



Test Monitoring Center

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MEMORANDUM: 19-051

DATE: October 31, 2019

TO: D02.B0.07 ROBO Mailing List

FROM: Tom Schofield

SUBJECT: ROBO Technical Update – Updated Reference Oil Targets

On October 24, 2019, the ROBO Surveillance Panel approved updating the targets and acceptance bands on reference oil 438-2 based on additional calibration test results. The panel also approved preliminary reference oil targets on reference oil 434-3 based on round robin results. (Oil 434-3 will be phased in to replace 434-2 as that inventory is depleted). These approved changes are effective November 1, 2019.

The LTMS ROBO section 42 will be updated accordingly with the following information (changes/additions in red font):

Table 1
MRV VISCOSITY
Unit of Measure: LN(MRV)

D7528 (ROBO) Aged Oil MRV Acceptance Bands, mPa·s and ln(mPa·s)								
Oil	n	Natural Log Transformed Mean (ln)	Mean in Original Units	s.d. (ln)	95% band in mPa·s Min ¹	95% band in mPa·s Max ¹	95% Bands Min (ln)	95% Bands Max (ln)
434-1	13	10.6599	42,612	0.1672	30,706	59,136	10.3322	10.9876
434-2	36	² 10.9284	² 55,737	0.1551	² 41,126	² 76,008	² 10.6244	² 11.2386
434-3	13	²10.8411	²51,078	0.1342	²39,265	²66,443	²10.5781	²11.1041
435	15	11.4895	97,685	0.2932	³ 60,000	173,546	³ 11.0021	12.0642
435-1	22	11.0416	62,420	0.20295	⁴ 44,570	92,910	⁴ 10.7048	11.4394
438	14	10.2676	28,785	0.2037	19,308	42,912	9.8683	10.6669
438-2	19	²10.5404	²37813	0.2596	²22,734	²62,894	²10.0316	²11.0492

¹ 95% bands in mPa·s are listed for information purposes only, the transformed values will be used to judge acceptance in all cases.

² A bias adjustment has been applied to the means of reference oils 434-2, **434-3** and 438-2 to account for biases observed in the TMC reference data during the periods that each oil target dataset was generated. The 95% confidence range reflects the inclusion of the bias adjustments.

³ The minimum value for Reference oil 435 is fixed at 60,000 (11.0021 in transformed units) and not a true 95% minimum as calculated from the statistics.

⁴The minimum value for reference oil 435-1 is based on -1.66 standard deviations from the target mean (to match the range previously approved for oil 435 min), so is not actually a 95% confidence range. A 95% confidence range would use 1.96 standard deviations from target mean.

It was also agreed that a finding of yield stress >35 Pa on end-of-test oxidized samples for oil 434-3 only does not invalidate a test. A finding of yield stress for all other approved reference oils does operationally invalidate those tests. The LTMS document will be updated accordingly.

TMS/tms

c: <http://www.astmtmc.cmu.edu/ftp/docs/bench/robo/memos/mem19-051.pdf>

Distribution: Email