

Technical considerations for the limit setting

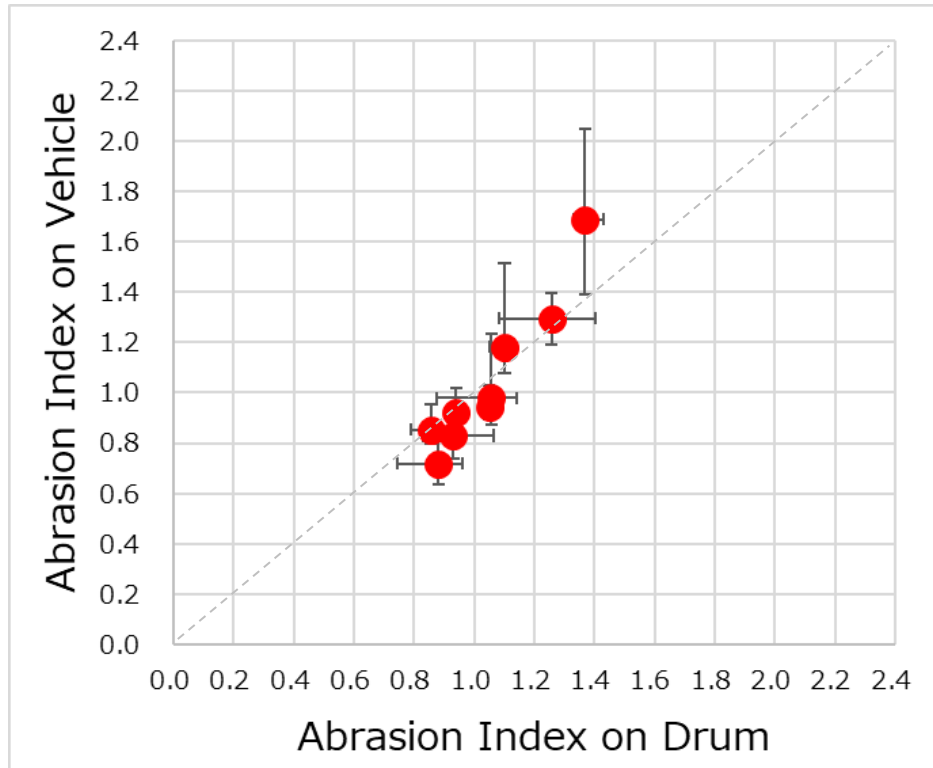
36th TF TA
7th July 2025



JAPAN AUTOMOBILE STANDARDS INTERNATIONALIZATION CENTER

1. Correlation between Drum test method and Vehicle test method

There is a correlation between the indoor drum test method and the vehicle test method. Therefore, limit value should be set simultaneously for both test methods.



