

**Report of the 7th meeting of the informal group on
“Behaviour of M2 & M3 general construction in case of Fire
Event (BMFE)”**

(<https://wiki.unece.org/display/trans/GRSG-BMFE-07>)

Date: 2019, June 25th - 26th

Venue: Federal Highway Research Institute (**BAST**)
Brüderstraße 53, D-51427 Bergisch Gladbach

Chair: Mr. Herveleu (UTAC-CERAM)
Secretary: Mr. Fontaine (OICA)

1. Welcome and Roll call

2. Adoption of the agenda (BMFE-07-01)

The Chair informed of his wish to make it a target to the group to freeze the wordings prepared for UN R107, in particular on door opening, and fire extinguishing systems, and for UN R118, for the adhesive agent. The target is to prepare informal documents for the 118th GRSG session (April 2020).

3. Validation of the minutes of the last meeting (BMFE-06-16)

The minutes were adopted with no change.

4. Accidentology & statistics: revision of the accidentology collection table (BMFE-06-05)

- Format review [Chair]

Document: BMFE-07-04e (Chair) Accidentology table 2016 – 2018

The Chair presented the table. He requested to take it as a reference when transmitting the data to the Chair. S suggested to add the nature of the source of energy (fuel) in the table.

D informed not recording such fire events in the national statistics, hence could not bring additional data.

The Chair stressed that the table well indicates that as soon as there is a victim, there is a collision, this is a direct link.

Some manufacturer stressed that this data is quite confidential.

Spain proposed to discriminate the fatalities from the injured, and make the cells digital (no text).

In general the table should be formatted such to be workable.

Some expert suggested adding the vehicle class as a criterion (Class 1, 2 etc) yet as the data might not be available, the criterion could be changed into standing / not standing passengers. Separated inputs for location (country / city) need also to be introduced.

The Chair committed to re-format the table accordingly as soon as possible for making it available on the website

Conclusion:

- Chair to upgrade the table according to the comments received

- Additional inputs [All experts]

Document: BMFE-07-06 (Spain) Fires 2016_2019 BMFE Consolidated (2)

Spain presented the document. The levels are defined by IRU about the severity of the fire (level 1 = component, level 4 = total vehicle burn, subjective assessment).

The experts discussed the best way to integrate the Spanish data into the reference table. Also some dates are to be reviewed before merging the data.

The Chair suggested focusing on the cases with victims, even if this could be a non-perfect criterion for selection. In addition, the data is sometimes difficult to find when there is no fatality.

The experts convened that this group is the worldwide best place to exchange data.

Conclusions:

- BMFE-07-04 is a living document
- Chair to modify the table according to the above debate
- Spain to add their data
- All to provide data as relevant.
- All are free to propose updates of format to make the document more workable.

5. Regulation No.118 (Day 1)

5.1. Flammability performance

- Relevancy of the current requirements [Gerflor]

Document: BMFE-07-05 (GERFLOR) R118 - horizontal - vertical burning tests

The expert from GERFLOR presented the presentation.

There was a debate on the best approach. The ISO 5658 is currently dedicated to the horizontal burning rate yet could well be used in UN R118 for both the horizontal and the vertical burning rates. Gerflor did not share this position since the materials should be tested in the position (H vs.

V) they are in the vehicle.

Conclusion:

- Gerflor proposal opens discussion for alternative for both horizontal and vertical test method
- No need to add toxicity criterion in this regard
- Item kept in the agenda to best capture the way forward.

5.2. Smoke toxicity: development of a simplified method for interior materials used

- Status of study progress [BASt]

Document: BMFE-07-10 (BASt – BAM)

BAM (Bundesamt für Materialforschung und -prüfung – Federal office for research and testing of Materials) presented the state of play of their ongoing research project “„DEVELOPMENT OF TEST FOR TOXICITY ASSESSMENT OF BUS INTERIOR MATERIALS” (FE 82.0728/2019), in 5 steps:

1. Identifying the materials at stake
2. Identifying the toxic components
3. Performing the relevant tests (Oct 19)
4. Defining an assessment method (April 2020)
5. Defining recommendations (ca. Nov 2020)

BASt shared the project roadmap. BASt found reasonable to share preliminary results in spring 2020, prior the GRSG session. This seems compatible with the terms of reference of the informal group (amendments for both regulations for 120th GRSG in October 2020)

The experts were made aware that the burning behaviour is a complex item influenced by a number of different parameters. The German research commits to capture these parameters and approach the reality.

In terms of scenario, the Chair stressed that the group identified the target as “normal event” during 4-5 minutes. BASt presented a preliminary comparison study attempting to transfer the train approach to the cases of the busses. The bus is assumed to be more flexible than the train for stopping (lateral movement is possible, etc.)

