

FIA Tests

Crash-box frontal test

We compared the FIA protocol test, decomposed in two types of tests:

- in dynamic,
- in static.

The dynamic test is a crash test performed at a speed of 50km/h.

The load applied for the static test for a sport production car is 20kN with a rise time less than 3 minutes and a hold time of 30 seconds.

Roll-cage test

At the front of the car in the vertical static load 23.75kN for small cars, there are no specifications for rise time and hold time.

As for the FIA tests philosophy, the « mechanical impact » test RESS is also a dynamic test, and for the “mechanical integrity” test, we have to perform a static test.

Trailer truck’s underrun bar (Règlement n° 58, 73, 93)

100 kN without specification for the rise time and the hold time.

RESS mechanical integrity

It is really important to specify a rise time and a hold time to have repeatable tests. Moreover, we think that the target effort value specified in the doc ress 100-2 (100kN) is too important (equivalent to the worst case of an underrun bar which is a safety component). Also, 100 ms is not a relevant hold time for a static test.

We propose in blue:

Annex 8D

Mechanical integrity

1. PURPOSE

The purpose of this test is to verify the safety performance of the RESS under contact loads which may occur during vehicle crash situation.

2. INSTALLATIONS

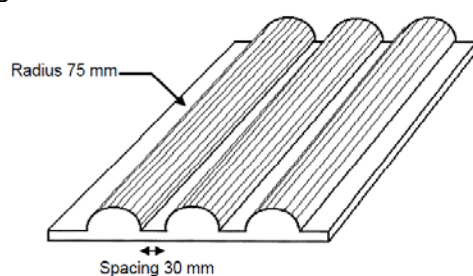
This test shall be conducted either with the complete RESS or with related subsystems of the RESS including the cells and their electrical connections. If certain electronic management unit for the RESS is not integrated, such control unit may not be installed on the DUT. The DUT shall be connected to the test fixture only by the intended mounting methods.

3. PROCEDURES

Crush a [RESS or pack(s)] between a resistance and a crush plate described in figure 7 with a force of 20kN with a rise time less than 3 minutes and a hold time of 30 seconds [100 kN] [X seconds; how fast] during [Y seconds; how long] at least 100 ms should be limited to a duration of [100] ms in direction of travel and horizontally perpendicular to the direction of travel of the [RESS].

[Optionally, this test can be conducted with the mechanical load according to ECE-R12 Annex 3 or ECE R94 Annex 3 in the direction of travel and with the mechanical load according to ECE R95 Annex 4 in the direction horizontally perpendicular to the direction of travel. The mechanical load shall be determined by the vehicle manufacturer using test or simulation data and agreed by the Technical Service.]

Figure 7:



[Dimension of the crush plate:

600 mm x 600 mm or smaller]