DRAFT REPORT

7th 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: **John Deere** Werke Mannheim 70 (John Deere Forum)
John-Deere-Str. 70
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Chairman: Dr. Klaus Preuβer (D) (dr.klaus.preusser@schwerte.de)
Secretariat: Mr. Olivier Fontaine (OICA) (ofontaine@oica.net)

Dates: Tuesday, 18 June 2013 - 19 June 2013

1. Welcome and Introduction

Mr. Marc Rosenkranz welcomed the participants

2. Approval of the agenda

Document: IGPG-07-01 (Chair)

The agenda was adopted with no change

3. Revision and approval of the draft minutes of the 6th meeting

Document: IGPG-06-09 (Chair)

The draft minutes were adopted with no comment.

4. Outcomes of GRSG-104 (April 2013)

The Chair recalled that the informal group provided a report as document GRSG-104-43. At GRSG-104, F requested a revision of annex 21 (installation). In addition, the Chair requested GRSG a prolongation of the mandate under documents GRSG-104-40 and 41. All documents presented by the informal group were adopted by GRSG.
The Chair recalled the target of this 7th meeting of the informal group for the next GRSG session: report of the progress of work with regard to the installation and the revision of Annex 21, and of the progress of work of the subgroups on wiper test.

5. Proposal for a wiper test

5.1. Outcome of Subgroup 1 - On-Road-Testing of wiped plastic glazing (real-life-data)

Document: IGPG-07-04 (IGPG-SG1)

Dr. Matthai presented the state of play of subgroup 1.

The 3rd car currently tested would long more than 1 year for having 1 winter real world experience. Yet this would bring the results after the deadline of the informal group, this is the reason why VW is looking to another test method than the current delta haze, i.e. STRAYLIZER.
There was a question about the possible comparison of the STRAYLIZER compared to the delta haze in the case of the Taber test.
VW recommended inviting STRAYLIZER to explain the principle of the measurement. The results may be different according to the orientation of the STRAYLIZER compared to the direction of the scratches.
Sabic proposed to measure some samples out of the RR and the subgroup 2, in order to compare the STRAYLIZER with the usual delta haze measurement.
Dr Matthai explained that only 3 windshields, one backlight and one lab windshield could be monitored because no manufacturer could provide a further vehicle. Hence the test campaign will be finished at the end of these tests.
The Chair recalled that the origin of the STRAYLIZER is coming from the measurement of the light transmission. The apparatus can measure the quality of the sample surface.

5.2. Outcome of Subgroup 2 - lab test equipment to test wiper resistance on small samples

Document: IGPG-07-05 (IGPG-SG2)

Mr. Terragni gave a presentation of the progress of work. Step 2/5, i.e. defining the targets and defining the test procedure.
Differences in lab equipment are currently remaining. Evaluation of the methodology: measurement according to the direction of the scratches.
The sample size can differ according to the kind of testing equipment. The samples are measured on both the exterior and the interior sides as a matter of checking that the results will be similar and that the value of the inner side will be below that of the outer sider.
Conclusion:

- High variation in all tests except D
- One test lab has low variation in Test A
- Need to increase the number of samples for improving the statistical relevancy
- Perhaps another analysis tool (other than Delta haze) may provide better results because the scratches produced by the wipers are not homogenous and and not deep, hence haze may not be appropriate (vs. homogeneous scratches): straylizer, reduced straight light angle, etc. the deviations are so high that we cannot differentiate the samples, unless there is a statistical result.

A lot of data are available and still some work to do to improve the tests. Mr. Terragni stressed the need also to correlate with subgroup 2.

Q&A:
Lowest speed is in general 30 cm/s.
It was suggested that StrayLizer be invited to the group for presenting some results.

Conclusion:

- The two subgroups committed to coordinate for the further steps.
- A joint meeting of the 2 subgroups will be organized before the November informal group meeting.
- Some results will be communicated to the informal group at the November meeting.

