Procedure for Demonstrating Equivalence of Convoy and Drum Test Facilities for Tyre Abrasion

Overview of proposed Annex 4 to new UN Regulation on Tyre Abrasion

UNECE Task Force on Tyre Abrasion (43rd session). online, 02-02-2026

The Goal – Harmonised Abrasion Testing

- **The Challenge:** The industry utilises two distinct, valuable testing methodologies (On-Road Convoy and Indoor Drum). To ensure fair competition and environmental protection, these methods must yield comparable results.

- **The Solution:** A robust **Equivalence Procedure (Annex 4)** designed to correlate the outputs of different facilities.

- **The Objective:** To create a "Common Currency" for abrasion limits, allowing manufacturers to choose their preferred test method while ensuring the final Type Approval value is mutually recognised.

Establishing a baseline

• **The "Start-up" Phase:** To launch the new UN regulation smoothly, the circuits that generated the data for the limit definitions are designated as the initial **"Equivalent Circuits" (EC)**.

•Additionally, a path to equivalence with three circuits (equivalent or not) is included.

• **Method neutrality:**

- •The new Annex 4 fully supports the inclusion both vehicle and indoor drum methods.
- •The equivalence process ensures that an indoor drum facility’s output is mathematically aligned with the regulatory limits, preserving the drum's advantages (repeatability, cost) while ensuring compliance.

Flexible paths to equivalence demonstration

The Annex offers tailored options to suit different laboratory needs:

- **Path A: The Harmonised Approach (Generic or Common Transfer Function)**

  For: Standard drum facilities using common industry parameters.
  Mechanism: Uses a generic, pre-defined transfer function coefficient (a) or a common shared among the drums (under assessment and equivalent).
  Advantage: Streamlined process requiring comparison against at least **1 Equivalent Facility** (which can be another Drum)

Flexible paths to equivalence demonstration

The Annex offers tailored options to suit different laboratory needs:

- **Path B: The Customised Approach (Specific Transfer Function)**
  For: Drum facilities with unique technologies or specific testing needs
  Mechanism: The facility determines its own specific correlation coefficient ('a').
  Requirement: A robust correlation exercise against **3 Circuits or 2 equivalent circuits** to ensure the specific method is accurately calibrated.

Flexible paths to equivalence demonstration

The Annex offers tailored options to suit different laboratory needs:

- **Path C: New Circuits**

  For: New convoy test tracks wishing to be recognized as valid test facilities.

  Mechanism: Direct comparison against the established baseline.

  Requirement: Must demonstrate equivalence against **at least 1 Equivalent Circuit (EC)** [or 3 non-equivalent circuits].

  Goal: Ensures that new outdoor tracks produce results statistically indistinguishable from the initial ”limit-setting" circuits.

Equivalence criteria

The Correlation Model

Results are aligned using a linear transfer function anchored at the Reference Tyre (ALI=1), ensuring both methods agree on the standard reference.

Quality Assurance

Equivalence is confirmed if the facility achieves a high correlation (R^2 > 0.85) and precise ranking of tyres (within 0.25 of the consensus mean). This confirms that the indoor drum method or circuit accurately reproduces the tire ranking observed on the road.

Maintaining Consistency (Operational stability)

Reproducibility Focus

Once a Drum facility proves its equivalence, the specific parameters used are recorded in the test report, securing the high repeatability of Drum method is maintained over time for Type Approval testing.

Defined Tolerances

Operational parameters are monitored within agreed tolerances (e.g., Flow Rate within 5%) to ensure day-to-day stability without creating unnecessary operational constraints.

Why Annex 4 is the Robust Way Forward

- **Harmonisation:** Enables a single set of abrasion limits to be applied interchangeably for both Vehicle and Drum methods.
- **Technology Neutrality:** The same rigorous equivalence criteria apply to *any* facility (circuit or drum) seeking validation.
- **Future-Proof:** The **Transfer Function** mathematically aligns drum physics with road reality, replacing "correlation" with "equivalence."
- **Flexible Governance:** Allows Type Approval Authorities, Technical Services, or Facilities to coordinate the exercise, adapting to different regional needs.
- **Ready for Implementation:** The timeline fits within the Euro 7 administrative window (testing starts late 2026), ensuring no capacity bottlenecks.

Reminder - the Regulatory reality (Euro 7)

- The inclusion of **both methods** (on-road and indoor drum) is useful to ensure sufficient testing capacity for Euro 7 tyre abrasion approvals.
- However, this requires **robust safeguards**. If the UNECE route fails (no endorsement in GRBP 83), the Commission is legally obliged (Art 15(3) of Regulation 2024/1257) to adopt an EU Delegated Act (outside of WP.29).
- Since the Euro 7 Regulation refers only to the real-world method, this fallback would establish on-road testing only (no drum testing for Euro 7 compliance).

Thank you

This document has not been approved by the Commission and is subject to review and approval by the Commission before it can be considered as representing the official position of the Commission.