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PROPOSAL FOR DRAFT AMENDMENTS (05 SERIES) TO REGULATION No. 22

(Protective helmets)

Revision 1

Transmitted by the Expert from Germany

Note: The text reproduced below was prepared by the experts from Belgium, France, Spain and the United Kingdom on behalf of the expert from Germany chairing the informal group on Regulation No. 22, in order to clarify the requirements for conformity of production and routine tests, and to complete document TRANS/WP.29/GRSP/1998/15.

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Note: This document is distributed to the Experts on Passive Safety only.

A. PROPOSAL

The List of Contents

Insert a new title of paragraph 9, to read:

"9. Product qualification"

Titles of paragraphs 9 to 14 (former), renumber as 10 to 15.

Insert a new title of paragraph 16, to read:

"16. Transitional provisions"

Text of the Regulation,

Paragraph 3.3., amend to read:

"3.3. The competent authority and/or the technical service shall verify the existence of satisfactory arrangements in order to ensure effective control of the conformity of production in accordance with the provisions of paragraph 10. before type approval is granted."

Paragraph 8.1., amend to read:

"8.1. Each technical service shall prepare reports on the results of the approval tests and keep such reports for ten years. In the case of ...."

Insert new paragraphs 9 to 9.3.4., to read:

"9. PRODUCTION QUALIFICATION

9.1. In order to make sure that the manufacturer's production system is satisfactory, the technical department which conducted the approval tests must carry out tests to qualify production in accordance with paragraphs 9.2. and 9.3.

9.2. Qualifying the production of helmets

The production of each new approved type of helmet must be subjected to production qualification tests.

For this purpose, a random sample from the first batch will be taken of 40 helmets of the largest size (50 helmets if the test on the S point is involved) and 10 helmets of the smallest size.

The first batch is considered to be the production of the first tranche containing a maximum of 3200 helmets.

9.2.1. Test on the system of retention

9.2.1.1. The 10 helmets of the smallest size are subjected to test of the retention system described in paragraph 7.6.2.

9.2.2. Shock absorption test

9.2.2.1. From the 40 helmets (50 if the S point test is involved) take 4 (5 if the S point test is involved) groups each with 10 helmets.

9.2.2.2. All of the helmets in a group must first be subjected to the same conditioning treatment and then subjected to the shock absorption test described in paragraph 7.3. at the same point of impact. The first group of 10 helmets will be subjected to the shock absorption test at point B, the second at point X, the third at point P, the fourth at point R (and the fifth at point S is involved). The conditioning and the anvil for each group are chosen by the technical department which conducted the approval tests.

9.2.2.3. The results of the tests described in paragraphs 9.2.1. and 9.2.2. must comply with the following two conditions:

(a) no value shall exceed 1.1 L

(b) $\bar{X} + 2.4S$ shall not exceed L

where:

L = the limit value prescribed for each approval test

$\bar{X}$ = the mean of the values

S = the standard deviation of the values

The value of 2.4 specified above is only valid for a series of tests applied to at least 10 helmets, tested under the same conditions.

9.3. Production qualification of the visors

The production of each new approved type of visors (approved as such or as forming part of the helmet) must be subjected to production qualification tests.

For this purpose, a random sample from the first batch will be taken of 20 visors (30 visors if mist-retardant is involved).

The first batch is considered to be the production of the first set containing a maximum of 3,200 visors.

9.3.1. Test group A

light transmission – paragraph 6.15.3.4.
recognition of light signals – paragraph 6.15.3.6.
spectral transmission – paragraph 6.15.3.7.
light diffusion – paragraph 6.15.3.5.
optical qualities and resistance to scratches – paragraph 7.8.3.

Test group B

refractivity – paragraph 6.15.3.8.
mechanical characteristics – paragraph 7.8.2.

Test group C (optional)
mist-retardant – paragraph 6.15.3.9.

9.3.2. From the 20 visors (30 if mist-retardant is involved) take two (or three if mist-retardant is involved) groups each of 10 visors.

9.3.3. The first group of 10 visors will be subjected to each of the tests in group A, the second group to each of the tests in group B (and the third group the test in group C if mist-retardant is involved).