6. Review of the Taber test

At the last ISO meeting of SC11, the language was improved. Most of the French proposals were inserted in the draft. Remaining task: the reference glass was defined, but still the reference plastic pane must be defined. Since for all potential reference plastic materials investigated in SC11 the Taber and Daiwa wheels provided significantly different results, and due to the fact that Daiwa wheels are not available on the market, it was decided to conduct the standardization work only with the Taber wheels. The reference material would be Poycarbonat (Eurogard, NL) both sides coated with Momentive coating AS4000. Need to perform a RR with the same wheel lot and additionally with those wheels currently in use in the participating labs, 100, 500, 1000 cycles, with 13 different labs. This rolling resistance test is currently conducted, and will produce results in time for the next informal group meeting. If results are negative, then there will be a need to re-discuss.
PSA pointed out that the place where the coating is applied makes a difference in the result. The application of the coating depends on a lot of parameters, hence the necessity that the coating be applied with the same parameters throughout all the samples.
Taber will supply the wheels together with the reference plates.
Ideally test lab should know the details of the wheels. But no wheel supplier wants to provide this. Hence the need to define a glass reference, float glass, and a reference plastic. But then, there is a need to provide some details for the reference plastic material and process, same for the coating. The advantage of the plastic reference that was chosen is that there is one manufacturer willing to provide it, producing large panes, from which it is easy to cut a small part for low thickness variation. It was also stressed that this is no time and place to challenge the ISO decisions. The experts from the German delegation of the ISO group recommended that all interested experts attend the next ISO meeting.
For PMMA, the difference was of about 15% between the Daiwa and the Taber wheels, hence it was found reasonable to choose one wheel supplier.
PSA announced their intention to take part to the ISO round robin tests.

Conclusion: ISO decided about the definition of the reference material, but the decision still must be done for the reference values, according to the number of cycles.
Some of the other changes decided at ISO would have to be transferred into the UN regulation as well (headform test, crosscut test, etc.).

The Chair concluded that this would have no influence on the informal group work in a short timeframe, but ISO15082 results should be carefully checked.

Conclusion: the informal group agreed to wait for the final results of the ISO revision of the Taber test, and to make a decision accordingly after analysis of the results.

Next ISO meeting is scheduled in October 2013, results will be available at that meeting, and hence all necessary information will be available for the next meeting of the informal group in November 2013.

7. Further discussion of the draft regulatory text

Document: GRSG-104-43 (D on behalf of IGPG)

Dr Dümmler had a comment on paragraph 6.1.1.3. of the annex 17.
A debate took place about the consequences of adding the 1% initial haze.

2 properties are in stake: straight light transmission of the new material and resistance to abrasion.
It was suggested to add the requirement that the total haze should not exceed 3%.
After some debate, the group agreed that this would be decided at the November meeting.
Dr. Dümmler was of the opinion that, at least for windscreens, the initial straight light measurement should be a basic requirement, expressed as initial haze limit because the labs already measure initial haze, whereas the abrasion resistance is a different requirement.
Note: the wording should be consistent for all tests.
Dr Dümmler proposed further corrections which were directly incorporated in this document:
paragraph 2.6.3: definition of a laminated rigid plastic pane; Annex 3, paragraph 11.2.4.1.: chemical-resistance test under load - specification of the side of the test piece to be treated.
There was also the possibility to fully delete the test of resistance to radiation. It is not necessary to test the panes neither the interlayer because the simulated weathering already covers this. This was challenged because the test methods are not similar, (mercury vs. xenon), where the radiations are not the same (spectrum). In addition, it would be inconsistent to delete it while it is kept for the glass panes as test of the interlayer on radiation resistance.

Concerning the high temperature test, the group was informed that Mr. Esser was no longer interested in having this test for rigid plastic windscreens and in agreement to delete it from there, because Daimler found no influence of the high temperature on the plastic material. The group agreed to keep the high temperature test for laminated rigid plastics other than windscreens.

8. Revision of Annexes 14 and 21

Document: IGPG-07-02 (France)

F recalled that some experts agreed to correct some ambiguities in Annex 21.
Annex 14: Dr Dümmler challenged the size of 150 mm as limit for a small pane not to be tested with the headform because it is impossible to hit such a small piece from 3 m, the test cannot be carried out. In Annex 18 the informal group decided to change the small pane definition to 500 mm. It was proposed to keep the 150 mm definition of the small windows, but to carry out the test on samples bigger than the window. There is a difference between extruded vs. injection moulded parts because flat standard test pieces of 1170 mm x 570 mm can easily be cut from extruded plates while in case on injection moulding such a large and expensive tool is usually not available. Therefore, up to now alternatively original injection moulded parts are tested instead of those standard test pieces, but this is not practicable in case of smaller parts which are larger than the 150 mm limit. The injection parts should be at a certain minimum size in order to make the headform test feasible.
Annex 21: paragraph 3.3.: the concern of motorhomes was raised. The experts convened on the need to find a proper wording.
Paragraph 4.2.2.2.: a class M should only be possible if there is no need to look through the window.
Paragraph 4.3.1.: the delegate from France pointed out that in buses in France there is almost no interior partition glass that are not of toughened glass, because of costs and weakness of laminated glass. There is a problem for making the provision respected, or to change it to make it fit to the reality. This applies also to the front windows of caravans.

