



Label Application to Automotive Components

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. This procedure is intended to serve as a general guideline for label installation. This standard describes the procedure for applying a label to painted metal, glass, plastic, cloth or other material. The label can be either a pressure-sensitive adhesive attached label or a heat-transfer label. An in-process tape adhesion test for heat transfer labels is also included.

1.2 Applicability. All labels installed on all vehicles.

2 References

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

2.1 External Standards/Specifications.

None

2.2 GM Standards/Specifications.

GMW3059

GMW14573

GMW14829

2.3 Additional References.

- 3M Company, www.3m.com
- Sutherland Felt Company, 700 E Whitcomb Ave, Madison Heights, MI 48071

3 Requirements

3.1 Surface Preparation for Sheet Metal, Plastic and Glass Surfaces (Not Cloth).

3.1.1 The component surface must be clean and dry. Suitable cleaning solvents are isopropyl alcohol and isopropyl alcohol mixed with water up to 50% water, and a suitable ammoniated window cleaner, such as Windex, or equivalent. The solvent cleaning step may be replaced with a dry wipe using painted surface body cleaning cloths. The cloths may be washed and reused up to ten (10) times. The bonding surface must be free of dust, mold release, grease, fingerprint oil, condensation or any contaminate that may reduce the label bonding ability.

3.1.2 The application surface should be smooth. Grained plastic surfaces are more difficult to bond to and require a thicker adhesive. Bonding onto a cloth surface also requires a thicker adhesive. Some heat transfer labels have the ability to conform to uneven surfaces better than other heat transfer labels and pressure-sensitive labels. Certain low-surface energy plastics (e.g., polyethylene, polypropylene and acetal) are very difficult to bond to and require a specially formulated adhesive.

3.1.3 The recommended application surface and label temperatures are between 15 °C (59 °F) minimum and 40 °C (104 °F) maximum.

3.1.4 Injection-molded plastic parts are to be allowed to dwell for 72 h at room temperature before label application to inhibit blistering due to outgassing. If part supplier cannot allow parts to sit for 72 h prior to label application, the part supplier must contact the label supplier to supply a different label that will prevent blistering.

3.2 Label Application.

3.2.1 Pressure-sensitive Adhesive Label.

3.2.1.1 Firmly hold the label and peel it off the protective liner, being careful not to touch the adhesive. Do not stage or attach the label to unintended surfaces (e.g., shirt sleeve, glove, countertop, bare skin, etc.) Also, do not allow any foreign matter to contact the adhesive.

3.2.1.2 Position the leading edge of the label on the surface, again being careful not to touch the adhesive.

3.2.1.3 Carefully align the label to the receiving surface. Press firmly and smooth out by using a plastic squeegee ^{Note 1} or felt block ^{Note 2}.

Note 1: Squeegees available from 3M Company, such as PA-1 blue and PA-1 gold squeegees, are commonly used.

Note 2: Felt blocks available from Sutherland Felt Company, 700 E Whitcomb Ave, Madison Heights, MI 48071, such as 32SI felt block, are commonly used.

3.2.1.4 Force out any air bubbles across the length of the label until fully affixed to the substrate.

3.2.1.5 The entire surface of the label must be uniformly bonded.

3.2.1.6 Any label removed after it has contacted the surface cannot be reused, unless designed to be repositioned after a specified period of time after initial application.

3.2.2 Heat Transfer Labels.

3.2.2.1 Temperature is the most critical parameter in ensuring adhesion of the label to the substrate. Pressure should be minimal; dwell can be decreased until adhesion is compromised. The temperature range typically varies from 149 °C to 171 °C (300 °F to 340 °F), depending on the heat transfer label construction, substrate, label size, etc. Temperatures set too low can result in poor label adhesion. Temperatures set too high can result in bleed-through of the substrate, poor label adhesion and cracks in the ink layers.

3.2.2.2 Dwell time varies from 1 s to 4 s. Insufficient dwell time can result in poor label adhesion. Excessive dwell time can produce marks on the substrate.

3.2.2.3 Pressure (machine tonnage) varies from 454 kg to 3629 kg, (0.5 tons to 4 tons). Gage settings range from 138 kPa to 345 kPa (20 psi to 50 psi). Actual pressures at platen will range from 25 kPa to 69 kPa, (4 psi to 10 psi). Calculate actual pressure as follows: psi setting/area of platen in². Insufficient pressure can result in poor label adhesion. Excessive pressure can cause poor label adhesion, bleed-through of substrate and pressure marks on the substrate.

3.2.2.4 The parameters need to be established for the specific label and substrate. A tape test is recommended at the start of each application run and/or each roll of labels to verify adhesion to the substrate. The recommended tapes must have a minimum of 180 ° peel strength on steel of 440 N/m. In addition, the backing material must have low elongation. Tapes such as 3M Company's 610, 670 and 898 tapes have been used. Additional details about the tape and test can be found in GMW14829.

4 Validation

4.1 General. Label supplier is responsible for validating adhesion performance by obtaining samples of application substrate from substrate supplier or GM Engineer.

4.2 Validation Cross Reference Index. See GMW14573 for adhesion test and performance requirements.

4.3 Supporting Paragraphs. Not applicable.

5 Provisions for Shipping

Not applicable.

6 Notes

6.1 Glossary. Not applicable.

6.2 Acronyms, Abbreviations, and Symbols.

GSSLT Global Subsystem Leadership Team

Psi Pounds per Square Inch