



Adhesive, Structural – Metal, Tape Expandable

1 Scope

1.1 Material Description. This specification covers extruded tape adhesives suitable for structural bonding of oily galvanized, aluminum or cold rolled steel (CRS) automotive parts or assemblies. These structural adhesive tape materials are *not* weldable.

1.1.1 Materials approved to this specification shall be compatible with production pretreating, E-Coat, and topcoat systems.

1.1.2 This material shall be supplied on a release liner either as a die-cut part or on a continuous roll. The tape shall be easily removed from its liner without sticking or stretching. The material shall have adequate *tack* to adhere to oily production metal substrate to facilitate assembly of the parts without displacement of the adhesive material.

1.1.3 The adhesive is designed to cure in the heat of the E-Coat paint ovens.

1.1.4 Adhesive materials approved to this specification are designed to expand volumetrically during cure. The amount of expansion for a specific material is designated by the “Material Type” (Type I or Type II).

1.2 Symbols. Not applicable.

1.3 Applicability. The structural adhesive tapes approved to this specification are intended to augment adjacent welds, and/or mechanical attachments, in order to provide strength and/or stiffness to the interfaces between joined parts or assemblies for the life of the vehicle.

2 References

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

2.1 External Standards/Specifications.

ASTM D502	ASTM D638	ASTM D3418	SAE J243
ASTM D570	ASTM D1875	ASTM D4339	EPA Method 24

2.2 GM Standards/Specifications.

GMW3059	GMW15200	GMW15735	GMW16853
GMW14444	GMW15481		

3 Requirements

3.1 Toxicity. The toxicity shall be disclosed in kind and magnitude as required by the GM Material Safety Data Sheet. In addition, the material must have full approval of the appropriate medical department prior to production use.

3.2 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.

3.3 Stability (GMW15735). Material conditioned using potential storage conditions must be capable of passing all the requirements of this specification.

3.3.1 Elevated Temperature Stability. As shipped, the adhesive must be capable of withstanding a temperature of 55 °C for 72 h without deleterious effects.

3.3.2 Low Temperature Stability. As shipped, the adhesive must be capable of withstanding three cycles of the applicable cycle schedule outlined in GMW15735.

3.3.3 Storage Stability. The shelf life of the adhesive in closed containers shall be 90 days at a temperature not to exceed 35 °C. Shelf life of the material commences upon the receipt of the material from the manufacturer.

3.4 Nonsmoking. The adhesive shall not smoke up to 177 °C and shall not be classified greater than a slight smoker at 191 °C.

3.5 Material Properties – Uncured Adhesive. See Table 1.

3.6 Material Properties – Cured Adhesive. See Table 2.

3.7 Adhesive Properties. Test specimens, prepared as specified in the designated procedure, must meet the requirements of the following specification GMW15200 LS (Low Strength).

3.7.1 This procedure must be repeated for each bonding system under consideration for the application.

Table 1: Material Properties – Uncured Adhesive

Properties	Values	Test Methods
Color	Shall be set at time of approval	Visual
Odor	The material shall not have a noxious odor in either the cured or uncured condition	ASTM D4339
Sag Resistance	No sag or slide at room temperature or during bake	SAE J243, ADS-10, C
VOC	< 0.2%	EPA Method 24
Density	Shall be set at time of approval for the specific tape adhesive	ASTM D1875
Flash Point	> 200 °C	ASTM D502
Homogeneity	Material must be homogeneous and free of lumps or inclusions	-

VOC = Volatile Organic Compound

Table 2: Material Properties – Cured Adhesive

Properties	Values	Test Methods
Glass Transition	90 °C minimum	ASTM D3418
Moisture Absorption	< 1% by weight	ASTM D570
Elongation	1.5% minimum	ASTM D638
Tensile Strength	10 000 kPa minimum	ASTM D638
Volumetric Expansion	Type I = > 0% and ≤ 50% Type II = > 50%	GMW15481
Bondline Readthrough	No perceivable bondline read through	Visual

4 Manufacturing Process

Not applicable.

5 Rules and Regulations

5.1 Legal Regulations. All materials must satisfy applicable laws, rules, regulations and recommendations valid in the country of usage.

5.2 Language. In the event of conflict between the English and domestic language, the English language shall take precedence.