9.3.4. The results of the tests described in paragraphs 9.3.3., except for those conducted in accordance with paragraph 7.8.2. must comply with the following two conditions:

(a) no value shall exceed 1.1 L

(b) $\overline{X} + 2.4S$ shall not exceed L

where:

L = the limit value prescribed for each approval test

$\overline{X}$ = the mean of the values

S = the standard deviation of the values

The value of 2.4 specified above is only valid for a series of tests applied to at least 10 visors, tested under the same conditions."

Insert new paragraphs 10. to 10.6.6., to read:

"10. CONFORMITY OF PRODUCTION

10.1. The approved helmet or visor (as such or forming part of the helmet) satisfying the acceptability conditions of production qualification and in application of the present Regulation must be so manufactured as to conform to the type approved by meeting the requirements of paragraphs 6 and 7 above.

10.2. In order to verify that the conditions stated in paragraph 10.1. have been met, appropriate inspection of the production must be performed.

10.3. The holder of the approval is responsible for the conformity of production procedures and he must in particular:

10.3.1. Ensure the existence of effective procedures so that the quality of the products can be inspected;

10.3.2. Have access to the testing equipment needed for checking the conformity of each approved type;

10.3.3. Ensure that the test results are recorded and that the annexed documents remain available for a time period determined in agreement with the approval authority;

10.3.4. Analyse results of each type of test in order to verify and ensure the stability of the helmet or visors characteristics, making allowance for variation of an industrial production;

10.3.5. Ensure that for each type of helmet or visors at least the checks prescribed in paragraphs 10.5. and 10.6. of the present Regulation are carried out;

10.3.6. Ensure that any set of samples or test pieces giving evidence of non-conformity to the type of test concerned gives rise to a further sampling and test. All the necessary steps must be taken to restore conformity of the corresponding production.

10.4. The authority which has granted type approval may at any time verify the conformity control methods applied in each production facility.

10.4.1. At every inspection, the test records and production records must be available to the visiting inspector.

10.4.2. The inspector may select samples at random to be tested in the manufacturer's test laboratory (in the case where the manufacturer has such a laboratory). The minimum number of samples may be determined according to the results of the manufacturer's own verification.

10.4.3. Where the level of control appears unsatisfactory, or when it seems necessary to verify the validity of the tests carried out in application of paragraph 10.4.2., the inspector must select samples to be sent to the technical service which conducted the approval tests.

10.4.4. The approval authority may carry out any check or test prescribed in the present Regulation.

10.4.5. The approval authority must conduct at least one inspection per year. In cases where unsatisfactory results are found during an inspection, the approval authority must ensure that all necessary steps are taken to restore conformity of production as rapidly as possible.

10.5. Minimum conditions for the inspection of conformity of helmets

10.5.1. The manufacturer, or his duly appointed representative, must divide the helmets into batches which are as uniform as possible in regard to raw materials or intermediate products involved in their manufacture, and in regard to production conditions. The size of a batch must not exceed 3,200 units.

10.5.2. A sample must be taken from each batch in accordance with the provisions of paragraph 10.5.4.

10.5.3. The sizes of the helmets and the tests to be conducted are given in paragraph 10.5.4.

10.5.4. In order to be accepted, a batch of helmets must satisfy the following conditions:

			TESTS TO BE CONDUCTED					
Numbers in the batch	Number of samples/ helmet size	Combined Number of samples	Shock absorption (7.3)	Dislodging (7.7)	Retention system (7.6)	Acceptance criteria	Rejection criteria	Degree of inspection rigour
0<N≤500	First = 2LS + 2SS Second = 2LS + 2S	8	2 on LS 2 on LS	1 on SS 1 on SS	1 on SS 1 on SS	0 1	2 2	Normal
500<N≤3200	First = 3LS + 2SS Second = 3LS + 2SS	10	3 on LS 3 on LS	1 on SS 1 on SS	1 on SS 1 on SS	0 1	2 2	Normal
0<N≤1200	First = 4LS + 4SS Second = 4LS + 4SS	16	4 on LS 4 on LS	2 on SS 2 on SS	2 on SS 2 on SS	0 1	2 2	Strengthened
1200<N≤3200	First = 7LS + 6SS Second = 7Ls + 6SS	26	7 on LS 7 on LS	3 on SS 3 on SS	3 on SS 3 on SS	0 3	3 4	Strengthened

Note: LS signifies large size
SS signifies smallest size
The absorption of the shocks is arranged on B, X, P, R, S for the same helmet

The conditioning and the anvil in the case of the shock absorption tests are chosen by the technical service which carried out the approval tests.