Conclusion:

- Item remains in agenda for next session.
- Next meeting scheduled according to the roadmap of the study
 - Adapted balance between flame spread, smoke toxicity and smoke density [BASt]
 This topic will be involved in the first steps of the BAM study.

5.3. Comparison matrix between transport modes (BMFE-06-13)

- Additional inputs [All experts]

OICA explained that in average, the roughly estimated proportion of the interior fitting in the cost of a whole bus is ca 20%. The Chair was keen to evaluate the impact of another transport mode standards when applied to bus transport. Yet the exercise was recognized difficult.

D was keen to look at the whole picture, i.e. the benefits for the whole society vs. the costs for the society (prevented injuries etc. vs. new mandatory feature), in the context of life saving (vs. vehicles saving).

There was a debate on the way to balance the smoke toxicity with the flammability. For the issue of calculating the benefits, the Secretary questioned the group on the relevancy of conducting a study of the benefits in the context of a UN regulation. A regulation could be applied in any country signatory to the 58 Agreement (and even sometimes applied in countries non signatory to the 58 Agreement). D proposed to start with EU figures as they must be available. The expert also recalled that this addresses public transport and that the price of the vehicle should not prevent the operators from buying the vehicles.

S proposed to share the outcomes of a study conducted for the EU GSR 2 by TRL where it was argued to delete the fire suppression system based on the data and calculation.

D committed to present preliminary C/B ratio for the next meeting.

Conclusion:

- Item remains in agenda
- S will check the conclusions of the GSR Phase 2 study for the next meeting.
- D to provide input on C/B ratio

5.4. Influence of adhesive agent (BMFE-06-12)

- Last review on positions [CLCCR]

The Chair recalled that the debate at the last meeting led to the requirements cited in BMFE-06-12. CLCCR pointed out that Annex 2 addresses the suppliers only, hence would only indirectly affect the manufacturers, then making even more difficult to find compliant suppliers. The expert informed that the suppliers could accept producing test reports etc, but are not keen to conduct certifications. The Chair stressed that the proposal should be acceptable to the manufacturers since it only requests a list of references in the communication document. However, this questioned the process of a revision of existing approvals.

Conclusion:

- Text frozen, to be presented to GRSG of April 2020 as a proposal for a supplement

6. Regulation No.107 (Day 1)

6.1. *Experimental study on full scale test (BMFE-06-06)*

- Outstanding presentation [PlasticsEurope]

Plasticseurope was not present and this item was postponed to the next meeting.

6.2. *Full scale test*

- Synthesis of the project status [Aguila]

Aguila informed that the project is ongoing, yet the vehicles found on the market are too expensive to conduct full scale tests for the time being; and announced that the results could be ready for the next meeting.

The Fire brigade seems ready to evaluate new solutions for fire extinguishing, and then emergency exit opening.

Conclusion:

- Aguila to provide input at next session

6.3. *Combination of fire detection and fire suppression warnings (BMFE-06-15)*

- Review on the draft wording proposal [All experts]

Alarm system vs. fire suppression system. The group was informed that some vehicles have fully separate systems. Hence the target is to avoid a different level of detection for each system, hence avoid having fires with no warning.

Paragraph 7.5.1.5.1. of Annex 3.

Conclusion:

- Wording frozen as per document BMFE-06-08-Rev.1
 - Opportunity to separate provisions for temperature checks at different spots [OICA]
- OICA apologised for having no input to provide
Item postponed to the 2nd day of the meeting; OICA to provide position.

Conclusion:

- OICA to provide input for the next session
- Item remains in the agenda.

6.4. *Minimum performance level for fire detection (BMFE-06-08)*

- Review on the draft wording proposal with temperature as base requirement, keeping the opportunity for alternative solutions [OICA / RISE / Sweden]

There was a debate on the best wording. The group requested the manufacturers to indicate how they design their vehicles for identifying the engine compartment temperature.

Current technology in most vehicles seems to be a line full of cooling fluid, whose material melts above a certain temperature, making a leak of the fluid, then a pressure loss detected by a pressure sensor. The Chair suggested to fix a maximum regulatory temperature, below which the system must activate.

The group progressed in the wording and proposed that the manufacturer declares the reference temperature. Spain wondered how to test the requirement where the temperature should be measured.

To items were subject to question:

- Location of the measurement
- How to measure/test.

The group agreed to remove the reference to the location. Spain committed to check internally the way to test the alarm system and the fire suppression system. The Chair found that defining the test procedure is not necessary. S pointed out that defining the test protocols too accurately could make it design restrictive;

Conclusion:

- Declaration by the manufacturer
- Addition of a reference in the Annex 1 – Part 1 – Appendices 1 and 3: paragraph 4.4. (App 1) and paragraph 5 (App 3)
- Secretary to prepare proper informal document.
- All parties to check feasibility of the paragraph
- Wording to be finalized at next session.

