

# 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
  - ▶ safeguarding test car
  - ▶ duration: approx. 2 month
  - ▶ mileage: in analysis
  - ▶ wiper cycles: in analysis
  - ▶ status: windshield removed from car investigations in progress
- ▶ VW Golf 6
  - ▶ test car (development pool-car)
  - ▶ duration: approx. 3 month
  - ▶ mileage: approx. 10000 km
  - ▶ wiper cycles: approx. 52000
  - ▶ status: windshield removed from car investigations in progress
- ▶ VW Golf 6
  - ▶ test car (development pool-car)
  - ▶ duration: just started
  - ▶ mileage: currently 1500 km
  - ▶ wiper cycles: approx. 200
  - ▶ status: on-road test in progress



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## Activities for on-road tests: Working plan

### Recording parameters for on-road tests with VW Golf 6

| Fahrtenbuch für Golf WOB - DJ 557 |   | Fahrzeug mit Polycarbonat-Frontscheibe |  |  |  |  |  |
|-----------------------------------|---|--|--|--|--|--|--|
| <b>Fahrer</b>                     |   |  |  |  |  |  |  |
| <b>Telefon</b>                    |   |  |  |  |  |  |  |
| <b>Datum</b>                      |   |  |  |  |  |  |  |
| <b>Uhrzeit</b>                    | Beginn  |  |  |  |  |  |  |
|                                   | Ende  |  |  |  |  |  |  |
|                                   | reine Fahrzeit (ca.)                            |  |  |  |  |  |  |
| <b>Kilometer</b>                  | Anfang  |  |  |  |  |  |  |
|                                   | Ende  |  |  |  |  |  |  |
|                                   | Gesamt  |  |  |  |  |  |  |
| <b>Fahrstrecke</b>                | Stadt   |  |  |  |  |  |  |
|                                   | Land  |  |  |  |  |  |  |
|                                   | Autobahn  |  |  |  |  |  |  |
| <b>Belastung</b>                  | Wischzyklen                                     |  |  |  |  |  |  |
|                                   | Wasch-Zyklen                                    |  |  |  |  |  |  |
|                                   | Fahrzeugwäsche                                  |  |  |  |  |  |  |
|                                   | Eis-Kratzen                                     |  |  |  |  |  |  |
|                                   | Streusalz                                       |  |  |  |  |  |  |
|                                   | Spezial: Schmutz                                |  |  |  |  |  |  |
|                                   | Spezial: Sand<br>(siehe auch Blätter im Anhang) |  |  |  |  |  |  |
| <b>Bemerkungen</b>                |   |  |  |  |  |  |  |



# 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)

## 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**



Test field for 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



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

\* not original windshield



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

## Data base for on-road tests

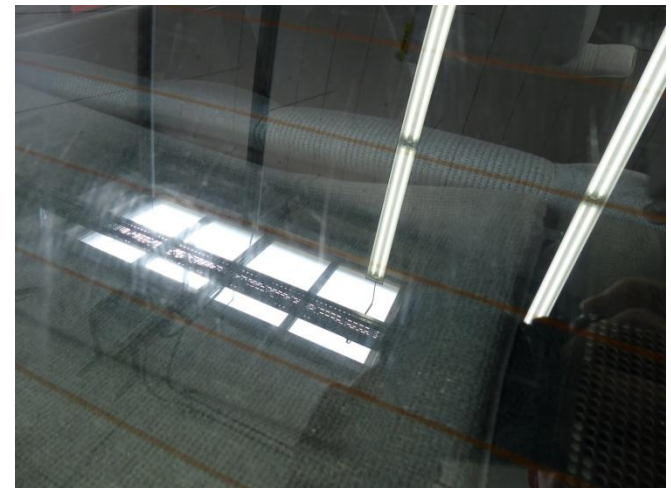
### Backlite: tempered safety glass

- ▶ 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 scratching



Backlite for measurements with StrayLizer



Backlite with Deterioration by ice scratcher



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

## Activities for on-road tests: Working plan

### Definition of the test methods

- ▶ Haze measurements
- ▶ additional test for the whole part:  
backlight measurements with StrayLizer from Fa. Schwahn Systems  
**Further development of the method is necessary**
- ▶ additional test for the grade of deterioration

