

**Report of Meeting
ASTM PM-2 Task Force
Automotive Gear Lubricants and Fluids
PRI Headquarters
Warrendale, PA
May 7, 2008**

CALL TO ORDER

Mr. Akucewich, Chairman, called the meeting to order at 1:55 pm.

AGENDA

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

MEMBERSHIP

The chairman reviewed the task force membership and revalidated the membership list. Company membership did not change, however some of the representatives for the companies did change. Attachment 3 shows the current task force membership.

TASK FORCE SCOPE

The task force scope was reviewed. No changes were made. The scope is shown as Attachment 4.

REVIEW TESTING REQUIREMENT / PROPOSED TESTS

Since it has been a significant amount of time since our last meeting the TF reviewed progress made to date. Attachment 5 shows each of the gear performance requirements needed for the category with the proposed tests and limits. Not all the performance requirements have a test identified or limits. Please review the proposed tests and limits and be ready to discuss them at the next meeting. Below is a review of the areas which need to be defined.

The pitting performance requirement does not have a proposed test or limits. The chairman is not aware of a pitting test in existence that meets ASTM standards. The CEC has restarted work on developing a pitting test but it is not complete. The chairman asked the committee if they know of any pitting tests that may be used in the PM-2 category. Dale Smith of Intertek-Park indicated that he was aware of a test and would forward information on it to the chairman. Attachment 6 contains the information on this test he forwarded. There are pitting tests being used in the industry but they have not been established as an industry standard or demonstrated adequate test repeatability to be used by ASTM. The lack of a developed test will be the biggest obstacle to completion of the

PM-2 category. Developing a test to meet this requirement will be costly and time consuming.

The wear performance requirement needs to be finalized. The TF decided that the wear test would be either the CRC L-20 or ASTM D4998 test procedure. The ASTM D4998 is a well established test procedure. The CRC L-20 test would need to be developed. No testing limits have been determined for this performance category.

The synchromesh durability performance requirement is defined but the limits have not been established. The CEC has a well established test procedure with two sets of standard hardware. The TF could use the standard hardware or utilize a different set of hardware. Developing a new set of hardware would require significant test development activity by the task force.

The scuffing performance requirement also is defined but the limits have not been established. The CEC developed this test and the procedure is well known and run by many labs. The TF would need to define the limits for this test procedure.

REFERENCE OILS

Another area where action is required is to obtain viable reference oils. See Attachment 7. Passing and failing oils for each test are needed for tests which don't already have oils in place. Preferably the passing oil would be able to pass all tests in the category and have appropriate field performance documentation.

DISCUSSION/ ACTION PLAN

The TF discussed what would be the next steps in moving forward with this category. The chairman proposed that the TF issue a letter to the industry asking for input to 1) identify a viable pitting test and 2) obtain reference oils to be used for the category.

Attachment 8 is a draft of a letter to the industry. The TF reviewed the letter and made a few changes. The TF discussed how to complete this and decide to do it before the next meeting. The chairman will work with the TF member it finalize the letter and send it out.

ADJOURNMENT

The meeting was adjourned about 3:00 pm.



Edward S. Akucewich,
PM-2 Task Force Chairman

ASTM Task Force Meeting
*Synchronized Manual Transmission Fluid Specification
for Commercial Vehicles*

May 7, 2008

Agenda

- ☐ Call To Order
- ☐ Review Agenda
- ☐ Membership
- ☐ Task Force Scope
- ☐ Review Requirements / Proposed Tests
- ☐ Reference Oils
- ☐ Discuss Open Issues
- ☐ Develop Action Plan
- ☐ Adjourn

**PM-2 Task Force Meeting
7-May-08
Attendance Record**

NAME	ADDRESS	TELEPHONE
Harold Chambers	Ford, ATN PC MD 214 35500 Plymouth Rd, Livonia MI 48150	313-805-8591
CHRIS PRENGAMAN	29400 LAURELANS BLVD WICKLIFFE OH 44092	440-347-4225
Rick Graziano	29400 Laurelans Blvd Wickliffe, Oh. 44092	440-347-2050
Galen Greene	//	440-347-2394
Gay Kehr	500 Spring St. Richmond VA 23219 23219	804-788-5305
Don Bell	//	804-788-6332
Sam Higuchi	500 Spring St. Richmond, VA 23219	804-788-5375
Thelma Marouge	Eaton Southfield Michigan	248-226-6985
Donna Mosher	EATON Galesburg, MI	269-342-3039
STEVE ELIOT	EXXONMOBIL 18486 LANIER ISLAND SQ. LEESBURG, VA 20176	703-669-9916

**PM-2 Task Force Meeting
7-May-08
Attendance Record**

[illegible]

**ASTM PM-2 Task Force
Automotive Gear Lubricants and Fluids
Membership List
May 7, 2008**

ATTACHMENT 3

1/1

**Edward Akucewich, Chairman
Don Bell
Brian Koehler
Don Lind (non-voting)
Stephen Eliot
Dale Smith
Salvadore Rea
Donna Mosher**

**Lubrizol
Afton Chemical
SwRI
TMC
ExxonMobil
Intertek Parc
Infineum
Eaton**

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.