6.5. Automated emergency exits (BMFE-06-11)

- Last review on positions [CLCCR]

Some manufacturers informed having had internal discussions and functional safety assessment of the proposal and hence could not support the proposal.

S challenged the “unexpected opening of the door” as a criterion since the vehicle is in an emergency situation, which is a rare situation.

CLCCR pointed out that:

- An emergency is an unexpected event
- The proposal is simply in opposition to the current construction of the vehicles.

Since the passengers are not warned of the emergency they may be confronted to a dangerous situation.

D proposed that, since there is a need to keep the process under the control of the driver, the driver could operate a control to delay the automatic opening of the door. Yet this needs further analysis because it is requesting an unnatural action from the driver in case of emergency. D insisted that

OICA investigates the D proposal. The experts furthermore discussed the need of keeping the situation under the control of the driver, and the cases of the false alarms,

S questioned the relationship between “functional safety” and this problem of automated emergency exits and suggested not including the driver in the loop of the automatic door opening

The Chair stressed that it is also important that the doors automatically open if there is no action from the driver.

CLCCR unfortunately could not prepare any draft wording.

Conclusion:

- Item kept in the agenda
- Need to reach consensus on a final wording
- CLCCR to take the lead for constructing a proposed wording for the next meeting

6.6. Safety instructions (BMFE-06-11)

- Last review on positions [CLCCR]

The Chair recalled that the target is to require the manufacturer to provide a means to permit the operator to provide safety instructions into the vehicle. The 1st part of the proposal provides requirements, the 2nd part provides the pass/fail criteria for assessing the performance requirements. CLCCR questioned the requirement for the operator to accomplish his part of the job. The Chair explained that the proposal is the farthest we can go in a UN regulation. The operator indeed works under national legislation. Yet the reservation from CLCCR remained as there is no guarantee of the effect in practice.

S supported the proposed wording since they have regulations on the operators. In S the loop is complete.

Some experts wanted to limit the proposal to classes II, III and B; the group endorsed this approach. It was also agreed to mandate good accessibility of the safety instruction. While the proposal is directed to some action by the operator, the manufacturers had still some concern about the proposed text:

- Reading of the last sentence in case of a vehicle designed for handicapped people
- Concern that each and any seat should be equipped with safety instructions.
- Application for the front row

It was stressed that the pass/fail criterion in the proposed sentence is only that the means must be “adapted to the design and architecture of the vehicle”, not that the instructions must be accessible and intelligible.

Conclusion:

- Text frozen as in BMFE-06-11-r2

- To be sent as informal document for April 2020 GRSG session (along the lines of the terms of reference)

6.7. Optimization of luminous trajectories and functionalities (flashing lights for ex.)

- Group expects new inputs [All experts]

Concern that the 06 series of amendments to R107, lighting provisions only address Class III vehicles. Should the lighting provisions be associated to the item 6.5. (automatic emergency exit), then the scope would be enlarged. Need to cross-check possible conflict

Conclusion:

- Topic already covered by the item 6.5. (automatic emergency exit opening)
- Item kept in agenda
- Spain as leader, should bring new input as relevant.
- CLCCR to cross-check possible conflict of scope with R107.06 (Annex 3, paragraph 7.8.)

6.8. Smokes extraction systems (BMFE-04-03)

- Inputs on the added value for road application [All experts]

The Chair recalled his request for input on the opportunity to take the experience of building applications for road application.

There was not new input.

Conclusion:

- Item kept in the agenda
- All experts to provide position, comments for the next meeting.

- Consideration of the chimenea effect related for bus/coach [Daimler]

OICA showed a video about a fire in Germany in 2011, demonstrating there is a phenomenon which could be assimilated to a chiminea effect. The Chair informed having had an exchange with the fire brigade team that operated at the Puisseguin event. According to them, there's no real chiminea effect on such type of vehicle volumes in these conditions.

The group acknowledged the two sources providing a trend in the opposite directions, however not enough relevant data are available to conclude on this physical effect

7. Next steps and meetings

7.1. 8th meeting (TBD – proposal from Aguila for a venue in Biarritz, France)

4-5 December 2019 (venue subject to Aguila confirmation) starting around 9:00 am the 1st day and finishing around 1:00 pm the second day.

7.2. 9th meeting (TBD)

Probably in spring 2020

8. A.O.B.

8.1. Additional item for the next session: “efficient perception of safety messages in case of fire”
Spain as leader for this item, presentation will be shared at the next session

8.2. Secretariat of the informal group: CLCCR to become secretary of the group as from the next session.