Proposal for IGPG: Wiper tests – Lab test for approval (Subgroup 2)

Activities for lab tests: Working plan

Setting base parameters for equipment

- basic settings of “ISO 11998” - equipment (reciprocating scrub testing machine)
  - scrub rate: 37 ± 2 scrub cycles/min (back and forth)
  - stroke length: 300 ± 10 mm
  - mass of scrub pad holder (downward force on the sample): 135 ± 1 g
- test sample size: e.g. 150 x 100
- wipe speed: e.g. 15 m/s
- wiper load: e.g. 20 g/cm
- wiper blade type: e.g. CR-type
- reversal point of the wiper have to be on the test sample

Definition of test mixture with artificial dirt

Mixture according ISO 9616, composed by volume:
- 92.5% water (with a hardness of less than 205 mg/l after evaporation);
- 5% aqueous saturated salt (sodium chloride) solution;
- 2.5% dust (type ISO 12103-1 A4)
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Activities for lab tests: Working plan

Definition of wipe conditions

Classification of wipe conditions based on experience

<table>
<thead>
<tr>
<th>basic wipe condition</th>
<th>realistic</th>
<th>frequency of occurrence</th>
<th>severity of condition</th>
</tr>
</thead>
<tbody>
<tr>
<td>dry without dirt</td>
<td>✓</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>wet without dirt</td>
<td>✓</td>
<td>+</td>
<td>0</td>
</tr>
<tr>
<td>wet with dirt</td>
<td>✓</td>
<td>+++</td>
<td>+</td>
</tr>
<tr>
<td>dry with dirt</td>
<td>✓</td>
<td>+</td>
<td>+++</td>
</tr>
</tbody>
</table>

Legend: - not occurring / no effect; o rare / small; + occurring / with effect

List of extreme conditions based on questionnaire

- testing of pre-aged samples
- wiping in cross direction
- wiping at different conditions
Proposal for IGPG: Wiper tests – Lab test for approval  
(Subgroup 2)

Activities for lab tests: Working plan

Development of an equipment description
- Analysis of equipment, equipment check, further optimization of the equipment
- Output to an equipment manufacturer
- Adaptation of the test-equipment

Definition and procedure of tests
- with base conditions
- with extreme conditions
- round robin tests

Analysis of the sample parts and comparison of the results
- base conditions vs. extreme conditions
- round robin tests
- wiper lab tests vs. on-road tests
Proposal for IGPG: Wiper tests – Lab test for approval
(Subgroup 2)

Activities for lab tests: Working plan

Definition of the lab test (equipment and conditions) for approval

Procedure round robin tests according defined lab test
  • Investigation of test reproducibility
  • Investigation of samples made of different materials and with different coatings
  • Definition of criteria/critical values for windshields of plastic glazing

Correlation of test results with wiper lab tests
  • Definition of tests and test conditions
  • Definition of criteria for windshields of plastic glazing

Summary of the results

Proposal to the UNECE, GRSG, IGPG
Proposal for IGPG: Wiper tests – Lab test for approval (Subgroup 2)

Activities for lab tests: Timeline

- **Decision to start the activities**: 10/12
- **Baseline study of currently used test equipment**
- **Definition for initial test (base parameters mixtures, conditions)**
- **Initial tests for equipment check**
- **Definition of the lab test (equipment, conditions)**: 04/13
- **First results of subgroup 1 and subgroup 2**: 06/13
- **Start round robin according defined test**: 08/13
- **Analysis of the samples from tests**: 12/13
- **Correlation of results to on-road tests**: 02/14
- **Proposal to UNECE, GRSG, IGPG**: 04/14
- **Development test equipment with manufacturer**
- **Optimization of test equipment**
- **First round robin (base conditions)**
- **Tests with extreme conditions**
- **Round robin according defined test: different materials, different coatings**
- **Definition of lab test for approval**
- **Analysis of the samples, correlations of results from lab tests and on-road tests**
- **Summary of the results**