

DRAFT REPORT

4th meeting of the GRSG informal group on

the introduction of plastic glazing for windscreens and laminated plastic panes other than windscreens in UN Regulation N°43

Venue: Federal Ministry of Transport, Building and Urban Development Division (BMVBS)
Meeting room no 0.105 (ground floor)
Robert-Schuman-Platz 1 D - 53175 Bonn
Germany

Dates: 6-7 March 2012

Chairman: Dr. Klaus Preußner (D) (dr.klaus.preusser@t-online.de)
Secretariat: Mr. Olivier Fontaine (OICA) (ofontaine@oica.net)

Attendees:

ACKERMANN, Doris	OICA/GME
BENYAHIA, Rym	Freeglass GMBH
BERTHET, Florence	OICA/Renault
BIERENS, Mark	Delta Glass BV
BLASS, Rudolf	Evonik Industries AG
Dr. BUCKEL, Frank	Bayer Material Science
Dr. DÜMMLER, Matthias	MPA NRW
CRANS, Matthew	Altuglass International
DAMM, Richard	Germany, BMVBS
DELNEUFCOURT, Jean Paul	European Commission
ESSER, Matthias	OICA/Daimler
FONTAINE, Olivier	OICA
HAMMER, Jan	Webasto
HARA, Junichi	JASIC Japan
HOSHIKAWA, Akira	JASIC Japan
HELMICH, Gerd	NSG Group
KANJI NANJI, Anis	PSA Peugeot-Citroën
KIESEWETTER, Bernd	Evonik Industries AG
KILLIAN Philipp	Evonik Industries AG
NAWROTH, Manfred	Bayer Material Science
Dr. PREUSSER, Klaus	Germany
ROSENKRANZ, Mark	John Deere
Dr. SCHMITZ, Jürgen	KRD
TERRAGNI, Matteo	Sabic
WIESENBERGER, Frank	Momentive
YAMAKAWA, Takehisa	OICA/JAMA
ZAFARI, François	Altuglas International

1. Welcome and Introduction

The Chair and the host welcomed the participants to the meeting.

2. Approval of the agenda

Document: IGPG-04-01 (Chair)

The agenda was adopted with the addition of some new presentations.

3. Revision and approval of the draft minutes of the 3rd meeting

Document: IGPG-03-15 and Rev.1 (Secretariat)

The corrections to the report IGPG-03-15 were tabled and the Secretariat committed to produce a revision of the report to be posted on the UNECE website.

The European Commission was keen to replace haze by delta haze and pointed out that the 2% value was not yet decided, nor demonstrated.

It was stressed that the real field experience of the last 30 years can bring good confidence of the value. It was also mentioned that the haze value depends on the abrasion test.

In addition, the haze rather than the delta haze is relevant for safety.

The group agreed to amend the wording as in the revised minutes IGPG-03-15-Rev.1.

4. Proposal for a wiper test

Daimler informed the informal group that no proposal for a wiper test can be tabled. The group decided not to investigate a wiper test for the time being.

5. Discussion about the relevant abrasion test(s)

Document: IGPG-04-05 (Mr. Helmich – NSG Group)
IGPG-04-02 (KRD)

Mr. Helmich presented some images showing the meaning of haze in terms of visibility.

The haze value of the samples shown in the presentation is of 1.5 to 1.7% haze. All pictures were taken through a well cleaned window.

1st Conclusion: the value of 2% does make sense for glass and Taber test

2nd Conclusion: important to find an initial haze value

3rd Conclusion: cross pattern from the wiper does exist

4th Conclusion: there is a relationship between haze and transmission coefficient

The group then investigated the document IGPG-04-02 prepared by KRD. The information comes from Police cars in Germany. It was specified that the washer of the tested vehicles was modified to ensure correct humidity before wiping.

5.1. Key parameters

The group confirmed on the following criteria for establishing a robust test:

- Reproducibility of the test, i.e. test not too sensitive to the test equipment
- Well simulating the reality (practicability)
- COP should be possible mainly (but not only, depending on the shape) on real parts.