### Plan for investigation of plastic glazing windshields

- ▶ car / model
- ▶ material of plastic glazing
- ▶ thickness of plastic glazing
- ▶ different coating systems

**No additional sample parts are ordered,  
because there are no additional test cars at other OEMs**



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

## Activities for on-road tests: Working plan

### Generation of a data base for comparison of plastic glazing with laminated glass

- ▶ Investigation of windshields from serial cars (laminated glass)
- ▶ Investigation of windshields from police cars (plastic glazing)

**Status: Investigation in progress based on StrayLizer measurements**

### Analysis of the sample parts from on-road tests

- ▶ Investigation of plastic glazing parts by StrayLizer and Haze measurements
- ▶ Correlation of test results from StrayLizer and Haze measurements and also with subjective rating
- ▶ Investigation of plastic glazing parts with other methods

**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

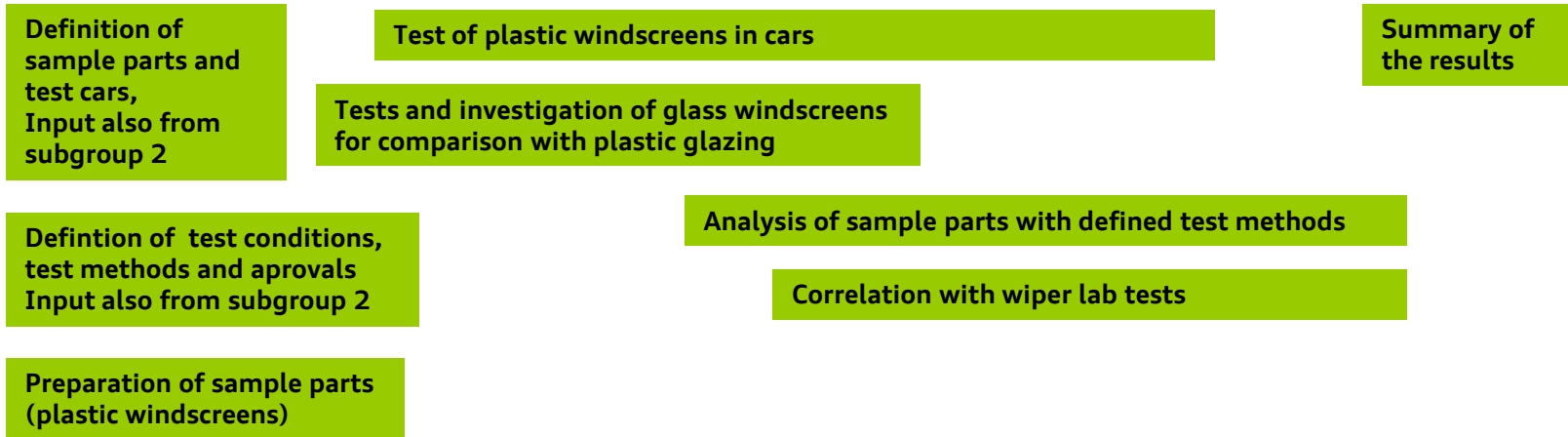
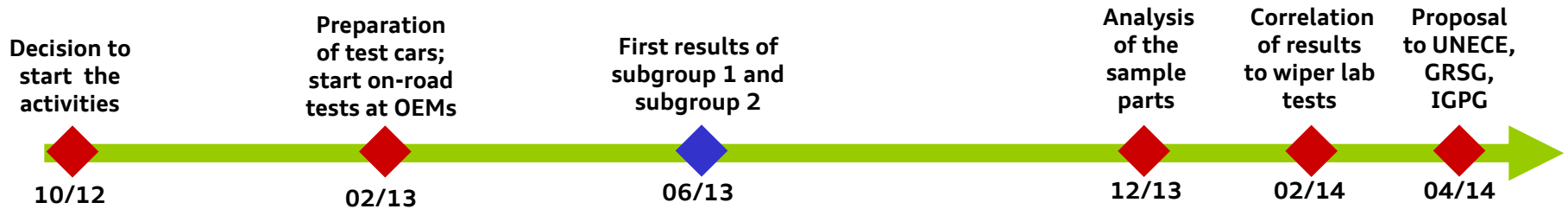
**Status: Investigation of samples from wiper test with StrayLizer**





