Proposal for IGPG: Wiper tests – On-road tests (Subgroup 1)

On-road tests PC windshields with AS4700: safeguarding BMW 3er

- BMW 3er
- duration: approx. 2 month
- mileage: approx. 10,000 km
- wiper cycles: not known

Red Marked Areas on the windshield with visible deterioration
Proposal for IGPG: Wiper tests – On-road tests (Subgroup 1)

On-road tests PC windshields with AS4700: safeguarding BMW 3er

Deterioration of sample 1a: double wiped area
Proposal for IGPG: Wiper tests – On-road tests (Subgroup 1)

On-road tests PC windshields with AS4700: safeguarding BMW 3er

Deterioration of sample 1c:
- by wiper
- stone impacts visible
Proposal for IGPG: Wiper tests – On-road tests (Subgroup 1)

On-road tests PC windshields with AS4700: safeguarding BMW 3er

Detrioration of sample 1f: mostly by stone impacts
Proposal for IGPG: Wiper tests – On-road tests (Subgroup 1)

On-road tests PC windshields with AS4700: safeguarding BMW 3er

Detrioration of sample 1f: mostly by stone impacts
Proposal for IGPG: Wiper tests – On-road tests (Subgroup 1)

On-road tests PC windshields with AS4700: test car Golf 6

- VW Golf 6
- test car (development pool-car)
- duration: approx. 3 month
- mileage: approx. 10,000 km
- wiper cycles: approx. 52000

Red Marked Areas on the windshield with visible deterioration
Proposal for IGPG: Wiper tests – On-road tests (Subgroup 1)

On-road tests PC windshields with AS4700: test car Golf 6

Deterioration of sample 3c: by wiper
Proposal for IGPG: Wiper tests – On-road tests (Subgroup 1)

On-road tests PC windshields with AS4700: test car Golf 6

Detrioration of sample 3e: mostly by stone impacts
Proposal for IGPG: Wiper tests – On-road tests (Subgroup 1)

Current on-road tests: PC windshields in test cars

Windshield: PC with AS4700

- BMW 3er
- wiper approval equipment
- 1,5 Mio cycles (without sand): no visible deterioration
- 100 cycles with sand manual distribution on the windshield
Proposal for IGPG: Wiper tests – On-road tests (Subgroup 1)

Comparison wiper test and on-road test: similar deterioration

Samples from wiper test

Samples of the windshield from on-road test

Samples of the windshield from wiper test

AS4700: 10000 cycles
Proposal for IGPG: Wiper tests – On-road tests (Subgroup 1)

Activities for on-road tests: Working plan

Analysis of parts from serial windshields

• Investigation of the samples cutted out of the windshields by Haze measurements and StrayLizer (if equipment is required)
• Correlation of test results from StrayLizer and Haze measurements and also with subjective rating

Status: Investigation is planned

Analysis of the sample parts from on-road tests

• Investigation of the samples cutted out of the windshields by Haze measurements and StrayLizer (if equipment is required)
  additional investigations of the parts currently mounted in the car (Porsche backlite, windshield Golf 6)
• Correlation of test results from StrayLizer and Haze measurements and also with subjective rating

Status: Investigation in progress

Correlation of test results with wiper lab tests

• Definition of tests and test conditions
• Definition of criteria for windshields of plastic glazing
Proposal for IGPG: Wiper tests – On-road tests (Subgroup 1)

Current on-road tests: PC glazing in test cars

Backlite: PC with AS4700

- Porsche Cayman
- test car (development pool-car)
- duration: approx. 12 month
- mileage: currently not known
- wiper cycles: currently not known

- status: test in progress
Proposal for IGPG: Wiper tests – On-road tests (Subgroup 1)

Activities for on-road tests: Working plan

Recording parameters for on-road tests with VW Golf 6

<table>
<thead>
<tr>
<th>Fahrtenbuch für Golf  WOB - DJ 557</th>
<th>Fahrzeug mit Polycarbonat-Frontscheibe</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fahrer</td>
<td></td>
</tr>
<tr>
<td>Telefon</td>
<td></td>
</tr>
<tr>
<td>Datum</td>
<td></td>
</tr>
<tr>
<td>Uhrzeit</td>
<td>Beginn</td>
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<td></td>
<td>Ende</td>
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<tr>
<td></td>
<td>reine Fahrzeit (ca.)</td>
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<tr>
<td>Kilometer</td>
<td>Anfang</td>
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<td>Streusalz</td>
</tr>
<tr>
<td></td>
<td>Spezial: Schmutz</td>
</tr>
<tr>
<td></td>
<td>Spezial: Sand</td>
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<tr>
<td>Bemerkungen</td>
<td>(siehe auch Blätter im Anhang)</td>
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</table>
Investigation of serial windshields (laminated glass)

Data base for on-road tests

Windshield: laminated safety glass
- VW-Group, different cars
- serial cars in daily use
- duration: different
- mileage: approx. 200000 – 400000 km
- wiper cycles: not known

results: measurements with StrayLizer from Fa. Schwahn Systems
results of the points the test field: see table
value in the wiped area: 2,6

deterioration of the windshield depends different influences:
stone impact, wiper, ice scratcher

correlation between subjective rating and measurements with StrayLizer
Proposal for IGPG: Wiper tests – On-road tests (Subgroup 1)

Investigation of serial windshields (laminated glass)

Data base for on-road tests
Windshield: laminated safety glass

<table>
<thead>
<tr>
<th>car</th>
<th>initial registration</th>
<th>mileage</th>
<th>StrayLizer average value (test field)</th>
<th>StrayLizer maximum value</th>
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</thead>
<tbody>
<tr>
<td>VW Golf 4</td>
<td>Jul 98</td>
<td>97600</td>
<td>0,96</td>
<td>1,8</td>
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<tr>
<td>AUDI A4 (B5)</td>
<td>Dez 95</td>
<td>310000</td>
<td>1,43</td>
<td>1,9</td>
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<tr>
<td>AUDI A6 (C4)</td>
<td>Mrz 92</td>
<td>316000</td>
<td>0,67</td>
<td>1,2</td>
</tr>
<tr>
<td>VW Sharan</td>
<td>Okt 96</td>
<td>285000*</td>
<td>0,43</td>
<td>0,7</td>
</tr>
<tr>
<td>VW Golf 2</td>
<td>Mai 89</td>
<td>235000</td>
<td>0,26</td>
<td>0,7</td>
</tr>
</tbody>
</table>

* not original windshield

Dr. A. Matthai, I/EK-P3; R. Meyer, EGNM/O, 18.06.2013
Proposal for IGPG: Wiper tests – On-road tests (Subgroup 1)

Data base for on-road tests

Backlite: tempered safety glass

- VW-Group, different cars
- serial cars in daily use
- duration: different
- mileage: approx. 100000 – 400000 km
- wiper cycles: not known

- results: measurements with StrayLizer from Fa. Schwahn Systems
  value of one measurement: 2,6

  deterioration of the backlite influences by ice scatching
Proposal for IGPG: Wiper tests – On-road tests (Subgroup 1)

Activities for on-road tests: Timeline

- **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

**Tasks and Activities**:

- **Definition of sample parts and test cars, Input also from subgroup 2**
- **Test of plastic windscreens in cars**
- **Tests and investigation of glass windscreens for comparison with plastic glazing**
- **Definition of test conditions, test methods and approvals, Input also from subgroup 2**
- **Analysis of sample parts with defined test methods**
- **Correlation with wiper lab tests**
- **Summary of the results**