Report of Meeting
ASTM PM-2 Task Force
Automotive Gear Lubricants and Fluids
PRI Headquarters
Warrendale, PA
June 21, 2006

CALL TO ORDER
Mr. Akucewich, Chairman, called the meeting to order at 11:00 am.

AGENDA
Task force reviewed the agenda. No changes were made. The agenda is shown as Attachment 1. The attendance list is shown as Attachment 2.

MEMBERSHIP
Attachment 3 shows the task force membership. Mr. Salvatore Rea of Infineum was added to the membership list. Also the TMC would like to remain on the membership list as a non-voting member.

TASK FORCE SCOPE
The task force scope was reviewed. The scope is shown as Attachment 4.

FEEDBACK TO SAE LETTER
Mr. Sullivan has not received any formal feedback from the presentation of the letter to the SAE TC-3. The feedback he has received was during his presentation. The feedback was positive to our proposal to drop the pitting test requirement from the specification. Thus was the consensus of the task force (TF) to move forward with the specification without a pitting test requirement.

DISCUSSION

Proposed Tests

Next, the TF reviewed each of the proposed tests. The draft list of proposed tests is outlined in Attachment 5. The TF reviewed each of the proposed test and made a few modifications. Below are the results of the discussion:

First Table 1 was reviewed. Changes were made to the tests outlined for the viscometrics and shear stability properties. The group decided to eliminate specifying specific tests for these properties. Rather than have specific tests, the tests required should reference the

SAE J306 testing requirements. This way if SAE J306 is changed, it does not require the future PM-2 standard from being modified.

For Table 2 the TF agreed with the table as presented. The proposed tests for the corrosion (FE), corrosion (non-FE), and oxidation and stability are acceptable. Also it agreed with eliminating any oxidation requirement.

One change was made to the tests outlined in Table 3. The description for the elastomer compatibility was changed to "Seal immersion test using various elastomers". The other tests in Table 3 were left unchanged.

Most of the discussion was centered around the tests outlined in Table 4. For the wear property, the TF decided to use either the L-20 run in and L-37 stand or the D4998 wear test run in an FZG test stand. The decision on which test to use will be made at a future date once reference oils are obtained and some tests can be run.

Scuffing and synchromesh tests selected were discussed in some detail. The tests selected are maintained by the CEC. The TF members were uneasy in letting the CEC govern test which we will be adopting in this specification. More information concerning how these tests are monitored and referenced is needed. The TF is not against using CEC tests but needs more information to understand the differences and the gaps between their monitoring method and ASTM's monitoring methods. The chairman will investigate and obtain additional information on CEC test monitoring for discussion at a future meeting.

Reference Oils

The TF agreed that the next step in the process is to obtained reference oils. These would be 2 to 3 oils which demonstrate a good, borderline and bad levels of performance. With reference oil, the task force could move forward in proposing requirements in the 3 tests outlined in Table 4 of Appendix 5.

ACTION PLAN

The task force agreed to develop an overview of the proposed tests which have been agreed to at this meeting for giving a status report to SAE TC-3. In addition to telling them about the tests selected, the report will indicate that the TF is ready to start setting limits and is now in need of reference oils to continue. The chairman will work with Mr. Sullivan to develop this status report.

ADJOURNMENT

The meeting was adjourned about 10:59 am.

Edward S. Akucewich,
PM-2 Task Force Chairman

ASTM Task Force Meeting

Synchronized Manual Transmission Fluid Specification for Commercial Vehicles

June 21, 2006

Agenda

- Call To Order
- Membership
- Letter to SAE Feedback?
- Discussion
  - Where are We?
  - Where Do We Go Now?
- Develop Action Plan
- Adjourn

Attachment 1
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Reference

PM-2 Task Force Meeting
21-Jun-06
Attendance Record

Name	Address	Telephone	E-Mail Address
Mike Fouts	DANA 3939 Technology Drive Maumee, OH 43537	419-887-3424	mike.fouts@dana.com
Dale Smith	Intertek CARS 100 [illegible] Way Pittsburgh PA 15238	412-826-5051	Dale.Smith@intertek.com
Robert Burrow	Afton Chemical 500 Spring St Richmond, VA 23219	804-788-6362	robert.burrow@aftonchemical.com
Cory Koglin	Same as above ↑	804 788-5305	cory.koglin@aftonchemical.com
Don Bell	Afton (as above)	8047886332	don.bell@aftonchemical.com
Salvatore Rea	Infineum USA LP 1900 E. Linden Ave Linden NJ 07036	(908)474-6602	salvatore.rea@infineum.com
HECTOR DE LAFUENTE	SwRI P.O. 28510 San Antonio 78228-0510	(210)522-5996	Hdelafuente@swri.edu
Don Lind	TMC 6555 Penn Ave Pgh, PA 15206	412-365-1034	dml@astmtmc.cmu.edu
FRANK FARBER	TMC 6555 PENN AVE PGH, PA 15206	412-365-1030	fmf@astmtmc.cmu.edu
CSC			

