

# ASTM New Engine Oil Gelation Test (EOGT) WK86363 Update

EOFT and EOWTT Surveillance Panel Meeting

April 29, 2024

Yong-Li McFarland, Chair



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# EOFT and EOWTT Surveillance Panel Membership

## 20 members

Beth Schwab, Afton Chemical

Michael Kunselman, Center for Quality Assurance

Robert Stockwell, Chevron Oronite

Quanchang Li, ExxonMobil

Michael Deegan, Ford

Melissa Chu, 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

Sean Alston, SGS North America

Jared Cavaliere, SwRI

Becky Grinfield, SwRI

Yong-Li McFarland\*, SwRI

John Loop, TMC

Amy Ross, Valvoline

\*Chair



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# EOFT D6795 and EOWT D6794 New Item

- ASTM D6795 is up for 5-year review in 2024, ASTM D6794 is up for review in 2025
- Looking for participants for suggested edits and improvements- Maggie, Rachelle, Victoria, John L volunteered
- Let Yong-Li know if can help
- Group will meet in May



# New EOGT WK86363, ILS# 1854

- Ford request for a new Engine Oil Gelation Test (EOGT): 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)) uploaded on ASTM Collaboration Area, email Jared with procedure questions
  - Oils: 11 potential reference oils offered; 17 oils received at TMC
  - Screening Tests, Pilot Study, and ILS: Screening Test completed, start additional Proposal testing
  - Timing: Pilot Study tests run by June, ILS tests to be run by October, and final method ballot in January or February 2025



# Updates 4-29-24

- Root Cause Subgroup update
  - Savant cold soak update
  - how many labs run 2 reference oils together vs separately
  - water differences between Type I, II, and III
  - New shearing tool info from ISP
  - OHT update on filters: filter tolerances for pore size and beta efficiency (if possible from OEM), share about process for 3rd party to cut filters and any quality protocol in process, and potential Certificate of Analysis for filters
- TMC update on labs' response for burette size opening (missing 2 labs response)
- TMC update on labs' response for storage temperature (after blending and bubbling CO2) (missing 4 labs response)
- TMC update on labs' response for part number, vendor, and photo of filter holder to TMC; OHT also offered info on part (missing 4 labs response)
- TMC update on labs' response if homogenization step description is accurate and add details to Data Excel (no changes from any lab)
- Eugene (Afton) to look into FTIR peak in ISP data around 2300 wavenumber to see what peak may be. This peak is related to CO2, and Afton does a correction for CO2 so not seen in Afton IR graphs. Not sure if ISP does a CO2 correction in their FTIR.



