

Oil Seal Compatibility Test (OSCT) Surveillance Panel Meeting Minutes (Revision 1)

05/13/2009

D. Bell

Meeting Attendance:

D. Bell (Afton)	J. Gropp (Lz)
B. Kearney (Afton)	J. D'Harte (AAM)
C. Koglin (Afton)	D. Lind (TMC)
S. Higuchi (Afton)	R. Graziano (Lz)
Bridget (TACOM)	G. Greene (Lz)
T. Marougy (Eaton)	D. Misich (Lz)
J. Keiter (Lz)	J. Mattern (Lz)
B. Koehler (SWRI)	A. Comfort (Army, TACOM)
D. Smith (Parc)	J. Porsche
B. McGlone (ArvinMeritor)	K. Miller (DANA)
B. Grinfield (SWRI)	

The OSCT Surveillance Panel meeting minutes from 2/11/09 and 3/11/09 that are available on the TMC website were unanimously approved (9 approved/0 abstentions and disapprovals).

There are currently multiple baths available at both Lz and SWRI with no known related problems or test severity issues for conducting OSCT via ASTM D5662.

The qualification data from Lz and SWRI for Fluoroelastomer batch FL377 in reference oils 161-1 and 160-1 was reviewed by the OSCT Surveillance Panel. The shore hardness, percent elongation, and % volume change for FL377 were well within the acceptance bands in both reference oils and in good agreement between labs. A motion made by B. Grinfield and 2nd by J. Gropp passed unanimously (9 approved) to approve FL377 effective 5/13/09 for OSCT per ASTM D5662. The elastomer distributor, Test Engineering Institute (TEI), will be alerted that they can release FL377 (~200 slabs) for sale to SWRI and Lz as orders are received.

The next Fluoroelastomer batch, FL378 (~200 slabs), is currently undergoing qualification testing, so an OSCT Surveillance Panel meeting will be called by the chairman when the FL378 data is available for review by the Test Monitoring Center (TMC).

Polyacrylate PA339 (~228 slabs) was approved at the last OSCT meeting and PA340 (>200 slabs) is currently undergoing qualification testing at SWRI and Lz, so an OSCT meeting will be conducted when the data is ready for review by the TMC.

The last two lots of Nitrile (NI333 and NI334, >600 slabs total) were initially rejected because the volume change percentage and percent elongation measured in reference oil 168 were below the acceptance bands. An investigation was undertaken to determine the root cause of the failures. After several discussions with the seal supplier, Freudenberg-NOK, we found that no changes were made to the NI elastomer process, personnel, or equipment. However, we did discover that the last several batches of NI were most likely from only a single lot of base polymer. Therefore, it appears that the current acceptance bands were set too tight and only representative of the variation from one batch of base polymer. Based upon a passing motion from the last OSCT Surveillance Panel meeting, the TMC adjusted reference oil 168 acceptance bands using the standard deviation from the previous discontinued reference oil 162 with data generated from calendar year 2000 onward. Reference oil 162 data set consists of ~138 data points and ~12 lots of NI, which is believed to be representative of at least six different lots of base polymer. Based on this, the new NI acceptance bands are significantly wider and thus the NI-333 and NI-334 data were well within these new limits and thus the OSCT Surveillance Panel approved NI333 and NI334 at the last meeting for OSCT. Lz and Afton are re-testing several mineral oil and synthetic based gear oils that have previously passed the NI elastomer ASTM D5662 test in either NI333 or NI334 to compare the results from these lots versus previous data generated from earlier lots of NI. The data will be reviewed by the Surveillance Panel when available.

Freudenberg wants to transition to a new kneader (blender) for mixing nitrile and polyacrylate elastomers during processing, so they prepared a lot of NI labeled as NI-exp, and shipped 30 slabs of it to TEI. NI-exp were qualification tested at SWRI and Lz and the data was reviewed by the OSCT Surveillance Panel. The NI-exp data in reference oils 161-1 and 168 were well within the acceptance bands and in good agreement between labs. A motion made by B. Grinfield and 2nd by J. Gropp passed (7 approved/0 disapproved/1 abstention) to approve NI-exp results and thus the new kneader effective 5/13/09 for nitrile and polyacrylate processing for subsequent batches FL377 for OSCT per ASTM D5662. Freudenberg will be requested to notify the OSCT chairman when new lots of NI and PA are processed with the new kneader so the lots can be tracked.

The current shelf life for OSCT elastomers is two years. A Freudenberg chief chemist claims that under the current storage conditions of refrigeration in the dark, that elastomers should last forever. The OSCT Surveillance Panel would like to extend the shelf life to five years. A nitrile lot NI329 was found that was manufactured on 11/21/03, thus older than five years. NI329 is undergoing qualification testing at SWRI and Lz, so when the data is complete, the chairman will call an OSCT Surveillance Panel meeting to review the data and determine if the shelf life can be increased to five years.

Lz upgraded to the "Bluehill" version of the OSCT Instron calibration method because Instron warned that previous versions of the software and electronics would not be

supported much longer. SWRI has not yet transitioned to the new version, but both versions are expected to yield the same results, but the “Bluehill” method is more automated and fully supported by Instron. Upon upgrading to “Bluehill”, the ASTM D5662 Annex procedure can no longer be followed step-by-step. A motion made by J. Gropp and 2nd by B. Grinfield passed (6 approved/0 disapproved/2 abstentions) to allow the use of the “Bluehill” calibration method, and that it be included in the Annex of the ASTM D5662 Standard. Although the Annex is far more detailed than any other gear oil ASTM method, the Panel decided it was best to not delete it out of concern for potential increase in variability of elongation results. The TMC will issue an information letter to revise the D5662 Annex. The OSCT Surveillance Panel was satisfied with the “Bluehill” upgrade, so SWRI will notify the chairman when they upgrade to it.

Motion to adjourn was unanimously approved on 5/13/09 at 11:55 am.