

PMP – Particle Measurement Program Informal Working Group Task Force 2– Brake Dust Sampling and Measurement

Meeting #35 – Thursday 08 JULY 2021 15:00 – 16:00 CEST

Minutes of Meeting – Final Version

1. Participants: As in the file *“35th TF2 Meeting Attendance”* uploaded in TEAMS.

2. Background: The purpose of this meeting was to discuss the last details of the TF2 output. A document titled *“PMP Brake Protocol - Testing Specifications”* has been produced and is attached to the MoM. This document will serve as basis for the upcoming InterLaboratory Study (ILS).

3. Discussion: TG briefly presented and discussed the eleven different clauses of the document. A last minute addition in Clause 1 relates to the cases when the final temperature of a section is below 40°C. It was agreed that the subsequent trip shall commence immediately without any intervention to warm the brake. A discussion regarding the definitions of *“Nominal Wheel Load”*, *“Actual Wheel Load”*, and *“Vehicle mass”* followed. The group agreed to calculate the *“Nominal Wheel Load”* without taking into account vehicles’ parasitic losses. TG suggested going through the GTR 15 and using a similar definition for vehicle mass (i.e. mass in running order). JW suggested adding that passenger weight is defined as 75kg. A quick introduction in the new proposal for cooling adjustment followed. TG asked TF2 members to study the method carefully and apply it to potential testing in the near future. Clause 3 discusses the background checks at different levels. TG explained that the application of charcoal (or activated carbon) filters shall be checked for its efficiency at the ILS; however, if this is not the case then the reference to this type of filters will be deleted. A discussion on whether the background check shall take place with dilution followed. MM suggested that no dilution shall be applied as it will minimize the background effect. Clauses 4 and 5 have not been amended compared to the GRPE-81-12. There has been a correction in the positioning of the embedded thermocouple when measuring the pad temperature (i.e. 1.0 mm near the centre of the friction surface on each pad instead of 2.0 mm written in GRPE-81-12). Clause 6 discusses the specifications agreed regarding the bedding procedure. An alternative to the 5 WLTP-Brake Cycles will be tested during the ILS. Clause 7 briefly discusses the enclosure design and the correct positioning of the calliper. A Figure has been added to better demonstrate the requirements and a clarification regarding the proper rotation direction of the disc has been provided. An extensive discussion related to the PN measurement followed. TG provided some clarifications related to the PCRF concept and highlighted the addition of specifications for the measurement of solid particles. There were questions related to the maximum dilution capacity. TG explained that the selection of the diluter shall be done by the labs based on their experience and the reference to 3000:1 is only indicative. What is important is to avoid saturation phenomena for the PN measurement instruments. BA highlighted the need to not modify dilution during emissions testing. A discussion related to the suitability of soot particles for PCRF calibration took place. RV asked for some clarifications related to the flow splitters. Their use shall be done following certain specifications described in the document. Finally, there was a discussion regarding the sampling rate of certain signals in Clause 11. It was agreed to highly recommend but not mandate a sampling rate of 250 Hz for brake torque, pressure, and linear speed.