- Ensuring proper safety level (the test would permit to achieve a level of safety at least equivalent to the level currently achieved by glass with the Taber test)

5.2. Amtec Kistler

- Test method: per ISO 20566, as amended by the Task-force
- Performance requirements to be defined in accordance with the “Table of equivalence”

5.3. Taber

- Per Annex 3, paragraph 4 of UN R43
- Performance requirements: 2% haze

5.4. Sand drop

- Per Annex 10 of UN R22 (Protective helmets – text available at <http://www.unece.org/trans/main/wp29/wp29regs21-40.html>):
- *“Three kilograms of 0.50/0.7 mm grain size quartz sand dropped from a height of 1,650 mm onto a sample mounted on a turntable, at a 45° angle to the direction of the sand”*
- Performance requirements to be defined in accordance with the “Table of equivalence”

5.5. Spray

- per Annex 6, Appendix 3 of UN R112 (headlamps)
- Test method (excerpt): *“Lamp lenses subjected to the action of a sand jet (25 g of sand per litre of water, with a grain size between 0 and 0.2 mm) sprayed almost perpendicular at a distance of 380 mm to the surface and at an operating pressure of 6.0 bars”*
- Performance requirements to be defined in accordance with the “Table of equivalence”

5.6. Discussions

Dr. Dümmler presented document IGPG-04-03 as a comparison of the abrasion tests. Some input from ISO is still awaited, to be available in June 2012. It was made clear that should the problem of the wheels be solved, the Taber test would provide much better reproducibility.

Dr. Dümmler insisted that the initial haze should also be defined.

The Chair

- Pointed out that the requirements for helmet visors per UN R22 are not comparable because the regulation permits a choice between 3 performance requirements, are interdependent and subject to different measurement procedures.
- Recalled that the experts are unhappy about the spray test of UN R112 and would like to go to the Taber test

KRD remarked that some side windows are required to fulfil the 1000 cycles and 2% performance.

Mr. Benyahya questioned whether the presentation could apply to the side windows (movable). The Chair pointed out that dropping the Taber test now would not be logical toward the existing side window performance requirements.

Mr. Terragni pointed out that the ISO procedure is well defined and could bring new information. In addition, Mr. Terragni questioned which test would best reproduce the wiper scratches as seen in the presentation IGPG-04-05 and the pictures. It was pointed out that this would vary depending on the vehicle usage.

The Chair requested the group to provide comments about the above debate

Mr. Hoshikawa was of the opinion to continue with the Taber test with the Daiwa wheels.

It was pointed out that the main problem of the Taber tests is the wheels reproducibility and that ISO does not assess this parameter.

The European Commission stressed that the COP for Amtec-Kistler is acceptable. For side windows, there is no wiper, rather movable windows.

Dr. Dümmler favoured investigation of a wiper test.

Bayer mentioned their internal wiper test procedure, based on an existing procedure (SAE 198 J). The expert urged other parties to conduct tests using the same test methods for comparing the results and improving the test. In the case this test had to be investigated, some prolongation of the informal group mandate should be asked.

SABIC informed that they will present in April 2012 at SAE the outcomes of a 2-year investigation of a wiper test method.

John Deere also mentioned some internal investigations

The group was informed that the blade pressure is usually around 20 kg/cm², as indicated by one of the two main wiper manufacturers.

SABIC pointed out that the blade speed is important, and that it is difficult to simulate in a laboratory (radius speed). In addition, the idea is to replicate the kind of scratch and distribution that we can find in real life, hence the rotation of the blade may be of some importance.

It was suggested to contact the wiper Industry as they must have some data available. However this Industry rather looks for the data on motor durability and wiper blade durability.

It was then suggested to include a wheel calibration in the Taber test method. However it would be difficult to find out the correct reference material and the question of the limited time was raised as well.

Conclusion: SAE SABIC presentation, addressing wiper action on back light, available at the following website address: <http://papers.sae.org/2012-01-0750/>

Mr. Helmich strongly supported the idea of a new wiper test.

The Secretariat suggested to keep the Taber test up to the time the 3 other tests (Amtec Kistler, sand drop and wiper tests) are ready and well established, because only the combination of these three can deliver a good simulation of the reality, and there is no certainty of what the Taber test simulates.

PSA supported that point of view and informed the informal group that France is about to start an in-depth evaluation of the Taber test with the hope to achieve improvement of the test method. However only well coated plastic glazing would then pass the 2% haze value.

JASIC was of the opinion that the Taber test should still be investigated as they were confident that Daiwa would produce wheels less subject to variations than those currently used for the Taber test. The expert in addition said that improvement of the wheels quality would permit to achieve results similar for both the glass and the plastic glazing.

The Chair summarized that the group decided to start investigation of a wiper test.

It was revealed that some experience of the wiper test does exist, but some information about the reproducibility of the test method was requested.

- Experience shows that reproducibility seems not sufficient
- Bayer also explained that they have experience only with one equipment used by one unique operator. In this frame the reproducibility is acceptable
- John Deere has some experience but there was doubt whether this is applicable or convenient for passenger cars.

The European Commission pointed out that some procedures do exist. The European Commission supported the investigation of the wiper test.

VDA on behalf of OICA informed that the manufacturers are interested in a wiper test and committed to investigate the wish to start work on this.

SABIC committed to internally investigate the willingness to share their experience in a wiper test.