France presented the work produced in the margins of the meeting. There was a debate about the necessity to take into account the places where occupants could be seated, and partitions having declared seats behind them. There was another debate about the glazing and windows necessary for driving and manoeuvring the vehicle, for the exemptions from the abrasion provisions. A further concern was raised about the interpretation of "forward facing", as it can be understood as partitioning for plastic glazing and not for toughened glass. It was proposed to have this debate at GRSG level. In GTR6 a definition of "forward facing" does exist, but is missing from R43. It was suggested to add a new paragraph 2.14. "forward facing glazing other than windscreen". The experts were urged to provide Mr. Pichon with proposals for definitions. Some discussions took place about the definition of the A-pillar. However the group agreed that the current definitions are sufficient (UN R125 – direct field of vision and UN R127 – Pedestrian Protection).

Concerning the size of the headform for the exemption in annex 14, the concern was about the way to test real parts between 150 mm and about 400 mm. Some special requirements should be added for these injection moulded parts, as flat standard test pieces of 1170 mm x 570 mm cannot be economically produced by injection moulding while the headform test is not feasible with real parts smaller than 400 mm. The table below was an attempt to clarify the problem and its possible solutions.

	Window	Flat sample	Alternative
Small window	<150	No test	
Other than small window	150 < diameter < [400]	1170 x 570 (material type testing and standard support frame)	Other part of same material, production procedure, thickness, colour with dimensions bigger than those of the original part, into which a 400 mm diameter circle can be scribed, and with a developed surface area of less than 1170 x 570. (part type approval for the original part (window 150 < diameter < [400]) and dedicated support frame)
	[400] < diameter	1170 x 570 (material type testing and standard support frame)	Real part (submitted for approval) (part type approval and dedicated support frame)

The part manufacturers pointed out that the shapes of the pieces become increasingly complex, e.g. integration of lighting devices or aerodynamic appendices. It was suggested to take the "transparent" portion of the piece as key parameter.
There was a debate as to whether the material or the part is tested.
Correct wording would have to be put into paragraph 4.2. of Annex 18, and also of Annexes 14 and 16.
The Chair volunteered to introduce the wording into the draft proposal for amendments to UN R43.

France raised the question of a new Annex, for laminated plastic windscreens, as this possibility is currently not foreseen in the regulation. The Chair recalled that the first priority of the informal group is the introduction of monolithic windscreens. The group agreed to consider the proposal and to request GRSG guidance about it.

9. List of action items for next meeting

- Experts to provide Mr. Pichon with comments and draft "forward facing" definition. Complete revision of Annex 21. Comments for 27 September 2013. Complete proposal to be distributed by 4 October 2013
- All experts are requested to have a clear and firm position with regard to the dimension of headform vs. window (current proposal: [400 mm])
- Need for a requirement on minimum initial haze. All experts are requested to have a clear and firm position with regard to this item
- Evonik to provide details about the panes shown as a demonstration (Lotus) for introduction in the final report.
- Correct wording for "mid windows" to be put into paragraph 4.2. of Annex 18. Annexes 14 and 16 to be reviewed accordingly as well
- Informal group to propose to GRSG to introduce provisions for laminated plastic windscreens. The Chair to prepare a draft for next meeting.
- Subgroups 1 and 2 to continue their respective work, and to report back at the next meeting.

10. Schedule for further IG meetings

Document: GRSG-104-42 (D)

GRSG-105	Geneva	8-11 October 2013
IGPG-08:	Paris (OICA offices)	27-28 November 2013
IGPG-09:	VDA (Berlin)	25-26 March 2014
GRSG-106	Geneva	5-9 May 2014

11. Any other business

Document: IGPG-07-03 (PSA)

PSA presented some results about the sand drop test and requested information from the experts who presented the Round Robin on sand drop test.
PSA found the test well representative of the reality. The test is known because already used by test houses. The results of the Round Robin proposed a 5% delta haze. UTAC performed additional tests. F proposed to conduct some additional tests in order to verify the procedure and the relevancy of the previous tests. It was explained that the sand drop test is more severe for glass than for plastic because of the "bounce effect", such that the particles rebound on the plastic because of the elastic deformation, while they fully impact the glass with inelastic deformation.
The Chair concluded that this is a problem of test protocols between test houses.