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

## Activities for on-road tests: Timeline



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

## Straylight-Measurement – Additional Method to Assess Glass- or PC-Panes

### Stray Light Measurement

#### Haze Measurement

- not significant enough today for PC
- only Measurement of small areas (ca. 10 mm x 10 mm)
- no measurement possible in the car
- very small scratches / cracks in the coating will not be measured properly

#### Stray Light Measurement

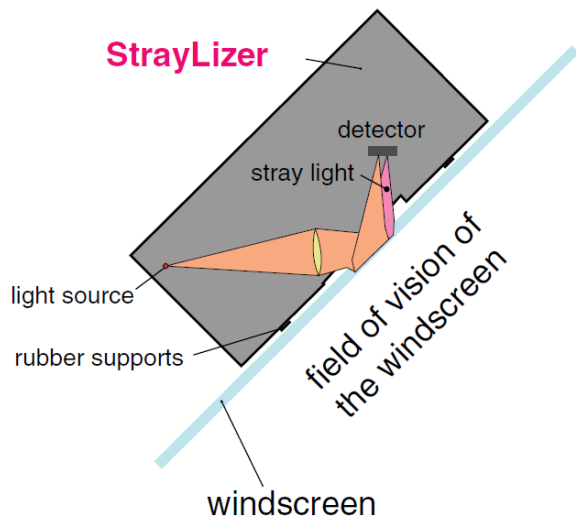
- Requirements to measure PC
- larger measurement field compared with Haze
- Measurement in the car should be possible
- small scratches / cracks in the coating should be measured and weighted correct



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## Straylizer-Measurement – Additional Method to assess Glass- or PC-Panes

The Straylizer measures the stray light and blinding effect caused by scratches, abrasion, impact wear and tear and inadequate cleaning on the exterior of the windscreen in the driver's line of vision. The reduced luminance coefficient SLI is displayed to evaluate the windscreen.



All Pictures from Company Schwahn Systems, Germany

The Straylizer is placed on four supports on the windscreen. The measurement is started by pressing a key and can be carried out in daylight.

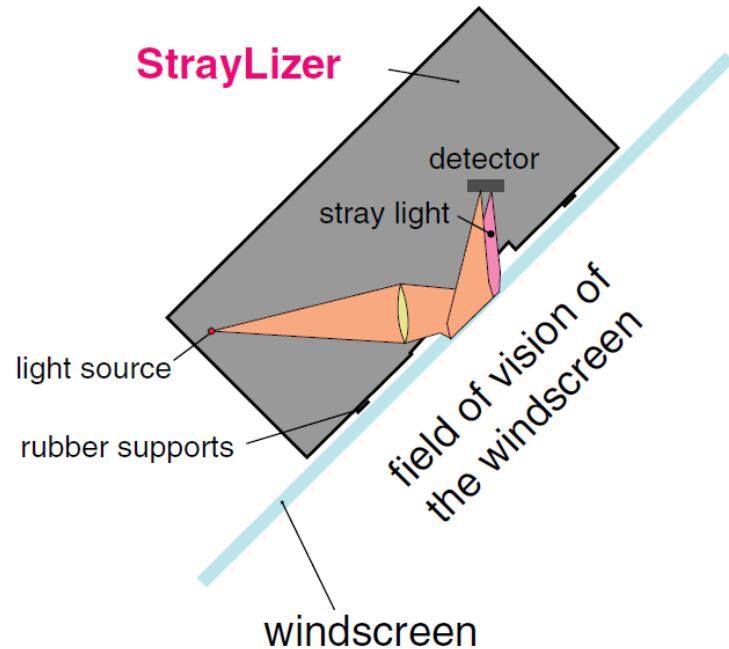


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## Straylizer-Measurement – Additional Method to assess Glass- or PC-Panes

The measurement principle is based on the German standard DIN 52298-1 which determines the measurement of scattered light of safety glazing material for vehicle glazing. Details → DIN 52298-1

The Straylizer irradiates the damaged outer surface of the windscreen with light at an angle of  $50^\circ$ . The stray light produced in the forward stray angle range of  $1.5^\circ - 2.5^\circ$  and the undisturbed transmitted light are partly reflected by the inner side of the screen and recorded by two radiation receivers in the device. The screen area penetrated by light is  $20\text{ mm} * 10\text{ mm}$ .



All Pictures from Company Schwahn Systems, Germany

