



Adhesive, Hot Melt, Urethane, Moisture Cure

1 Scope

1.1 Material Description. This specification covers a hot melt adhesive—suitable for bonding various interior materials. The adhesive, a 100% solids material, is applied like a conventional hot melt adhesive. After cooling, the adhesive undergoes moisture curing (x-linking) through exposure to moisture in the surrounding area.

The adhesives shall be capable of being dispensed with current production equipment designed specifically for reactive polyurethane adhesives. It shall be compatible with production systems.

1.2 Symbols. Not applicable.

1.3 Applicability. Bonds carpet, cloth, various plastics (except polypropylene and polyethylene), to other plastics, painted metal or glass.

2 References

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

2.1 External Standards/Specifications.

ASTM D412	ASTM D1489	ASTM D3163	ASTM D4339
ASTM D638	ASTM D1875	ASTM D3330	SAE J1524

2.2 GM Standards/Specifications.

GMW3059	GMW14444	GMW15735	GMW16853
GMW14124			

3 Requirements

3.1 Toxicity. The toxicity shall be disclosed in kind and magnitude, as required, by the GM Material Safety Data Sheet (MSDS). 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). The material conditioned using potential storage conditions must be capable of passing all the requirements of this specification.

3.4 Elevated Temperature Stability. As shipped, the material must be capable of withstanding a temperature of 55 °C for 72 h without separation or caking.

3.5 Low Temperature Stability. As shipped, the material must be capable of withstanding 3 cycles of Cycle A as outlined in Table 1 in GMW15735.

3.6 Storage Stability. The shelf life of the material in closed containers shall be 180 days at a temperature not to exceed 35 °C. Shelf life of the material commences upon the receipt of the material from the manufacturer.

3.7 Material Properties – Uncured Adhesive. See Table 1.

Table 1: Material Properties – Uncured Adhesive

Properties	Values	Test Methods
Color	Clear pale yellow or amber	Visual
Odor	The material shall not have a noxious odor in either cured or uncured condition	ASTM D4339
Solids Content, percent (%) minimum	97%	ASTM D1489
Viscosity, centipoise (cP)	The viscosity tolerance for any one supplier shall be $\pm 15\%$ based on the recorded viscosity of the original approved production sample	SAE J1524
Density, kilograms per cubic meter (kg/m ³)	The viscosity tolerance for any one supplier shall be $\pm 15\%$ based on the recorded viscosity of the original approved production sample	ASTM D1875
Homogeneity	The material must be homogeneous and free of lumps or air bubbles	-
Open time, minimum ^{Note 1}	45 s	-

Note 1: Three millimeters (3 mm) bead on non-metallic substrate.

3.8 Material Properties – Cured Adhesive. See Table 2.

Table 2: Material Properties – Cured Adhesive

Properties	Values	Test Methods
Color	Off White	Visual
Tensile Strength, megapascals (MPa), minimum	6.9	ASTM D638
Elongation, percent (%)	370	ASTM D412
180 Degrees Peel Strength ^{Note 1} , newton meters (Nm) minimum after the following environments: 168 h @ 25 °C 168 h @ 80 °C 168 h humidity GMW14124 Cycle C (1 cycle)	1750 1750 1750 1750	ASTM D3330
Over Shear Strength ^{Note 2} , megapascals (MPa), minimum after the following environments: 168 h @ 25 °C 168 h @ 80 °C 168 h humidity GMW14124 Cycle C (1 cycle)	8.3 8.3 8.3 8.3	ASTM D3163

Note 1: Cotton duck canvas bonded to ABS. Tested @ 25 °C, 300 mm/minute. Cure for 7 days @ 23 °C $\pm$ 3 °C and 50% $\pm$ 5% relative humidity (RH).

Note 2: Glass fiber reinforced polyester resin sheet molding compound (SMC), 12.7 mm/minute. Bondline thickness 0.5 mm. Cure for 7 days @ 23 °C $\pm$ 3 °C and 50% $\pm$ 5% RH.