100 Barr Harbor Drive ■ PO Box C700 ■ West Conshohocken, PA 19428-2959
Telephone: 610-832-9500 ■ Fax: 610-832-9555 ■ e-mail: service@astm.org ■ Website: www.astm.org

Committee D02 on PETROLEUM PRODUCTS AND LUBRICANTS

Chairman: W. JAMES BOVER, ExxonMobil Biomedical Sciences Inc, 1545 Route 22 East, PO Box 971, Annandale, NJ 08801-0971, (908) 730-1048, FAX: 908-730-1197, EMail: wjbover@erenj.com
First Vice Chairman: KENNETH O. HENDERSON, Cannon Instrument Co, PO Box 16, State College, PA 16804, (814) 353-8000, Ext: 0265, FAX: 814-353-8007, EMail: kenohenderson@worldnet.att.net
Second Vice Chairman: SALVATORE J. RAND, 221 Flamingo Drive, Fort Myers, FL 33908, (941) 481-4729, FAX: 941-481-4729
Secretary: MICHAEL A. COLLIER, Petroleum Analyzer Co LP, PO Box 206, Wilmington, IL 60481, (815) 458-0216, FAX: 815-458-0217, EMail: macvarlen@aol.com
Assistant Secretary: JANET L. LANE, ExxonMobil Research and Engineering, 600 Billingsport Rd, PO Box 480, Paulsboro, NJ 08066-0480, (856) 224-3302, FAX: 856-224-3616, EMail: janet_l_lane@email.mobil.com
Staff Manager: DAVID R. BRADLEY, (610) 832-9681, EMail: dbradley@astm.org

Reply To: Tom Schofield
ASTM Test Monitoring Center
6555 Penn Avenue
Pittsburgh, PA 15206
Voice: 412-365-1011
Fax: 412-365-1049
Email: tms@astmtmc.cmu.edu

ASTM Section D02.B0.07
High Temperature Foam Surveillance Panel

Unapproved Minutes of the Test Method D6082 Teleconference "Workshop" Held on March 12, 2003

At the direction of the D02.B0.07 High Temperature Foam Surveillance Panel at the general section meeting of December 9, 2002 (Anaheim) a Test Method D6082 teleconference "workshop" was held to discuss ambiguities in the method and procedural differences between the users of the method. The goal of the teleconference is to improve D6082 reproducibility by improving operational conformity among the users of the method.

The teleconference was held on March 12 and got under way at 2:00 PM EST. An agenda (attached) was circulated by Tom Schofield prior to the teleconference. A list of attendees is also attached.

The teleconference closely followed the agenda. Tom Schofield opened with a roll call followed by a discussion of the results of the recent round-robin on TMC oil 66. The results of the round-robin showed very poor reproducibility (lab-to-lab) but very good repeatability (within labs), which would suggest that the labs had done something different.

The obvious consideration would be whether or not the labs were reading the foam levels the same way, and if they were accurately differentiating the static foam "layer" from the kinetic foam. Lubrizol had supplied a photo for the purpose of our discussion, and there was general agreement as to the interface between the foam layers in the photo. The discussion turned to the fact that the photos are somewhat ideal, and the foam levels aren't always so discernible. The discussions went on to cover the need for adequate supplemental lighting to accurately discern the foam layers, and a suggestion was made for darkening the ambient room lighting so the supplemental bath lighting would be more effective. There seemed to be no confusion over differentiating static foam from kinetic, or reporting (correctly) the level of static foam versus (incorrectly) the total volume in the cylinder (oil, kinetic foam and static foam).

The discussion moved on to the types of baths, where it was noted that three of the four TMC participating labs used air baths, and one lab used a PAO oil bath (so, the use of silicone oil was not a factor).

The discussion turned to how important it was to properly and accurately calibrate the diffusers, clean the diffusers, clean the glassware (scrupulously), vigorously hand-shake the test samples immediately before pouring into the blender and being certain to use the blending "option" A.

George Pearson indicated that flushing the diffuser five times, the minimum set by the test method, was usually inadequate, and there was general agreement that special attention should be made to ensure the diffusers are really clean before re-use. There was some indication that not all labs are specifically following the test method in this regard. Joe Franklin pointed out that the procedure allows for some differences in the diffuser cleaning process, but that the final cleaning sequence is quite specific and inflexible in the method.

Having a good source of clean, dry air, with an acceptable dew point was mentioned, as was making sure the constant temperature air circulating fans in the air baths are working at full efficiency. Stone placement resting at the bottom of the cylinder was also mentioned.

Another consensus was that testing error could easily be introduced as a result of undetected air leaks throughout the air inlet system. Mark Kelley and Ted Selby advocated that the exit air volume be measured with a mass flow air meter to ensure the proper amount of air was coming OUT of the test cylinders, as a confirmation against leaks. There was some disagreement as to the practicality or effectiveness of this proposal. But there was no disagreement that even small leaks in the air system could cause inaccurate results.

Nothing new was introduced in the teleconference that might improve or clarify the test method beyond that which is already spelled out clearly in the procedure or in the annex of recommended practices. The suggestions of the attendees were for all users to review their operations to ensure that the procedure and Annex are exactly followed, particularly for cleaning the glassware and the diffusers. Particular recommendations were a restatement of the Annex X1, but it was agreed that the users should place particular emphasis on the following points:

- Adequate lighting to differentiate the foam layers (and repeat the testing if necessary, rather than guessing).

