

ASTM D6795 Engine Oil Filterability Test (EOFT) and ASTM D6794 Engine Oil Water Tolerance Test (EOWTT)

Surveillance Panel Meeting

June 5, 2023

Yong-Li McFarland, Chair



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Agenda

- Attendance
- Topic: New EOFT Gelation Test
- Next meeting



Surveillance Panel Membership and Scope

16 members

Beth Schwab, Afton Chemical

Robert Stockwell, Chevron Oronite

Dennis Gaal, Exxonmobil

Ron Shah, Infineum

Joe Franklin, Intertek

Karina Gil, Intertek

Michael Johnscher, ISP

Litchi Xie, Lubrizol Additive (Zhuhai) Co., Ltd.

Victoria Fein, Lubrizol

Jason Bowden, OH Technologies Inc

Greg Miiller, Savant Group

Maggie Smerdon, Savant Labs

Jared Cavaliere, SwRI

Becky Grinfield, SwRI

Yong-Li McFarland*, SwRI

John Loop, TMC

*Chair

Scope and Objective

- It is the responsibility of this panel to provide surveillance over Test Methods D6794 and D6795 bench tests used in the ILSAC and API passenger car oil categories. The surveillance panel will review data semi-annually supporting the precision for each bench test and when necessary, conduct workshops to bring the bench tests within accepted limits. The surveillance panel will function with the support of the ASTM Test Monitoring Center (TMC) in an effort to monitor the bench tests and maintain appropriate and adequate supplies of reference oils for the monitoring process. The panel will maintain a liaison with the “expert groups” in ASTM, which may help in the maintenance and improvement of the bench test methods used in support of the current ILSAC and API categories. The surveillance panel will make recommendations for appropriate action through Subcommittee D02.B, Section 7.



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Topic 1: New EOFT Gelation Test

- Ford request for modified EOFT Gelation Test: request to add a new test filterability test to better screen oils for field issues
- Current status
 - Method: 2 drafts (large volume (600g) and small volume (200 g)) have been proposed ready for group review on ASTM Collaboration Area, WK86363; ILS registered ILS# 1854
 - Oils: 14 total fluids offered with goal to be sent to ASTM TMC by July 3; different viscosity grades and base oils being considered; send 10 gallon per fluid; TMC to send 1 gallon sample per fluid to each lab; **group to decide any duplicate testing after running “reference oil” samples**
 - ILS Labs: 5 labs currently participating, open to additional labs, estimate 6-12 weeks for **28 tests (14 LV + 14 SV)**

Testing Lab Participants

Afton
Intertek
ISP
Savant
SwRI
TMC (monitoring system only)

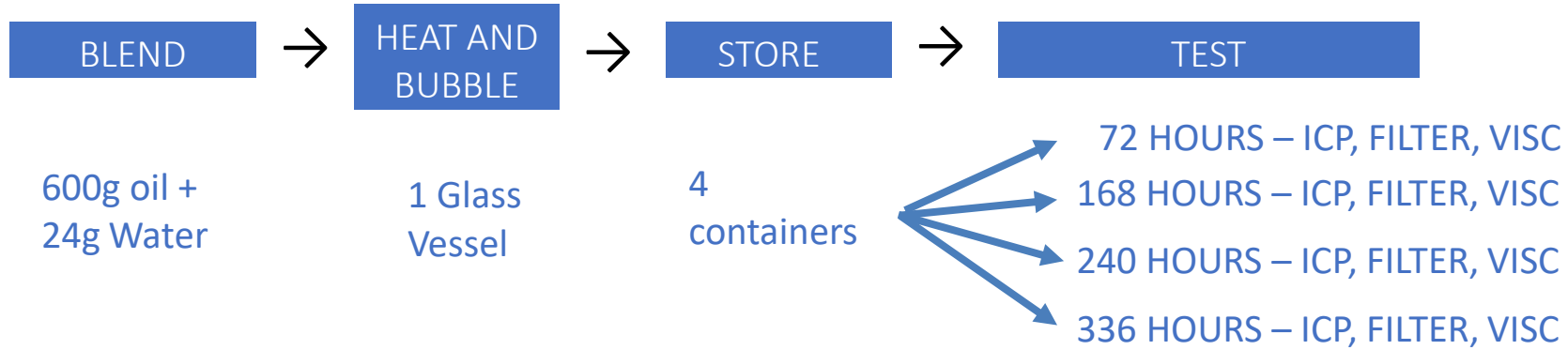


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swri.org

ASTM WK86363 New Filterability Test Plan

Large Volume (LV) Test



Small Volume (SV) Test



Key:
 ICP: D5185 and D5185 S
 VISC: D445 @40C
 Filter: filtration of D6795

New Oil
 Test ICP, VISC, Filter LV (@72 hours, 168 hours, 240 hours, 336 hours), Filter SV (@72 hours, 336 hours)