● : Average
Error bars : Max. value and Min. value

● Correlation $R^2 = 0.91$

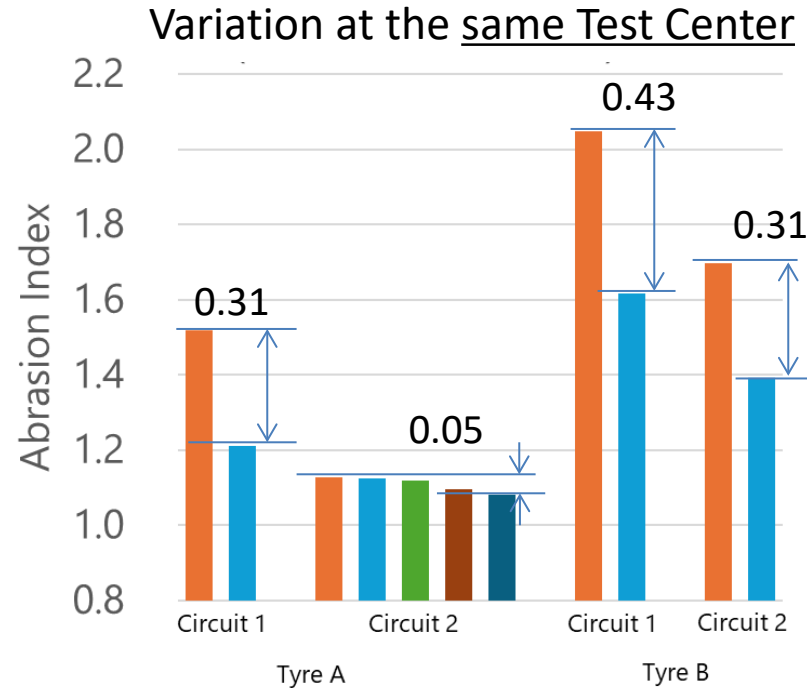
● Variation

	Vehicle	Drum
Standard deviation	0.12	0.08
Coefficient of Variation	11%	8%

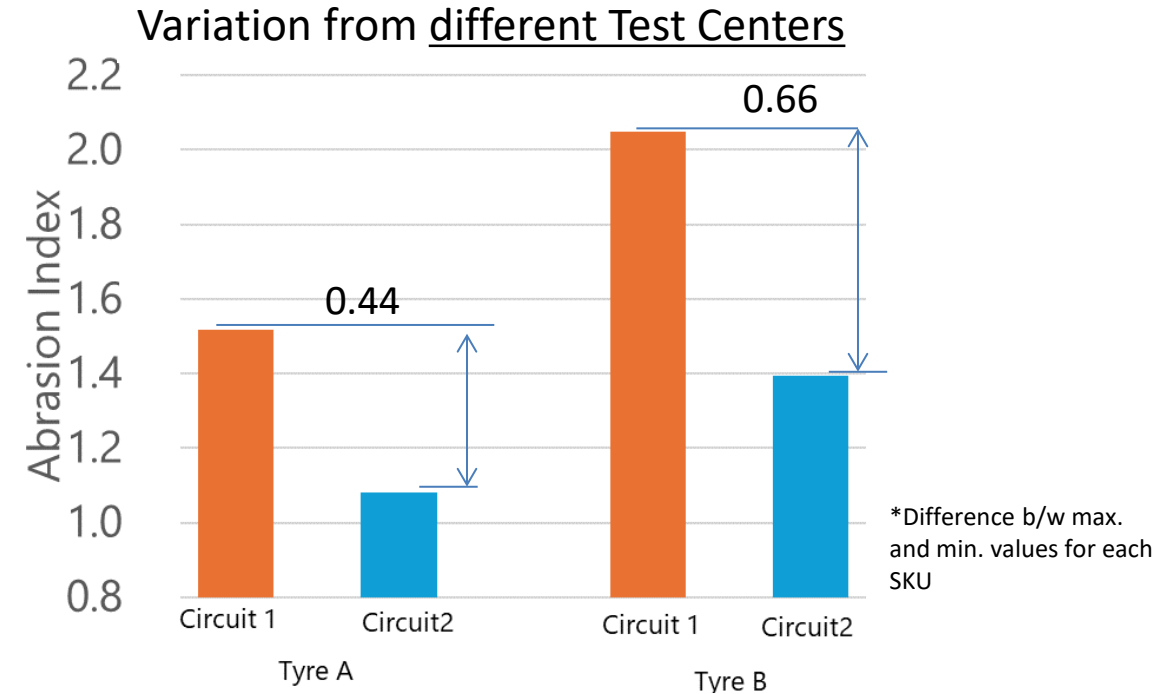
- ✓ Variability has been observed with both test methods.
- ✓ Based on the standard deviation, coefficient of variation, and range of Abrasion Index, the drum test method show slightly less variability and better repeatability compared to the vehicle method.
- ✓ We will continue to explore ways to improve the accuracy of both test methods.

2. COVA test : Variability Analysis of Vehicle method

There has been a tendency to focus too much on the results of the drum test in our discussions so far. Therefore, let's revisit and review the variability observed of the vehicle test method.



- ✓ Result variation of up to 0.43 even in the same TC.
- ✓ The cause of this variability is unknown.



- ✓ Result variation of up to 0.66 between TCs.
- ✓ The cause of this variability is unknown.

- ✓ **Variability in the results of vehicle tests has been observed both within TC and between TCs, and the causes of this variability have not yet been identified.**
- ✓ **To investigate the potential causes, it is necessary to collect and review detailed records of the test conditions used in the vehicle tests (ref. TAPP-22-2)**

Proposed items for providing vehicle test data



In relation to the correlation of test methods, we are analyzing outliers in the market assessment.

Since there are limitations to the analysis based on the indoor drum test, we need information on the test conditions and results for the vehicle test.

Here is the additional information requested.

Item	Rational	Reference
Tyre mass loss (or abrasion rate) for each tyre tested and tyre load on each wheel.	Verify whether there is a large right-left difference in the results or not. Because the right-left discrepancy in load, vehicle alignment, etc. may affect test results.	1.12.2. 1.12.3.
Record of driver rotations. Standard Deviation of acceleration per driver. (if available)	Due to the influence of the driver on tyre abrasion.	1.11.4.
Not only averages, but also the air temperature at each of a minimum 5 measurements per shift recorded during the test.	To verify the effect of temperature change on the tyre abrasion during the test.	1.7.3.2.
Frequency of distances where longitudinal / lateral acceleration exceeds $\pm 5\text{m/s}^2$.	If the percentage of failure is too high, it may affect the tyre abrasion.	1.6.13.3.2.