This dual sampling plan functions as follows:

For a normal inspection, if the first sample does not contain any defective units, the batch is accepted without testing a second sample. If it contains two defective units the batch is rejected.

Finally, if it contains one defective unit a second sample is selected and it is the cumulative number which must satisfy the condition of column 7 of the table above.

There is a change from normal inspection to strengthened inspection if, out of 5 consecutive batches, two are rejected. Normal inspection is resumed if 5 consecutive batches are accepted.

If 2 consecutive batches subjected to the strengthened inspection are rejected, the provisions of paragraph 12. are applied.

10.5.5. The remainder of the tests, not specified in the table above, but which have to be conducted in order to obtain approval, must be conducted at least once per year.

10.5.6. The inspection of helmet conformity is undertaken starting with the batch manufactured after the first batch which was subjected to production qualification.

10.5.7. The test results described in paragraph 10.5.4. must not exceed [1,1]L, where L is the limit value prescribed for each approval test.

10.6. Minimum conditions for the inspection of conformity of visors

10.6.1. The manufacturer, or his duly appointed representative, must divide the visors into batches which are as uniform as possible in regard to raw materials or intermediate products involved in their manufacture, and in regard to production conditions. The size of a batch must not exceed 3,200 units.

10.6.2. A sample must be taken from each batch in accordance with the provisions of paragraph 10.6.3.

10.6.3. In order to be accepted, a batch of visors must satisfy the following conditions:

			TESTS TO BE CONDUCTED				
Numbers in the batch	Number of samples/ helmet size	Combined Number of samples	Group A	Group B	Acceptance criteria	Rejection criteria	Degree of inspection rigour
0<N≤500	First = 4 Second = 4	8	3 3	1 1	0 1	2 2	Normal
500<N≤3200	First = 5 Second = 5	10	4 4	1 1	0 1	2 2	Normal
0<N≤1200	First = 8 Second = 8	16	6 6	2 2	0 1	2 2	Strengthened
1200<N≤3200	First = 13 Second = 13	26	10 10	3 3	0 3	3 4	Strengthened

Test group A

Light transmission – paragraph 6.15.3.4.
Recognition of light signals – paragraph 6.15.3.6.
Spectral transmission – paragraph 6.15.3.7.
Light diffusion – paragraph 6.15.3.5.
Optical qualities and resistance to scratches – paragraph 7.8.3.

Test group B

Refractivity – paragraph 6.15.3.8.
Mechanical characteristics – paragraph 7.8.2.

This dual sampling plan functions as follows:

For a normal inspection, if the first sample does not contain any defective units the batch is accepted without testing a second sample. If it contains two defective units the batch is rejected.

Finally, if it contains one defective unit a second sample is selected and it is the cumulative number which must satisfy the condition of column 7 of the table above.

There is a change from normal inspection to strengthened inspection if, out of 5 consecutive batches, two are rejected. Normal inspection is resumed if 5 consecutive batches are accepted.

If 2 consecutive batches subjected to the strengthened inspection are rejected, the provisions of paragraph 12. are applied.

10.6.4. The remainder of the tests, not specified in the table above, but which have to be conducted in order to obtain approval, must be conducted at least once per year.

10.6.5. The inspection of screen conformity is undertaken starting with the batch manufactured after the first batch which was subjected to production qualification.

10.6.6. The test results described in paragraph 10.6.3. must not exceed [1,1]L, where L is the limit value prescribed for each approval test."

Paragraphs 9. to 9.5.6. (former), shall be deleted.

Paragraphs 10. to 13.5.1. (former), renumber as paragraphs 11 to 14.5.1.

Insert a new paragraph 14.6., to read:

"14.6. Information for wearers shall also include the following:

the name and address of the manufacturer,
the performance of the helmet and/or visor as recorded in testing,
an identification of the class of protection,
protection for transport, and
the significance of any further markings."

Paragraphs 14.to 15.3.1. (former), renumber as paragraphs 15. to 16.3.1.

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B. JUSTIFICATION

This proposed draft amendment makes it possible to clarify everything related to production qualification and production conformity.

It no longer permits any interpretation.
It standardizes the method between helmets and visors.
It introduces the S point.
It introduces new tests relating to visors.
It repeats the major guidelines for conformity of production of Regulation No. 16
and of Regulation No. 44, where the responsibilities of each are perfectly described.
It is precise in the matter of sampling and in the tests to be performed.

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