Zero Hour (LV only)
 Blend 30g oil + 1.2g Water → Test ICP, VISC



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Oil Matrix Table

New EOFT Test WK86363	Oil 1 Example only	Oil 2	Oil 3		
Oil ID	Tech 1 0W-16 / TMC 1011				
SAE Viscosity Grade	0W-16				
Base Oil Group	IIID				
Single Base Oil Slate	Yes				
Additive Available for Reblending	Yes				
Finished Oil Properties				Participant	Fluids
Kv @100°C, cSt	7.34			Toyota	2 fluids (2 vis grades)
Kv @ 40°C, cSt	37.84			Ford	2 fluids
VI, D2270	164			Afton	4 fluids (1 technology, 2 vis grades, 2 base oils)
CCS D5293 at temperature of grade	5380(-35°C)			Lubrizol	4 fluids (2 technologies 2 treat rates, 1 vis grade, 1 base oil)
ICP, D5185 with S				Infineum	4 fluids (2 technologies, 1 vis grade, 1 base oil)
TBN, D2896					
SASH, D874					
Pumping at grade temp, cP (D4684)	19800				
Relative VM Content*	x				
Base Oil Properties					
Base Oil Blend KV @ 100°C	4.218				
Base Oil Blend KV @ 40°C	19.5				
Base Oil Blend VI	122.00				
Base Oil Blend Saturates D2007	98.3				
Base Oil Blend Saturates D7419	pending				
Base Oil Blend Sulfur content D2622	0				

*Anchor the VM level in one blend at X % wt. and report VM level in second blend relative to X. For example X and 0.9X or X and 1.2X.

6-5-23 Notes: Request to have “reference oil samples” run in duplicate before running rest of matrix (Ford to help expedite samples), request to run D5185 in duplicate per interval using 2 aliquots, YM to send ILS volumes Excel to labs to verify sufficient sample amount



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Draft Timeline (realistic)

Task	Date								
	May-Jun 2023	Jul-Aug 2023	Sept-Oct 2023	Nov-Dec 2023	Jan-Feb 2024	Mar-Apr 2024	May-Jun 2024	Jul-Aug 2024	
Develop test procedure and report form (ILS)	█								
Collect and prepare donated oil samples (16 samples)	█	█							
Ship out oil samples to labs			█						
Labs run tests and submit results for ILS				█	█				
Data analysis to generate Research Report (RR) & Precision						█	█		
Ballot test procedure and RR							█	█	
Generate pass/fail limits [Outside this Surveillance Panel]									



Next Steps

- Review and add comments to 2 drafts in Collaboration Area by June 16
- Complete ILS report form (volunteers to review- Beth S, John L)
- Check with stats group on ILS design, data collection- YM to check with Travis on stats group
- Oils donation participants to send oils and Oil Matrix Excel to TMC

Participants		
Method Development	Oil Donations	Testing Labs
Afton	Afton	Afton
ExxonMobil	Ford	Intertek
Ford	Infineum	ISP
Infineum	Lubrizol	Savant
Intertek	TMC (collection, shipping only)	SwRI
ISP	Toyota	TMC (monitoring system only)
Lubrizol		
Oronite		
Savant		
SwRI		
TMC		



Action Items

- Additional testing labs? Let YM know on estimated timing for 28 tests (14 SV + 14 LV)
- All to comment on 2 draft methods by June 16
- YM to work on ILS Report form and Beth and John to review
- YM to contact stats group on ILS design
- YM to discuss with ASTM ILS group
- YM to email out ILS Volumes Excel to lab participants
- Oil Participants to send 10 gallons oil to TMC by July 3
- Edit timeline as needed
- Mike Deegan to let YM know in 1 week (by June 12) on timing for 2 “reference oils”, request 20 gallons up front, and maybe need 1 drum to use as future reference oil.



Other New Business?

- Next meeting to review status: hybrid ASTM D02 Denver Wed June 28 12-1 MDT