## EOGT FISHBONE ACTION ITEMS LIST - Revised 24APRIL2024

Category	Cause	Sub-Cause	Action to Evaluate	Due Date	Status	Date Closed
Method/Environment	Storage Time Temperature/Thermal Cycling	Cold temperature not being considered as a driving parameter	Savant performing "cold soak" on post test retains (repeat storage at 32F), bring to room temperature, then repeat filtration. Want additional tests on performance oils with cold soak: <b>SwRI to run at cold storage -5C and 7C with waring blender with 2 CO2 tubes on 2 performance oils. Savant to consider a second run.</b>	May 10	Savant reported differentiation on change in filter rate after cold soak for the 2 samples (retains from 8% water). <b>One oil had -74% average change in filter rate while the other oil had -13.18% average change in filter rate.</b>	
Method	"Process of method execution" different between labs and initiating lab	Blending process using dispersing tool different between labs (not detailed in procedure)	Review ISP procedure execution video during Task Force Meeting (operators will be present).	April 15	Will share on April 15	4/15/2020
Environment	Differences in storage conditions from initiating lab	Storage temperature possibly differ over time (not in controlled environment)	At ISP, storage location was an office area. ISP will confirm if office area maintains 20-25C, or if temperature is lowered at during off-business hours (night time)	April 12	Heating system may go down to 16C, but unsure if office actually goes to that temp	4/12/2024
Environment	Differences in storage conditions from initiating lab	Storage temperature possibly differ over time (not in controlled environment)	Request participating labs to monitor and report storage temperatures, as well as confirm they are in a controlled environment (set temperature, no fluctuations due to company energy savings)	April 22	YM to ask labs to provide response to TMC	
People/Lab	Labs not running Oil F and K together versus initiating lab. (Oil F run on different day from Oil K)		Angela to review data to check how many labs running 2 reference oils together and separately	Apr ?	Angela to share with this subgroup findings: 3 labs ran samples together, 3 labs started testing on different days - Not a factor	4/24/2024
Equipment	Shearing tool and calibration	Differences in type of shearing tool used and how 18,000 rpm is calibrated may change results	ISP ask to share how rpm is calibrated; <b>Group to review the different blade types used:</b> Afton: IKA T25, IKA S25N-18G (rotor and stator gap: 0.3mm); ISP: IKA T18 now digital T18 , IKA S18N-19G (rotor and stator gap: 0.25 mm); SwRI: IKA S25N-18G; Savant: Waring blender	15-Apr	tool used hasn't been calibrated and uses setting 6 for 18,000 rpm; a new digital version has a connection to "calibrate"; ISP is using new head: <a href="https://www.ika.com/de/Produkte-LabEq/Dispergierer-pg177/T-18-digital-ULTRA-TURRAX-3720000/">https://www.ika.com/de/Produkte-LabEq/Dispergierer-pg177/T-18-digital-ULTRA-TURRAX-3720000/</a> , same blade	
Materials	different water types used		Angela to share differences between Type I, II, III and share links to papers on silica forming more carbonate; <b>Check silica content of DI water from different labs (ISP, Savant, SwRI)</b>	Apr ?	With increasing silica content, may form more carbonate; Type III has most silica (up to 500 microgram/L)	
Materials	filter paper variation	understand batch variability and if any differences in cutting filters	YM to ask OHT to provide 1) tolerances for pore size and beta efficiency from manf, 2) could share with main group their procedure for cutting filter paper and quality protocol to ensure integrity and compliance; 3) C of A possible to be shared	Apr ?	Ask: how is inspection done (microscope or by eye), detail on inspect: what happens to die if there are bent, slugs or debris; assume 13 mm diameter? For 1 batch cutting, what is inspection frequency for batch? How many total parts are inspected and how are they selected for inspection (are they representative of batch)	
Equipment	Filter holder		YM ask labs to share part #, vendor and photo of holder to TMC	Apr ?		
Methods	homogenizing step		YM ask labs to check if homogenization step is accurated described in Data excel			



# Action Items and Next Meeting

- Group to let Yongli know on direction for EOGT
  - Labs to let TMC know on burette size opening (missing 2 labs response) by May 13
  - Labs to let TMC know on storage temperature (after blending and bubbling CO2) (missing 4 labs response) by May 13
  - Labs to let TMC know on part number, vendor, and photo of filter holder; OHT also offered info on part (missing 4 labs response) by May 13
  - Labs to let TMC know if homogenization step description is accurate and add details to Data Excel (no changes from any lab) by May 13
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- Next Meeting: Wed May 22 at 8:30AM CDT



# Thank you for your support!

Participants		
Method Development (11)	Oil Donations (9)	Testing Labs (7)
Afton ExxonMobil Ford Infineum Intertek ISP Lubrizol Oronite Savant SwRI TMC	Afton Ford Infineum Lubrizol OH Technologies (donate filters only) Oronite Subaru TMC (collection, shipping only) Toyota	Afton (Screening, Pilot, and ILS) Intertek (Screening, Pilot, and ILS) ISP (Screening, Pilot, and ILS) Savant (Screening and ILS) SwRI (Screening, Pilot, and ILS) TMC (monitoring system only) Valvoline (Screening and ILS)