- Cleaning and calibrating the diffusers EXACTLY as prescribed in the test method.

- Cleanliness of the glassware and apparatus, ensuring that ALL apparatus to come in contact with the test sample is scrupulously clean.

- Vigorously hand shaking the test sample in its original container before pouring into the blender.
- Being certain to perform the option A blending, and ensuring the blender speed is in correct calibration (19,800 – 24,200 rpm unloaded).
- Ensuring the air source meets the specified dew point requirement (-60 deg. C or lower)*.
- Making CERTAIN that there are no air leaks in the input air system.

In conclusion, it was agreed that a second round-robin on severe performing oil TMC 66 is warranted, this will be carried out in the next few weeks with the TMC issuing the testing protocol, shipping the test samples and collecting and interpreting the data. Two modifications were agreed on for the second round-robin. First, that the duplicate runs be run by each lab two or more days apart, rather than at the same time from the same blended test sample (that is, two separate samples of the same oil will be supplied, and each sample will be tested completely independently by each lab, two or more days apart). Secondly, in case of additional discrepancies in the data, the TMC will ask for the unused residual samples to be returned for verification that the samples have been correctly identified by the TMC.

The teleconference concluded about 4:00 PM EST.

Respectfully submitted March 20, 2003,

Tom Schofield

*Supplemental note concerning air source: A subsequent discussion with several teleconference participants disclosed that it would take an extraordinarily sophisticated mechanical lab air system to achieve the REQUIRED minus 60^{o}C or lower dew point specified in the test method. Those labs simply running house air through DRIERITE or silica gel drying columns are unlikely to meet this requirement. To achieve complete compliance with the method, it is likely that the use of a specialized supplemental mechanical air dryer or bottled air would be necessary.

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Attachment

c: ftp://astmtmc.cmu.edu/docs/bench/minutes/HTFOAM_20030312_D6082_Workshop_Minutes.pdf

Distribution: Email (D02.B07 High Temperature Foam Mailing List, Surveillance Panel and Participants)

ASTM D02.B0.07 High Temperature Foam Surveillance Panel

Test Method D6082 Teleconference "Workshop"
Call for Workshop & Agenda
March 12, 2003 2:00 PM Eastern Standard Time

Important attachments: Photo (jpg) of foam levels; TMC Oil 66 round-robin summary; (old) List of recommended practices.

Purpose of "workshop":

1. To try to resolve, via teleconference, any laboratory operational differences that might explain the poor reproducibility found in the August-September 2002 TMC oil 66 round-robin.

2. To facilitate discussion among the users of the method that might clarify any lab-to-lab differences and that might lead to a more uniform conformance between the labs, with particular focus on the reading of foam levels in the graduated cylinder (kinetic versus static foam).

3. To discuss a follow-up round-robin to try to introduce a severe performing oil (with respect to GF-3/GF-4 limits) to the TMC blind calibration monitoring program.

Agenda (the agenda is a loose one, we're hoping the users will facilitate pertinent discussion of significant sources of lab differences in testing results):

1. Introductions.

2. Discussion of the TMC Oil 66 Round-Robin results (Reproducibility versus Repeatability).

3. Discussion of reading foam levels (photo).

4. Discussion of the test method: Significant points that may differ between labs.

5. Discussion of the individual lab practices: Sample homogeneity, cleanliness of apparatus, lighting, bath medium (silicon oil?), etc.

6. Discussion of recommended practices. Are they being followed? Should they be amended?

7. Is an additional (actual meeting) workshop warranted?

8. Follow-up round-robin matrix.

9. Conclusions: Recap of discussion, significant operational differences, new recommendations, next round-robin.

Tom Schofield
ASTM Test Monitoring Center
Voice: 412-365-1011
Email: tms@astmtmc.cmu.edu

TMS/tms
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ASTM D02.B0.07 High Temperature Foam Teleconference Attendees
March 12, 2003

Name	Company	Email	Phone
Elton Collins	ChevronTexaco Global Lubricants	ecol@chevrontexaco.com	510-242-1301
Joe Franklin	PerkinElmer Automotive Research	joe.franklin@perkinelmer.com	210-523-4671
Frank Gotto	The Lubrizol Corporation Chair, D02.B0.07 HT Foam SP	fjg@lubrizol.com	440-347-8087
Becky Grinfield	Southwest Research Institute	bgrinfield@swri.org	210-522-3652
Dave Harris	Ethyl Corporation	Dave_Harris@Ethyl.com	804-788-5275
Kathy Jahn	The Lubrizol Corporation		
Mark Kelley	Castrol NA	mark.kelley@castrolna.com	732-980-3639
Kishore Nadkarni	Chair, DO2.SC6. Foam Task Force	KNadkarni@aol.com	
George Pearson	The Lubrizol Corporation	gop@lubrizol.com	440-347-8131
Todd Pope	PerkinElmer Automotive Research	todd.pope@perkinelmer.com	210-647-9477
Gil Reinhard	PerkinElmer Automotive Research	gil.reinhard@perkinelmer.com	210-523-4674
Juan Salgado	PerkinElmer Automotive Research	juan.salgado@perkinelmer.com	210-647-9477
Tom Schofield	ASTM Test Monitoring Center	tms@astmtmc.cmu.edu	412-365-1011
Ted Selby	Savant, Inc. Chair, D02.B0.07	tselby@savantgroup.com	(989) 496-2301
Rudy Trevino	Southwest Research Institute		