

**Introduction:**

OICA welcomes the final draft of the PMP technical annex on particulate mass measurement in the light duty Regulation No. 83.05.

OICA has been an active contributor and participant in the PMP meetings and supports in principle the amendments to improve the particulate mass measurement, which includes the following:

- Revised filter material – TX40 replacing the existing T60;
- Deletion of the requirement to use a backup/secondary filter;
- Use of an anti-static mat / charge neutralisation prior to filter weighing;
- Use of reference filters mass change to determine whether filter conditioning is valid (relating to atmospheric conditions in the weighing room).

However, OICA has identified a number of open questions regarding the measurement system described in the revised draft technical annex 4 for Regulation No. 83.05. OICA requests that this paper containing a brief list of the open questions is appended to the draft technical annex and revisited at the conclusion of the Laboratory Verification Study. OICA will also continue to conduct testing and experimentation to provide answers to the questions and will share data with the relevant parties as soon as it is available.

**Open issues:**

1. Heated filter holder and sample line: This was introduced based on the US2007 Heavy Duty particulate measurement protocol. In fact, there are a number of fundamental differences between the light duty set up and that required for US Heavy Duty 2007 which mean that heating the filter holder/sample line may not have the beneficial effect on reducing variability that was anticipated. OICA has seen from their own PM-3 programme that using a heated filter holder, even in conjunction with a very short sampling line does not provide any reduction in test to test variability. OICA requests that further examination of this item is carried out before it is finally agreed to be incorporated in the technical annex as the arrangements are complex and may not provide any actual benefit.
2. Reference filters: OICA supports the use of reference filters with a maximum permitted change as a criterion to determine whether the weighing room conditions are valid during the filter conditioning. However, OICA believes it is necessary to further study the implications of the actual condition, since the criteria were not agreed in the last meeting and believes it may be necessary to amend the requirements when further data is available. To date, OICA data clearly corresponds almost exactly with the Mettler data, showing that an 8% change in relative humidity causes a 23-24 µg change of filter weight. To put this in context, this weight change is within a similar order of magnitude to the mass of particulate collected on the filter medium.
3. Buoyancy correction: This correction factor takes into account further environmental conditions in the weighing room including air pressure, which, since high surface area but low mass objects are being weighed could become more significant when measuring particulates from very low particulate emitting vehicles. The correction factor is specifically permitted within US Heavy Duty 2007, but has not yet been considered whether it is necessary to adopt within the ECE-R83 mass measurement protocol. OICA requests that this item should be examined and adopted if there is evidence/data to support the requirement.

OICA commits to providing data from its Members, as soon as it is available to help clarify these remaining open questions.