



Spray-on Bedliner – Limited Weatherability

1 Scope

This specification details the qualification and performance requirements of an ambient cure two (2) component spray-on bedliner and is intended to protect the truck bed from scratch and chip.

1.1 Material Description. These materials are based on aromatic urethane technology. Materials approved to this specification, will tend to yellow or darken in color and will lose gloss becoming flat at a steady rate after exposure to natural sunlight.

1.2 Symbols. Not applicable.

1.3 Applicability. These materials are designed to adhere to approved paint systems in production at GM North America (GMNA) plants. These materials are ambient cure and must not see a paint bake. Adhesion must be proven over the paint layering in 1.3.1.

1.3.1 Paint Layering. Electrocoat + Primer + Basecoat + Clearcoat.

1.4 Remarks. For cost savings purpose one or more paint layers may be eliminated. For each specific case proposal, additional testing is required to determine bedliner adhesion to proposed paint layering.

2 References

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

2.1 External Standards/Specifications.

ASTM D257	ASTM D2240	ASTM D5420	SAE J1767
ASTM D412	ASTM D4541	ASTM D9681-51	SAE J2527
ASTM D624			

2.2 GM Standards/Specifications.

GMW3059	GMW14333	GMW14700	GMW14729
GMW3208	GMW14444	GMW14701	GMW16853
GMW14270			

2.3 Additional References. None.

3 Requirements

3.1 The submission requirements of this specification must be completed prior to approval. The supplier must clearly define the usage target.

3.2 Material Application. Materials approved to this specification must be capable of being robotically applied.

3.3 Submission Package. All data and documentation generated during the material approval must be included and approved by the responsible engineer.

3.3.1 Material Identification. All paint layers and bedliner used in the submission must be identified by product codes and batch number.

3.4 Process Identification. A baseline and target range for film build must be established prior to the submission. Application equipment and spray parameters used for the submission must be documented.

3.5 Panel Preparation. All substrates, pretreatment, and coatings layers shall be fully identified with source, product code, batch number, bake description and film build.

3.5.1 Basecoat Color = White.

3.5.2 Bedliner Film Build = 2.28 mm to 2.41 mm (90 mils to 95 mils) dry film unless otherwise specified.

3.5.3 Panel Age = Three (3) days unless otherwise specified.

3.6 Physical Property Requirements.

3.6.1 The physical property testing outlined in Table 1 must be demonstrated over all target GMNA topcoat technologies. These topcoat technologies will be determined by the appropriate Materials Engineering Vehicle Systems Paint Engineer.

3.6.2 All other physical requirements listed in Table 2 are inherent to the material not its adhesion performance to substrate. Therefore, panel prep may be done over any one of the target GMNA topcoat technologies identified in 3.6.1.

3.7 Test Methods in Table 1 that are Not Published as GM Test Methods.

3.7.1 Peel Strength Adhesion Test.

3.7.1.1 Prepare panels with 2.28 mm to 2.41 mm dry film of bedliner.

3.7.1.2 Let panels age for seven (7) days.

3.7.1.3 Cut bedliner away from side edges of the substrate, to prevent false readings from bedliner adhering to the backside Electrocoat (e-coat).

3.7.1.4 Pull the taped/foiled area of bedliner, away from the substrate, leaving approximately a 25 mm (1 in) tab of bedliner.

3.7.1.5 Bend the bare substrate 90 degrees, in the opposite direction of the film tab.

3.7.1.6 Set the Instron claws at 25 mm (1 in) of distance from each other.

3.7.1.7 Set the Instron Crosshead speed to 50 mm (2 in) per minute.

3.7.1.8 Place bent edge of substrate into the bottom claw of Instron, and fasten.

3.7.1.9 Place the raw edge of the substrate into the bottom claw of Instron, and fasten.

3.7.1.10 Select the reset button on the Instron, to clear out previous readings.

3.7.1.11 Set the decimal point all the way to the right.

3.7.1.12 Start the Instron by pressing the **UP** button and allow the claws to pull until failure.

3.7.1.13 Record the load unit in Pound-Force (LBF).

3.7.1.14 Disconnect the claws from the bedliner, and remove the test panel. Press the return button, to return the claws to the original position.

3.7.2 Cold Cycle Adhesion Test.

3.7.2.1 Prepare panels with 2.28 mm to 2.41 mm dry film of bedliner.

3.7.2.2 Let panel age for three (3) days.

3.7.2.3 Cut bedliner away from side edges of the substrate on all four sides.

3.7.2.4 Place panel in metal or plastic panel rack.

3.7.2.5 Place panel in -30 °C freezer for 12 h.

3.7.2.6 After 12 h, visually inspect panel for any adhesion loss or panel deformation. The level of deformation can be measured in millimeters (inches) by the distance from a level plane.

3.7.2.7 Allow panel to remain at room temperature for 6 h. This completes one (1) cycle.

3.7.2.8 Repeat the above sequential process for 10 cycles.

3.7.3 Heat Deformation Test.

3.7.3.1 Acquire materials.

3.7.3.1.1 Weights to specified load.

3.7.3.1.2 Pedestals with at least one side having a smooth flat surface and a known total surface area that will achieve the specified load. (Elcometer dollies work well).

3.7.3.1.3 Masking tape double-sided 25 mm (1 in).

3.7.3.1.4 Test piece with a level surface.

3.7.3.1.5 Masking tape 25 mm (1 in) or 50 mm (2 in).

3.7.3.1.6 Temperature controlled electric oven; set at the appropriate temperature.

3.7.3.1.7 Timer.

3.7.3.2 Prepare panels with 2.28 mm to 2.41 mm dry film of bedliner.

3.7.3.3 Let panels age for seven (7) days.

3.7.3.4 Use the 25 mm (1 in) double-sided tape, attach the pedestal to the weight, with the smooth surface not facing the weight.

3.7.3.5 Center the pedestal and weight onto the test piece.

3.7.3.6 Loosely secure the weight to the test piece using 25 mm (1 in) or 50 mm (2 in) masking tape. Do not have additional weight or pressure, added to the test piece, by securing too tightly. Be sure the weight is balanced on the pedestal and the pedestal lies flat on the test piece.

3.7.3.7 Place the test piece with attached weight, flat in the temperature controlled oven; at the specified temperature.

3.7.3.8 Set timer for specified duration.

3.7.3.9 When the time is complete, remove test piece from oven. (Use standard precautions for oven use.)

3.7.3.10 Carefully remove tape to free pedestal from test piece.

3.7.3.11 Carefully remove the dolly and weight from test piece. (**Caution:** Test piece, weight and pedestal may be hot.)

3.7.3.12 Rate for deformation or imprint of pedestal in test piece, using the Rating Scale, see 3.7.3.12.1.

3.7.3.12.1 Rating Scale.

- 0 = No Imprint/Marking.
- 1 = Minor Imprint/Marking.
- 2 = Moderate Imprint/Marking.
- 3 = Severe Imprint/Marking.

3.7.3.13 Comment on whether the pedestal stuck to the test piece upon removal of the pedestal.

3.7.3.14 Check 24 h later to observe any recovery from deformation of the test area. Record the observations, see 3.7.3.14.1.

3.7.3.14.1 Specified Test. Record observations of the following:

- Surface area of pedestal.
- Weight as specified.
- Temperature as specified.
- Duration as specified.

3.7.3.15 Standard Test Parameters.

- 0.845 kgf/cm² (12 lb/in²).
- 85 °C (185 °F).
- 8 h duration.

3.8 Emissions Testing of Interior Materials and Parts. For all Code E designated parts per GMW14444, reference GMW16853 for emissions testing of interior materials and parts.