Conclusion:

- Wiper test remains in the agenda for the next meeting
- All interested parties are requested to provide input for the next meeting
- At the next meeting, the group will start investigating a draft test method.

Dr. Buckel presented document IGPG-04-04

He stressed that, when the test method destroys the coating, the influence of the coating cannot be high. It can be expected that both PC and PMMA can well withstand the tests. If there is no advantage for the OEMs and to the final users then it is not necessary to add these tests on the regulation.

Mr. Esser concluded from the presentation that the visibility for the driver would be maintained even after the test, what is important for safety.

Dr. Dümmler pointed out that other materials than PC and PMMA will arrive on the market and was of the opinion that the tests should remain in the regulation.

It was mentioned that the stone shipping test is expensive, and the cross cut test should remain, followed by the chemical resistance test.

Conclusion:

- keep cross-cut followed by the chemical resistance. All the experts also agreed to keep the chemicals proposed.
- It was decided to keep the combination III. Humidity test followed by 227g Ball drop, contrary to what was decided at the previous meeting.

6. Test of Resistance to Chemicals

Kept:

- humidity followed by ball drop
- Weathering followed by cross cut
- Cross cut followed by immersion in chemicals

It was suggested that 3 samples out of 4 must fulfil both chemical resistance tests (immersion test and “under load” test)

Conclusion: adopted as above

7. Test of Optical Qualities

It was suggested to take over all the existing tests of the regulation. 4 samples out of 4 must fulfil the requirements.

8. Further discussion of the draft regulatory text

Document: ECE/TRANS/WP.29/GRSG/2009/8 (D)

The group discussed in depth the Annex 18.

Paragraph 3: flexibility test: adopted with no change

Paragraph 4: headform test:

The experts were made aware that the windscreen blackout is of a 2nd material. But for the test, the whole component is considered as being built in one piece, while only the transparent part should be tested. In the case of installation by gluing, the head form test would be acceptable. But in the case of over-moulded blackframe the experts found the test irrelevant.

Conclusion: the group agreed with the proposed text.

Concerning the size of the component, it was acknowledged that no interpretation problem was experienced by any Technical Service or manufacturer. The European Commission however could not accept such text subject to interpretation.

The group accepted to the new wording under suggestions from the European Commission. Paragraph 4.4.: the European Commission was very satisfied with the decision of 100% satisfactory results.

Paragraph 5: “227 g ball test”

The different drop heights were questioned. As this addresses LAMINATED panes, it was agreed to mandate 6 m.

EVONIK committed to run tests at 6 m drop height for laminated side windows to demonstrate the relevancy of the value.

The group finally adopted the amended text.

Paragraph 6.1.: abrasion

The Chair suggested that a task force be set up with experts interested in the establishment of a test method for wiper test. According to the time plan of the informal group, it was acknowledged that defining a new test method would be difficult in the defined time frame. In this view, the time period between now and the September meeting could be used to draft a preliminary proposal of a test method for wiper test. In the meantime, some additional data will be gathered with regard to the Taber test, for making a reasonable and sound decision.

OICA supported this activity.

The Chair clarified that only the really interested experts should attend this task force, open to any plastic and wiper industry representatives.

EVONIK, Momentive, Bayer, SABIC, JASIC, Freeglass will take part to the group.

Mandate of the TF is to propose:

- a concept of a test method for wiper test
- a reasonable work plan
- the expected time schedule
- assessing the relevancy of such wiper test
- Task Force led by OICA

OICA suggested to start with a general email requesting input about the existing test methods by end of [May], then followed by a telephone conference exchanging the interesting comments, then drafting of a concept, then possibly a 1st meeting.

Conclusion: all participants were happy with the above suggestion

Taber test: statement from Dr. Dümmler

- General problem with assessing the Taber test.
- Problem is how we can manage the reproducibility of the Taber test.
- Feeling that the current performance requirement of 1000 cycles and 2% haze was historically a mistake, not taking into account the necessary 95% confidence, rather the mean value.
- Feeling that the plastics show higher absolute values, implying also higher range of results (lower reproducibility).
- The 1000 cycle/2% problem will probably never be solved for the Taber test.

9. List of action items for next meeting

- EVONIK to provide drop height results
- OICA to initiate TF on Wiper test
- Secretary to revise minutes of last meeting
- Dr. Dümmler to provide outcomes of the ISO work in due time.
- Secretary and Chair to make available the working document (revised GRSG/2009/8), as amended, to the experts, within a reasonable time frame.

10. Schedule for further IG meetings

Document: GRSG-99-25 (D)

IGPG-05 : Paris 5/6 September 2012

IGPG-06: European Commission January 2013 (To be confirmed)

11. Any other business

BASSt has finalized their research on head impact, to be distributed by the end of March 2012