Headform tests Data

16-19 January 2006

Pedestrian Safety GRSP Informal Group January 06
Car 1: Designed and approved to EU Directive 2003/102/EC Phase 1

No adult test area

Impactor child/small adult 3.5 kg

Impact angle 50° to the horizontal

Impact speed 35 km/h.
Car 2: Sports car

NOT approved to EU Directive 2003/102/EC Phase 1

70 impact points tested
Car 3: Designed and approved to EU Directive 2003/102/EC Phase 1

- No adult test area on bonnet
- Impactor child/small adult 3.5 kg
- Impact angle 50° to the horizontal
- Impact speed 35 km/h.

20% safety margin
The need for 1/3 zone on the complete bonnet area is due to feasibility (conflicting requirements for locks, bonnet stops, …) and will not be changed for Phase II.

The head impact protection will improve due to more stringent HIC 1700 (actual values will be much lower due to 20% safety margin and need for transition zone).
EuroNCAP Phases 10 to 11+ (see INF GR/PS/45)

- 39 vehicles tested in total
- EuroNCAP test conditions different from EU Phase 1, but interpolation indicates that for child headform:
  
  Vehicle 1: about 67% (2/3) of the area would meet HPC 1000
  about 33% (1/3) of the area: HPC 1000 to 2000
  
  Vehicle 2: about 10% of the area would meet HPC 1000
  about 50% of the area: HPC 1000 to 2000
  about 40% of the area: HPC above 2000
Remarks and conclusions:

1. Only brand new models, specifically designed to meet the requirements can pass.

2. Existing models cannot be made compliant.

3. Even the best vehicles need the HIC 1700 exemption for compliance.

4. Because of high scatter of the test results, manufacturers need safety margin, usually 20% below legal limit.

5. Meeting the GTR requirements in the framework of vehicle type approval is clearly a significant challenge.
HEADFORM IMPACT TEST RESULTS
ON BONNET TOP FROM J-NCAP 1st YEAR

Jan. 16 -19, 2006 in Washington, D.C.

JAMA
Example of J-NCAP ’03 Impact Points

This report studies data on only GTR area.
EXAMPLE of J-NCAP TEST RESULTS

- Total area, WAD1000-2100 is divided into 60 areas.
- Each area has each HIC value from impact test or from neighbor area assuming as same, excluding glass and A pillar area where HIC is given 650 or 2000 by decision based on the experience.

Result: Level 1

Total Point: 1.74
HIC Distribution of Impact Points on GTR Area

Model

0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20
Distribution of HIC Range by Impact Point [ <800<1360]
Distribution of HIC Range by Number of Area [<1000<1700>]

Model Distribution of HIC Range

- ≤1000
- 1000< ~ <1700
- ≥1700
Distribution of HIC Range by Number of Area [\(<800<1360\)]
Example of J-NCAP: Model #1

This model has only one impact point but evaluated as follows:

Area 2

- C3-d
- 1331 (Wiper Arm)
- 1058 (Joint of Wiper Arm)

Area 3

- 1299 (Glass Lower)
- 688 (Bonnet rear)
- 877 (Bonnet rear)
- 6315 (Fender)

GTR area