Proposed items for providing vehicle test data

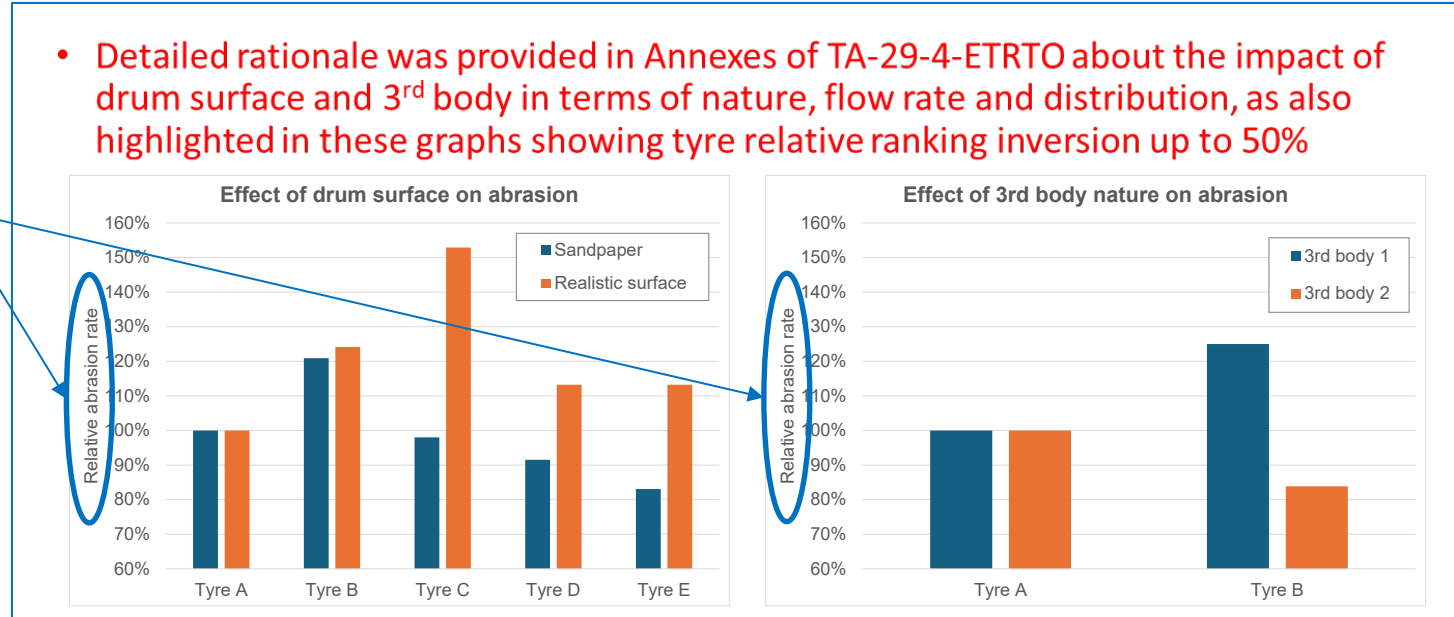
Item	Rational	Reference
Whether any problems occurred with the test vehicle while running. If yes, details of dealing with the problem.	Due to possible effects on abrasion depending on the test vehicle.	1.11.10.
Whether a puncture occurred while running. If yes, details of dealing with it.	Due to the possible effect on abrasion caused by dealing with punctures.	1.11.11.
Amount of change in alignment from the start to the end of the test.	Due to the possible effect on abrasion caused by vehicle alignment.	1.6.1 1.11.5.2 1.12.2 1.12.3

3. Response to ETRTO comments regarding the drum method

- In TA-33-8v1, ETRTO commented that tyre relative ranking inversion of up to 50% can occur, but this is based on the “Relative abrasion rate” calculated by ETRTO, not on the Abrasion Index.

Ref. TA-33-8v1

“Relative abrasion rate”



- ✓ Tyre abrasion is evaluated based on the Abrasion Index; therefore, the proposal to delay the limits setting for the drum test method by nine months on the grounds of a 50% difference in “Relative abrasion rate” is excessive and unacceptable.
- ✓ Since TF TA is in the important phase to discuss abrasion limits. We would like to propose this kind of discussions be held at the TF TA after the September GRBP.

4. Limit setting for test methods

Limit setting

- ✓ Since there is no situation where one test method should be selected from a technical point of view, the limit setting for both methods should be treated equally.
- ✓ The proposal to postpone limit setting for 9 months is inappropriate. Both methods have their respective advantages and disadvantages, it is appropriate to treat both methods equally.

Improvement of Test Method Accuracy

- ✓ To improve the accuracy, flow rate control provisions have been tightened and temperature range have been narrowed which have been incorporated in the working document.
- ✓ To improve the correlation, it is necessary to study both test methods, and detailed data of vehicle method are needed to analyze the variability of the vehicle test results.
- ✓ We would like to continue to study the improvement of the accuracy of both test methods in the mid- to long-term.
- ✓ We are also working on the possibility of short-term accuracy improvement, and we would incorporate any effective improvement into the proposal to the September GRBP.

Allowance for some clusters

- ✓ We prefer +0.1 allowance for 3PMSE, LI<77 and UHP.
- ✓ The above allowance needs to be permanent, not tentatively.

Limit values

- ✓ Since it is difficult to handle different limit values for different test methods, it is better to set the same margin to both methods for Stage 2.
- ✓ Limit values for Stage 1 has been reviewed based on “% of Tyre excluded” in TA-34-5.

Stage1 Normal: 1.30

Stage2 Normal: 1.24

*Here are the limit values for Core limits + Abrasion Margin.