



Bed Liner, Gate Liner, and Protective Cap Impact and Abrasion Test

1 Introduction

Note: Nothing in this standard supercedes applicable laws and regulations.

Note: In the event of conflict between the English and domestic language, the English language shall take precedence.

1.1 Purpose. To evaluate the impact and high load performance of pickup truck bed trim components of the general type shown in Figure 1 at cold and ambient temperatures and their abrasion resistance at ambient and high temperatures.



Figure 1: Typical Bed and Gate Liner

1.2 Applicability. All original equipment bed liners, rail caps, and end gate trim capable of contacting cargo.

2 References

Note: Only the latest approved standards are applicable unless otherwise specified.

2.1 External Standards/Specifications.

None

2.2 GM Standards/Specifications.

None

2.3 Additional References.

- Subsystem Technical Specification (SSTS)
- Validation Cross Reference Index (VCRI)

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3 Resources

3.1 Facilities. Environmental chamber capable of -30 °C and large enough to fit the test vehicle.

3.1.1 Calibration. The test facilities and equipment shall be in good working order and shall have a valid calibration label.

3.1.2 Alternatives. Alternative test facilities and equipment may also be used. However, all measuring variables as specified in this standard shall be determined correctly with respect to their physical definition.

3.2 Equipment.

3.2.1 Digital Camera. Video camera optional.

3.2.2 Concrete building block measuring 19.4 cm (7.63 in) high by 19.4 cm (7.63 in) deep by 38.8 cm (15.63 in) wide and weighing 16 kg $\pm$ 4 kg. See Figure 2.



Figure 2: Concrete Building Block, 16 kg $\pm$ 4 kg

3.2.3 Two (2) concrete building blocks, 32 kg $\pm$ 8 kg fastened together. See Figure 3.



Figure 3: Two Concrete Blocks Tied and Banded Together

3.2.4 One 2.5 cm diameter, 3 m (118 in) long solid steel rod, 12 kg $\pm$ 0.25 kg.

3.3 Test Vehicle/Test Piece. Vehicle with all pickup box trim components installed with production-representative materials, methods, and fasteners.

3.4 Test Time. Not applicable.

3.5 Test Required Information. Not applicable.

3.6 Personnel/Skills. No special training or skills are required.

4 Procedure

4.1 Preparation. Install bed liner, sides, rail caps, and end gate panels.

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4.2 Conditions.

4.2.1 Environmental Conditions.

4.2.1.1 Cold Temperature. $-30\text{ }^{\circ}\text{C} \pm 3\text{ }^{\circ}\text{C}$.

4.2.1.2 Ambient Temperature. $23\text{ }^{\circ}\text{C} \pm 5\text{ }^{\circ}\text{C}$.

4.2.1.3 High Temperature. $80\text{ }^{\circ}\text{C} \pm 3\text{ }^{\circ}\text{C}$.

4.2.2 Test Conditions. Deviations from the requirements of this standard shall have been agreed upon. Such requirements shall be specified on component drawings, test certificates, reports, etc.

4.2.2.1 Vehicle test is not required to demonstrate the results of this test procedure.

4.2.2.2 Subsystem or bench level testing on representative part samples and a representative fixture may be acceptable. Such deviations shall be specified on component drawings, test certificates, reports, etc. Such deviations shall be approved by the GM Subsystem Validation Engineer and specified on the Validation Cross Reference Index and test reports.

4.3 Instructions.

4.3.1 Impact and Load Testing. Place vehicle in a $-30\text{ }^{\circ}\text{C} \pm 3\text{ }^{\circ}\text{C}$ cold chamber for a minimum of 4 h until the chamber has reached this test temperature. Test 4.3.1 at cold temperature and at ambient temperature as defined in 4.2.1 and the following instructions.

4.3.1.1 Bed Liner and Top Rail Impact. To be performed at cold and ambient temperatures.

4.3.1.1.1 Determine common customer impact locations and weakest areas of the bed liner and top rails, to be used for impact test defined by this procedure. Locations shall be approved by the GM Subsystem Validation Engineer and Design Release Engineer.

4.3.1.1.2 Drop concrete block from a height with the bottom of the block 25 cm above the bed liner floor onto bed liner floor. Drop the block at an angle so the pointed edge makes contact with the liner surface.

4.3.1.1.3 Repeat at a total of 14 locations on the floor, end gate, wheelhouse, and top rail areas. See Figure 4 and Figure 5 for possible impact points.

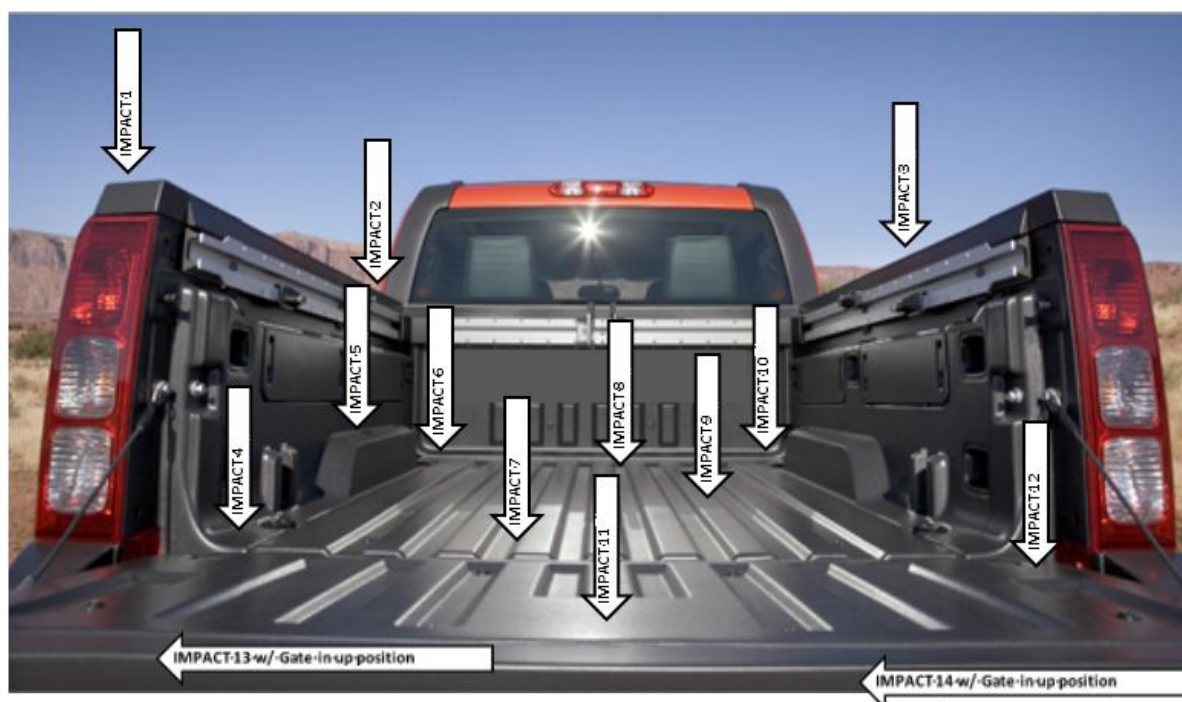


Figure 4: Impact Points – Bed and Top Rails

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