

# Comments on the EC's Annex 4 proposal (TA-43-2 and TA-43-3)

43rd TF TA

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## Comments on the EC's Annex 4 proposal

- Generally, there are differences in the conditions under which circuits and drums are recognized as “Equivalent.” Based on the principle of fairness, comparable requirements shall be applied to both circuits and drums.
- In draft Annex 4, paragraph 2.7 stipulates that circuits providing data for the abrasion limit definition become Equivalent Circuits. Drum test facilities participating in the previous test campaign shall also be defined as Equivalent Drum.

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4.1.2.1 The participating facilities shall be selected according to the type of assessment being performed:↵

(a) ~~Assessment of a Circuit: In addition to the AC, the participating facilities shall include either: ↵~~

~~(i) At least [one] Equivalent Circuit (EC), with any number of additional equivalent circuits or equivalent drums, as long as the number of equivalent circuits is higher than the number of equivalent drums; or ↵~~

~~(ii) At least [three] circuits (regardless of equivalence status), with no participating drums. ↵~~

(b) ~~Assessment of a Drum using a Specific Transfer Function: If the AD intends to determine a specific transfer function coefficient  $\alpha$ , the participating facilities shall include either: ↵~~

~~(i) At least [two] Equivalent Circuits (EC), with any number of additional equivalent circuits or equivalent drums, as long as the number of equivalent circuits is higher than the number of equivalent drums; or ↵~~

~~(ii) At least [three] circuits (regardless of equivalence status), with no participating drums.↵~~

(c) ~~Assessment of a Drum using a Generic Transfer Function: If the AD intends to use a Generic Transfer Function (as defined in paragraph 2.18) the participating facilities shall include either: ↵~~

~~(i) At least [one] Equivalent Circuit (EC), with any number of additional equivalent circuits or equivalent drums, as long as the number of equivalent circuits is higher than the number of equivalent drums; or ↵~~

~~(ii) At least [one] Equivalent Drum (ED), with any number of additional equivalent circuits or equivalent drums, provided that all equivalent drums use the same Generic Transfer Function.↵~~

- Furthermore, several items should be removed to establish feasible criteria that do not create de facto barriers to participation.
  - ✓ Establishing the baseline value using only circuits is inappropriate. It shall be set using both circuits and drums.

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- Furthermore, several items should be removed to establish feasible criteria that do not create de facto barriers to participation.
  - ✓ Applying a transfer function when drum test facilities compare with the baseline value is inappropriate.

~~4.3.3 — Before comparing to the baseline values according to paragraph 4.3.2, the results of a drum facility under assessment shall be adjusted using the transfer function defined in paragraph 2.17. ←~~

~~4.3.4 — Drum facilities under assessment using a generic transfer function shall apply the value of the generic coefficient  $\alpha$ . ←~~

~~4.3.5 — For drum facilities under assessment determining a specific transfer function, the value of the coefficient  $\alpha$  shall be calculated based on the results of the inter-facility equivalence exercise. ←~~

~~— The calculation method is the Least Squares regression on the shifted coordinates. ←~~

~~Let: ←~~

~~$$x^i = \frac{ALI_{drum}}{ALI_{drum}} - 1 \leftarrow$$~~

~~$$y^i = \frac{ALI_{vehicle}}{ALI_{vehicle}} - 1 \leftarrow$$~~

~~The coefficient  $\alpha$  is calculated as: ←~~

~~$$\alpha = \frac{\sum_i (x^i \cdot y^i)}{\sum_i (x^i)^2} \leftarrow$$~~

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- Furthermore, several items should be removed to establish feasible criteria that do not create de facto barriers to participation.
  - ✓ The  $R^2$  requirement of 0.85 is too high. It is anticipated that no testing centre will be able to meet this requirement.

~~(ii) For all exercise tyres, the correlation coefficient ( $R^2$ ) between the results of the facility under assessment and the baselines shall be greater than [0.85]. The correlation coefficient shall be calculated using the Ordinary Least Squares (OLS) method between the candidate facility's results and the baseline values, according to the following formula:~~

—↓

$$R^2 = 1 - \frac{\sum_i \left( \frac{ALCT_{drumTF,i} - ALCT_{vehicle,i}}{ALRT_{drumTF,i} - ALRT_{vehicle,i}} \right)^2}{\sum_i \left( \frac{ALCT_{drumTF,i} - \frac{\sum_j ALCT_{drumTF,j}}{n}}{ALRT_{drumTF,i} - \frac{\sum_j ALRT_{drumTF,j}}{n}} \right)^2}$$

— Where  $i$  is the exercise tyre index and  $n$  the total number of exercise tyres tested

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- Furthermore, several items should be removed to establish feasible criteria that do not create de facto barriers to participation.
  - ✓ It is unnecessary to fix drum equipment such as the surface. If such provisions are necessary, similar provisions shall be applied to the circuit as well.  
(e.g., fixing the vehicles used, prohibiting driver changes)

~~4.3.6 — Indoor drum test facilities that prove equivalence under this procedure for the specific or generic transfer function are recognised for the specific test parameters used during the exercise. ←~~

~~— The following parameters shall be recorded in the equivalence test report and shall remain fixed for all subsequent Type Approval or Conformity of Production testing: (i) The surface texture (e.g., specific sandpaper grit or surface reference); (ii) The third body type and specification; (iii) The third body flow rate [g/km]; (iv) The method of third body distribution (e.g., nozzle type, position, and pulse frequency); (v) the transfer function applied. ←~~

~~Any change to the constructive characteristics (such as the powder distribution system) or significant deviation in the operational parameters shall require a new demonstration of equivalence. ←~~