Will need to address the KA24E (IVA and IVB) and STDF (diesel IMPC) fuel specifications because of the D1319 issue.

Scope and Objectives

The Technical Guidance Committee is a standing committee under the ASTM Test Monitoring System Executive Committee. The TGC shall consist of the chairmen of the surveillance panels of monitored tests, a representative of each of the test developers/sponsor who are responsible for the test procedures and the Director. The Technical Guidance Committee will advise the Director in technical matters concerning test procedures.

This will involve working with the surveillance panels, test developers, critical parts suppliers, fuel suppliers and testing laboratories across all testing types to improve the repeatability and reproducibility of the test procedures. The TGC will provide guidance for future test developments. Additionally, the TGC chairman will liaise with the ACC PAPTG Chair.

Objectives:

- 1) Develop guidelines for issues that are potentially common to all HD/PC engine, gear and bench testing.
- 2) Work with the Rating Committee to provide guidance for issues related to visual deposit ratings.
- 3) Provide guidance on best practices for critical component identification within test procedures.
- 4) Continue to refine the “Guide for Test Development” document as new categories are developed.