

Proposal of Equivalence Criteria

43rd TF TA
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JAPAN AUTOMOBILE STANDARDS INTERNATIONALIZATION CENTER

1. Principles regarding equivalence criteria

Equivalent criteria

- The requirements should be appropriate for UNR based on the 1958 Agreement.
- The requirements should be technically reasonable and feasible.
 - Because both test methods contain variability in test results, it is impossible to guarantee the results of one test method based on the results of another.
 - Imposing excessive technical requirements on only one test method will not solve the problem.

Proposal of Equivalence Criteria

- A method that technically mitigates the risk of outliers by using the SRTT abrasion level, which supports the Abrasion Index concept, is appropriate.
- Case 1. Abrasion level of SRTT above 135 mg/km/t :
 - Not acceptable: Match the severity with vehicle test.
- Case 2. Abrasion level of SRTT between 100 and 135 mg/km/t :
 - Abrasion index is corrected to reduce the risk of potential outliers in the higher severity range compared to vehicle test.
- Case 3. Abrasion level of SRTT below 100 mg/km/t :
 - Test centers are required to report test results using two SRTTs simultaneously at different drum positions.
 - SRTT abrasion level results allow TAA to ensure that each testing center is conducting the test properly.
 - Equivalence check by SRTTs are also valid for convoys.

- ✓ At TFTA 41st session, JASIC proposed narrowing the abrasion level range of the SRTT to effectively establish testing under ‘same severity’ conditions as direction for improving the accuracy of the drum test method.
- ✓ Based on this idea, we propose a tentative improvement to the test accuracy of the 83rd GRBP by tightening the upper limit of the reference abrasion level.
- ✓ We propose a candidate upper limit of 135 mg/km/t for SRTT17S and SRTT17W, based on JRC’s recommendation reported in TA-42-3.

Proposed change

2.4.2.3. Test Surface

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The abrasion level of the SRTT17S reference tyre for all types of surface shall be in the range between 45 mg/(km·t) and ~~190~~ **135** mg/(km·t).

The abrasion level of the SRTT17W reference tyre for all types of surface shall be in the range between 35 mg/(km·t) and ~~165~~ **135** mg/(km·t).

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- ✓ The idea is to use the abrasion level of the reference tyre as a basis to correct test results in areas where the severity deviates from vehicle test.
- ✓ Specifically, when the abrasion level of the reference tyre is between 100 mg/km/t and 135 mg/km/t, $0.02x(\text{SRTT Abrasion Level} - 100)$ is added to abrasion index of the drum test results.
 - ✓ The average outliers where the drum test results are smaller than the vehicle test results are between 0.4 (a difference of 0.25 or more) and 0.45 (a difference of 0.3 or more).
 - ✓ The abrasion level of the reference tyre in vehicle test is approximately 100 mg/km/t for the front axle when the average for all four wheels is 75 mg/km/t. A maximum of 100 mg/km/t is expected in vehicle test.

Proposed change (TBD)

In case a drum test is conducted and the abrasion index of the reference tyre is between 100 mg/km/t and 135 mg/km/t, the abrasion index obtained from the test results plus $0.02x(\text{SRTT Abrasion Level} - 100)$ shall be used as the abrasion index.

- ✓ Ensuring test accuracy is crucial to avoid producing outlier test results. It would be beneficial to introduce procedures for verifying test accuracy at each test center.
- ✓ For vehicle test method:
Vehicle test method specifies the permissible abrasion level for reference tyres to test centers, taking into account temperature dependency.
In addition to this, define requirements such as verifying the equivalence of abrasion levels for each vehicle by conducting test with equipping reference tyres on all vehicles in a convoy under conditions which ensuring input of each cycles within tolerance.
- ✓ For drum test method:
Define requirements such as verifying the equivalence of abrasion level across two positions by testing the reference tyre under conditions where the third body flow rate per cycle is maintained within tolerance.
A procedure will be introduced to determine the combination of surface, third body and flow rate at each drum based on the SRTT abrasion level.

The proposed requirement is primarily intended to ensure equivalence for the case below 100 mg/km/t, however, also apply to the case above 100 mg/km/t.

We will prepare proposed change.