Attachment 2
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Reference

PM-2 Task Force Meeting
21-Jun-06
Attendance Record

Name	Address	Telephone	E-Mail Address
DTB	Lubrizol 29400 LAKELAND BLVD WICKLIFFE OH 44092	440-347-2388	dtb@lubrizol.com
Jerry Gropp	Lubrizol Corp. 29400 Lakeland Blvd. Wickliffe, OH 44092	440-347-1223	jlg@Lubrizol.com

Attachment 2
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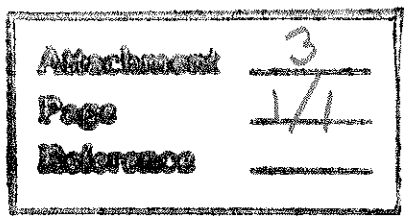
Reference

PM-2 Task Force Membership

- Committed Members
  - Lubrizol
  - Afton Chemical
  - SwRI
  - TMC? - (NON-VOTING)
  - ExxonMobil
  - PARC
  - INFINIUM

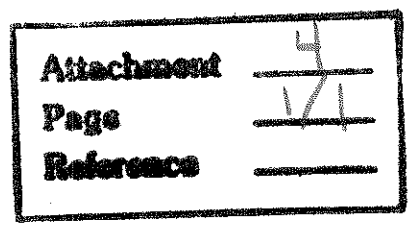


Proposed Specification

Synchronized Manual Transmissions
for
Commercial Vehicles

Scope

To create a specification using standardized tests and methods that will define a minimum acceptable level of performance for lubricants to be used in synchronized commercial vehicle manual transmissions.



Proposed Tests

- Performance Properties Considered
  - Viscometrics
  - Shear stability
  - Corrosion (Fe and non-Fe)
  - Oxidation
  - Elastomer compatibility
  - Foaming tendency
  - Storage and compatibility
  - Wear (abrasive, scuffing, fatigue)
  - Synchromesh performance

TABLE 1

Proposed Tests

Property	Proposed Method	Description	Proposed Requirement
Viscometrics	ASTM D445	Kinematic viscosity	Per SAE viscosity grade as defined by SAE J306
Viscometrics	ASTM D2983	Apparent (dynamic) viscosity	Per SAE viscosity grade as defined by SAE J306
Shear stability	CEC L-45-A-99	20 h laboratory bearing shear test	Stay in grade as per SAE J306

remove specific TESTS & refer to J306 requirements for these properties

Attachment 5
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Reference

TABLE 2

Proposed Tests

Property	Proposed Method	Description	Proposed Requirement
Corrosion (Fe)	ASTM D7038	7-day moisture corrosion test w/axle components	SAE J2360 limits
Corrosion (non-Fe)	ASTM D130	Standard Cu strip test run at 3h/121°C condition	MT-1 limits
Oxidation & Stability	ASTM D5704	L-60-1 bench test using 120 mL oil, Cu cat., and air	MT-1 limits
~~Oxidation~~	~~CEC L-48-A-95~~	~~Glassware bench oxidation test~~	~~TBD~~

Attachment 5
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Reference

TABLE 3

Proposed Tests

Property	Proposed Method	Description	Proposed Requirement
Elastomer compatibility	ASTM D5662	Seal immersion test using ~~FL, PA, NI type~~ VARIOUS elastomers	MT-1 limits, FL and PA Only
Foaming tendency	ASTM D892	Lab glassware test for tendency and stability at RT and 93°C	MT-1 limits
Storage and compatibility	FTM 3440	Compatibility w/other oils meeting same specification	MT-1 limits

Attachment 5
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Reference

TABLE 4

Proposed Tests

Property	Porposed Method	Description	Proposed Requirement
Wear (general)	CRC L-20 or ASTM D4998 ~~or Modified L-37~~	High torque, low speed hypoid axle test – 30 h at 93 – 121°C or FZG Wear Test	No xs wear + no ridging, rippling, scuffing damage
Scuffing	CEC L-084-02	FZG ½ tooth width step load test (A10/16.6R/120)	TBD
~~Pitting~~	~~Work Stopped by CEC~~	~~FZG pitting test (C/8.3/90 LS TBD)~~	~~TBD~~
Synchromesh	CEC L-066-~~01~~ 99	FZG SSP180 durability test w/friction material TBD	TBD

Attachment 5
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Date 21, 2006

Where Do We Go Now?

- Abrasive Wear Test
  - L-20 or ASTM D4998 (FZG based) ~~or Modified L-37~~
- Reference Oils => Need to Determine This
  - Two category oils needed
- Other

Attachment 5
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Reference