

# SURFACE VEHICLE RECOMMENDED PRACTICE

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## SURFACE MATCH VERIFICATION METHOD FOR PRESSURE SENSITIVE ADHESIVELY ATTACHED COMPONENTS

**Foreword**—This Document has not been changed other to put it into the new SAE Technical Standards Board Format.

This SAE Recommended Practice has been developed by the SAE Mounting Tape Subcommittee of the SAE Decorative Tape and Molding Committee. The Mounting Tape Subcommittee was formed in 1984. The objectives of this committee are to develop SAE Standards, Recommended Practices, and Information Reports relative to automotive applications of decorative tapes and adhesive mounting tapes.

1. **Scope**—This SAE Recommended Practice applies to evaluation of the conformance match condition existing between two surfaces. Evaluation of this conformance may be especially useful in bonded applications although it may also have relevance to bolted adjacent surface joint conditions.

Since good bonding surface conformity is necessary for providing optimal bond performance with pressure sensitive adhesives, the purpose of this document is to provide a method of evaluating the conformance match of the mating surfaces.

This document is intended as a guide toward standard practice but may be subject to frequent change to keep pace with experience and technical advances. This should be kept in mind when considering the use of this document.

Tool types, materials, application tools, and component contact area evaluation methods are included as part of this document.

In most cases a visual evaluation of contact performance may be satisfactory; however, for greater accuracy a measurement tool may be used. When reporting a contact value the mode of evaluation (e.g., visual, measurement tool) should be indicated.

- 1.1 **Purpose**—The purpose of this document is to establish a uniform practice for testing the surface match conformance which exists between two surfaces.

2. **References**—There are no referenced publications specified herein.

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### 3. **Definitions**

**3.1 Test Surface**—The component surface applied to the CCS tool to evaluate match (moldings, nameplates, claddings, emblems, etc.).

**3.2 Contact Pattern**—Size, configuration, and location of contacted areas occurring within the test surface.

**4. Significance and Use**—The adhesive contact demonstrated by the component applied to a clear surface is an excellent indication of the degree of conformance existing between the component and its target surface.

A component's surface contacts a clear surface representation of the component's mating surface during application. This provides an index of the surface conformance match existing between the component and its target application area. In addition, these clear representative surfaces are useful for validating application tool component placement processes.

### 5. **Apparatus**

**5.1 Clear Coordinated Surface (CCS)**—A transparent polymer accurately representing a specific surface, providing an edge or outline scribe, (or equivalent) location index, and displaying test surface contacted and uncontacted areas.

NOTE—Tools may be constructed from Blehm BP-4228 or equivalent. Surfaces to be matched (e.g., prototype, pilot, production, etc.) should be agreed upon by the participating parties.

**5.2 Measurement Tool**—Such as a Compensating Polar Planimeter, or equivalent, is used for measurement of contacted and uncontacted areas.

**6. Conditioning**—At the time of application, test surface, CCS tool surface, as well as surrounding ambient temperatures shall be  $23^{\circ}\text{C} \pm 2^{\circ}\text{C}$  ( $72^{\circ}\text{F} \pm 4^{\circ}\text{F}$ ).

### 7. **Procedure**

**7.1 Tool Surface Preparation**—Immediately prior to application clean CCS tool surface with a clean lintfree cloth moistened with isopropyl alcohol.

NOTE—For repeated use and ease of repositioning, CCS tool application surface may be treated using a material such as Johnson Paste Wax, or equivalent. Surface treatments must not adversely affect tool clarity or component contact.

Contamination of component or tool mating surfaces at any time throughout the component application stage is considered unacceptable.

**7.2 Component—Loose Application Method**—Immediately prior to application, remove any release liners from the component and loose apply (plant on) the component to the tool assuring proper alignment with indexing or aligning features.

**7.3 Pressurization**—Using a 4.5 kg (10 lb) roller, make two passes at an approximate rate of 50 mm/s (2 in/s) along the central axis of any contact surfaces, through the component center, or as agreed upon by the participating parties.

NOTE—Assure any pressurizing device is guided along as freely as possible avoiding any additional normal forces. Roller rates and paths taken on the component surface must remain as consistent as possible between application in order to minimize contact pattern effects. Avoid imposing any additional weight on the applied component (weight of tool, etc.) prior to measurement of contact pattern.

**7.4 Tool Surface Contact Evaluation**—Observe the test surface through the tool, distinguishing contacted from uncontacted areas. Note the contact pattern.

**7.5 Measurement of Contact Surface**—Within 60 min of application of component to tool, calculate the percentage of contact area by using the following formula:

$$\frac{\text{Total Contacted Area}}{\text{Total Available Mating Surface Area}} \times 100\% = \% \text{ Contact} \quad (\text{Eq. 1})$$

NOTE—Measurement directly to the CCS tool surface or a photograph is considered acceptable.

**7.6 Component Removal**—Avoid damaging the tool surface during removal.

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