ATTACHMENT 4

Requirement / Proposed Tests

<u>Gear Performance Requirement</u>	<u>Proposed Test</u>	<u>Description</u>
Wear (High Torque Low Speed Axle)	CRC L-20 or ASTM D4998	Hypoid axle test – 30 hr at 93C or FZG wear test
Corrosion Protection (wet/dry)	ASTM D7038 (L-33) ASTM D130 (non-Fe)	Moisture corrosion test with axle components Standard Cu strip test at 3 hr/121C
Scuffing (High Speed Shock Load)	CEC L-084-02	FZG ½ tooth width step load test (A10/16.6R/120)
Anti-Foaming Performance	ASTM D892	Lab glassware test foaming tendency and stability 93C
Storage and Compatibility	FTM 3440	Compatibility with other oils meeting same specification
Synchromesh Durability	CEC L-066-99	FZG SSP180 durability test with standard materials
Oil Elastomer Compatibility	ASTM D5662	Seal immersion test using FL, PA and NI type elastomers
Shear Stability & Viscosity	ASTM D445 ASTM D2983 CEC L-45-A-99	Kinematic viscosity Apparent (dynamic) viscosity 20hr bearing bench test
Thermal/Oxidative Stability	ASTM D5704 (L-60-1)	Bench test – 120ml/163C/Cu strip/air
Pitting Resistance	TBD	TBD

ATTACHMENT 5

Requirement / Proposed Tests

<u>Gear Performance Requirement</u>	<u>Proposed Test</u>	<u>Requirement</u>
Wear (High Torque Low Speed Axle)	CRC L-20 or ASTM D4998	TBD
Corrosion Protection (wet/dry)	ASTM D7038 (L-33) ASTM D130 (non-Fe)	SAE J2360 limits MT-1 limits
Scuffing (High Speed Shock Load)	CEC L-084-02	TBD
Anti-Foaming Performance	ASTM D892	MT-1 limits
Storage and Compatibility	FTM 3440	MT-1 limits
Synchromesh Durability	CEC L-066-99	TBD
Oil Elastomer Compatibility	ASTM D5662	MT-1 limits
Shear Stability & Viscosity	SAE J306 Requirements	SAE J2360 limits
Thermal/Oxidative Stability	ASTM D5704 (L-60-1)	MT-1 limits
Pitting Resistance	TBD	TBD

ATTACHMENT 5

2/2

May 7, 2008

PRI Headquarters, Warrendale, PA

Akucewich, Edward

From: Dale Smith Intertek [Dale.Smith@intertek.com]
Sent: Friday, May 09, 2008 1:50 PM
To: Akucewich, Edward
Subject: Sprung test information

Hi Ed,

I took a look at my procedures and found the sprung test information. The performance category starts with the stage test ISO 14635-2 (A10/16.6R/90 then with a new gear applies a single stage of 8, 9, or 10 depending on ISO procedure. This turns out to be a FVA information sheet #243 dated 1995 and they call it Research project #243 Scuffing test EP oils S-A10/16.6R/90. I even have some information on a 120C test but limited. This could work.

Dale

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Reference Oils

- ☐ Requires Multiple Oils
- ☐ Two Category oils needed
- ☐ Need pass and fail for each test which don't already have oils in place.
- ☐ Need to ask industry for oils?

Date: 7 May 2008

To: Lubricant Users and Manufacturers

The purpose of this letter is to ask for your help in the development a new category for commercial vehicle synchromesh manual transmissions and transaxles, designated PM-2, currently taking place within the ASTM D02 B3 Gear Oil Classification Panel (GOCP). ASTM D02 B3 established a task force (PM-2) to develop a new lubricant category to replace the current API GL-4 category. The PM-2 task force has been working on developing this new category for the last few years. We have made significant progress in this effort to date.

The PM-2 category consists of the following gear performance requirements (see attachment for proposed tests and limits):

1. High Torque Low Speed Axle
2. Corrosion Protection (wet/dry)
3. High Speed Shock Load
4. Anti-Foaming Performance
5. Storage and Compatibility
6. Synchromesh Durability
7. Oil Elastomer Compatibility
8. Shear Stability & Viscosity
9. Thermal/Oxidative Stability
10. Pitting Resistance

Addressing the above performance requirements, it is felt by the PM-2 task force and GOCP panel that items 1-9 can adequately be satisfied with existing tests.

The PM-2 task force has identified two areas where we could use your guidance and input.

- 1) The first is a request for a standardized test which will fulfill the pitting requirement (item 10 above) of this proposed new category. Pitting resistance poses a problem which could result in a delay in the completion of this new specification. The industry does not have a pitting test which meets the requirements of ASTM. Any input as to a viable test which will meet the pitting test requirement would be greatly appreciated.

- 2) The second area of need is for reference oils to be used in developing the limits for the category. See attachment for testing requirements and current proposed limits. The task force is in need of both passing and failing oils for each test specified. Preferably the passing oil would be able to pass all the tests in the category and have appropriate field performance documentation.

Please consider the two above requests and forward any comments, questions and suggestions to me. Thank you in advance for your attention to this request.

Edward Akucewich, Chairman
PM-2 Task Force
ASTM D02 B3