First findings of additional research of the NL

GRSP Informal Working Group on Frontal Impact

TNO | Knowledge for business

GRSP Informal Working Group on Frontal Impact
Frontal Impact Tests

Initial Kinetic Energy

- Baseline test 50 / 50 km/h
- R94 56 km/h
- Euro NCAP 64 km/h
- PDB 60 km/h
- Car-to-car 56 / 56 km/h
- Car-to-MPDB 56 / 56 km/h
Frontal Impact Tests
Energy Absorbed by Barrier

- Baseline test 50%
- R94 ~50kJ
- Euro NCAP ~50kJ
- PDB ~15% (based on VC-Compat data)
- Car-to-car depending on collision partner
- Car-to-MPDB to be determined
### Fiat 500-to-MPDB test

#### Test set-up

<table>
<thead>
<tr>
<th></th>
<th>Fiat 500</th>
<th>MPDB</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Type</strong></td>
<td>1.2 POP LHD</td>
<td>PDB v8.0</td>
</tr>
<tr>
<td><strong>Mass</strong></td>
<td>1225 kg</td>
<td>1487 kg</td>
</tr>
<tr>
<td><strong>Velocity</strong></td>
<td>56 km/h</td>
<td>56 km/h</td>
</tr>
</tbody>
</table>

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[Image of Fiat 500 and MPDB test setup]

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Fiat 500-to-MPDB test
Fiat 500-to-MPDB test
Preliminary results
Fiat 500-to-MPDB test
Comparison

<table>
<thead>
<tr>
<th></th>
<th>Euro NCAP</th>
<th>MPDB</th>
</tr>
</thead>
<tbody>
<tr>
<td>Impact velocity</td>
<td>64 km/h</td>
<td>56 / 56 km/h</td>
</tr>
<tr>
<td>Initial kinetic energy</td>
<td>194 kJ</td>
<td>330 kJ</td>
</tr>
<tr>
<td>EES</td>
<td>55 km/h</td>
<td>56 km/h</td>
</tr>
</tbody>
</table>

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Conclusions

• The Fiat 500 was not designed for this test

• The Fiat 500 to MPDB test was shown to be severe; some injury values were over the R94 limit and the compartment could not cope with the forces

• A more detailed analysis and comparison of the following tests will be presented:
  • TNO test: FIAT 500 to MPDB
  • ADAC test: FIAT 500 to Audi Q7
  • Euro NCAP: FIAT 500