

**Proposed Special Condition on CS 25.773(b) - Pilot Compartment View
Applicable to Embraer EMB-545/550**

Introductory note:

The following Special Condition (SC) has been classified as an important SC and as such shall be subject to public consultation, in accordance with EASA Management Board decision 12/2007 dated 11 September 2007, Article 3 (2.) of which states:

"2. Deviations from the applicable airworthiness codes, environmental protection certification specifications and/or acceptable means of compliance with Part 21, as well as important special conditions and equivalent safety findings, shall be submitted to the panel of experts and be subject to a public consultation of at least 3 weeks, except if they have been previously agreed and published in the Official Publication of the Agency. The final decision shall be published in the Official Publication of the Agency."

Statement of issue:

Embraer model EMB-545/-550 aeroplane flight deck design incorporates a hydrophobic coating as a primary means to provide adequate windshield view in the presence of atmospheric precipitation. Reliance on such a coating, in lieu of wipers, constitutes a novel or unusual design feature for which the applicable airworthiness regulations do not contain adequate or appropriate safety standards. Therefore, according to Commission Regulation (EU) No 748/2012, Annex I (Part 21), 21.A.16B(a)1, a special condition is required in order to keep the same level of safety established by the regulations.

CS 25.773(b)(1)(i) requires a means to maintain a sufficiently clear portion of the windshield, for both pilots to have a sufficiently extensive view along the flight path, during precipitation conditions. The regulations require this means to maintain such an area during precipitation in heavy rain at speeds up to $1.5 V_{SR1}$.

Windshield hydrophobic coatings effectiveness to maintain a clear vision area may depend to some degree on airflow. The heavy rain and high speed conditions specified in the current rule do not necessarily represent the limiting condition for this new technology. For example, airflow over the windshield, which may be necessary to remove moisture from the windshield, may not be adequate to maintain a sufficiently clear area of the windshield in low speed flight or during ground operations. Alternatively, airflow over the windshield may be disturbed during such critical times as the approach to land, where the aeroplane is at a higher than normal pitch attitude. In these cases, areas of airflow disturbance or separation on the windshield could cause failure to maintain a clear vision area on the windshield.

Embraer 545 / 550 - Special Condition D-05

- Pilote compartment view – CS 25.773 (b)(1) & CS 25.773 (b)(1)(i)

1. CS 25.773(b)(1) is replaced by the following:

"The aeroplane must have a means to maintain a clear portion of the windshield during precipitation conditions, enough for both pilots to have a sufficiently extensive view along the ground or flight path in normal taxi and flight attitudes of the aeroplane. This means must be designed to function, without continuous attention on the part of the crew, in -"

2. CS 25.773(b)(1)(i) is replaced by the following:

“Conditions from light misting precipitation to heavy rain at speeds from fully stopped in still air, to 1.5 V_{SR1} with lift and drag devices retracted; and”

3. All the reference in the regulation to CS 25.773 (b)(1) & (b)(1)(i) requirements should be intended as amended above.