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

Meeting on 3rd and 4th September OICA Paris:

Define and agree in the task force a planning of activity to reach the final target of the group:

1. Define principle test setup/test machine
2. Define procedure / test protocol
3. Propose an evaluation methodology
4. Check Repeatability and reproducibility
5. Correlate with Subgroup I - onroad results

Partecipants:
Sabic, Bayer, Evonik, Freeglass, Momentive, Bosch, Renault, PSA, KRD, OICA, (VDA proposal doc.)
Proposal for IGPG: Wiper tests – Lab test for approval
(Subgroup 2)
Activities for lab tests: Timeline

- **10/12**: Decision to start the activities
- **KW48/11**: IGPG pre methodolgy agreement
- **04/13**: Definition of lab test methodology / required equipment
- **04/14**: Proposal to UNECE, GRSG, IGPG
- **06/13**: First results of subgroup 1 and subgroup 2
- **08/13**: Start round robin according defined fine tuned test
- **12/13**: Analysis of the samples from final road test
- **02/14**: Correlation of results to on-road tests
- **04/14**: Proposal to UNECE, GRSG, IGPG

**Timeline Details**

- **02/14**: Analysis of the samples, correlations of results from lab tests and on-road tests
- **04/13**: Review of Defined Methodology data, Repetability (Reproducibility)
- **06/13**: First Fine tuning of developed methodology
- **06/13**: Tests with extreme conditions as testing of pre-aged samples
  - wiping in cross direction
  - wiping at different conditions
- **06/13**: Definition of lab test for approval
- **06/13**: Initial tests for equipment check
- **08/13**: Round robin according defined test: different materials, different coatings
- **08/13**: Test protocol adaptation to Sub1 results
- **08/13**: Development test equipment with manufacturer
- **10/12**: Definition for initial test (base parameters mixtures, conditions)
- **12/13**: Analysis of the samples, correlations of results from lab tests and on-road tests

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**Key Points**

- **Baseline study of currently used test equipment/methodology/evaluation Methodology**
- **Development test equipment with manufacturer**
- **Optimization of test equipment**
- **Test protocol adaptation to Sub1 results**
- **(Round Robin latest methodology)**
- **Analysis of the samples, correlations of results from lab tests and on-road tests**
- **If Necessary**
- **IGPG pre methodology agreement**

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**Activities**

- **Baseline study of currently used test equipment/methodology/evaluation Methodology**
- **Development test equipment with manufacturer**
- **Optimization of test equipment**
- **Test protocol adaptation to Sub1 results**
- **(Round Robin latest methodology)**
- **Analysis of the samples, correlations of results from lab tests and on-road tests**
- **If Necessary**
- **IGPG pre methodology agreement**
Proposal for IGPG: Wiper tests – Lab test for approval
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Activities for lab tests: Timeline Subgroup 2 check vs Subgroup 1

Decision to start the activities
10/12 KW48/11

Review Methodology & Equipment
Definition of the lab test methodology / required equipment parameter / evaluation methodology

Review of Defined Methodology data, Repetability (Reproducibility)

First results of subgroup 1 and subgroup 2
06/13 08/13

Start round robin according defined fine tuned test

Analysis of the samples from final road test
12/13

Correlation of results to on-road tests
02/14

Proposal to UNECE, GRSG, IGPG
04/14

(Subgroup 2)

Decision to start the activities
10/12

Preparation of test cars; start on-road tests at OEMs
02/13

First results of subgroup 1 and subgroup 2
06/13

Analysis of the sample parts
12/13

Correlation of results to wiper lab tests
02/14

Proposal to UNECE, GRSG, IGPG
04/14

(Subgroup 1)
Proposal for IGPG: Wiper tests – Lab test for first equipment allignment (Subgroup 2)

Activities for lab tests: Working plan
Bayer, Evonik, Audi (TBD), Bosch (TBD)

Setting base parameters for equipment

- basic settings of “ISO 11998” - equipment (reciprocating scrub testing machine)
  - scrub rate: $37 \pm 2$ scrub cycles/min (back and forth)
  - stroke length: $300 \pm 10$ mm
  - mass of scrub pad holder (downward force on the sample): $135 \pm 1$ g
- test sample size: e.g. 150 x 100
- wipe speed: e.g. 15 cm/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)

1- Dry condition with dirt A4 1000 – 3000 – 5000 cycle
2- Wet Condition with dirt 5000-25000 cycle Slurry / Basin
BOSCH CR-Type
Check Haze, (Roughness)
Proposal for IGPG: Wiper tests – Data Review
(Subgroup 2)

a. Test methodology- instrument settings and test protocols
   I Range of experimental parameters (velocity, load, slurry flow etc)
   II Adaptability of environmental conditions (heat, humidity, hazards etc.)
   III Experimental results
   IV Post wiper evaluation methods and criteria (interpretation of results)
   V Type of samples tested

b. Test equipment
   I Robust enough to run 24/7/360 with extreme conditions (with dust, dry dirt, mud slurry, temperature, UV radiation etc.)
   II Test parameters (machine capabilities)
   III Automation (robotic) – ability to run the full test sequence and conditions unattended

c. Test repeatability and reproducibility based on operational experience. Provide the details of test equipment and methodology
   I Repeatability and reproducibility
   II Correlation of data with big scale tester (wiper stand)
   III Correlation with field data (fleet vehicle)
   IV Availability of the machine for evaluation at different locations
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 – Resin / Coating (Subgroup 2)

Resin / Coating proposal from Subgroup 2 to be evaluated with Subgroup 1

1. PMMA + Polysiloxane coating

2. PC + Polysiloxane coating (Momentive AS4700 system)

(3. PC + Ploysiloxane coating (KRD) TBD about vehicles availability)

4. Glass
   - LT> 75%
   - Thermoformed
   - Coating applied manually (with measurement of initial haze, Coating Thickness, coating quality check)
   - Colour
   - Sample thickness
Proposal for IGPG: Meeting W48/2012 (Subgroup 2)

EVONIK proposed to host the meeting in W48 in Darmstadt