SURFACE VEHICLE RECOMMENDED PRACTICE

J2634™	JUN2024
Issued 2003-01 Reaffirmed 2024-06 Superseding J2634 MAR2015	

Scribing of Coatings in Preparation for Testing of Wheels and Wheel Trim

RATIONALE

SAE J2634 has been reaffirmed to comply with the SAE Five-Year Review policy.

Foreword—This scribing test procedure has been agreed to as the preferred method of preparing a part to evaluate the coating systems used for automotive wheels and wheel trim due to observed variability associated with scribing methods.

The intent is to recognize, by the industry, a single common method for sample preparation. This common procedure will benefit all by reducing the testing complexity, eliminate the need for specialized test equipment and facilities, utilize improved methods, increase test efficiency, and reduce the overall number of special tests required to approve a paint or paint system.

Scribing is utilized to simulate a break in the coating which may occur in the field and which results in corrosion sites. The ability of the part to resist corrosion with such damage provides an indication of the expected field performance under these conditions.

Comparative testing of alternative coatings and pretreatment systems using scribing allows discrimination of the performance levels.

This scribing method is important to ensure consistency in the exposure of the metal substrate, which provides active corrosion sites.

This scribing method was developed based on testing on automotive wheels and wheel trim but may be used on other components as well.

1. ***Scope***—This SAE practice is intended for the sample preparation of test pieces for automotive wheels and wheel trim. The practice provides a consistent scribing method for use on test panels and or component parts with substrate chemical pretreatment and coating systems. Test specimens can then be subjected to various corrosion tests in order to evaluate performance without significant variations of the degree of exposure of the substrate. The scribing is used to create a break in the coating/finishing as can occur in the field through gravel and other damaging conditions.

   NOTE— Significant variability is attributed to surface contour, coating hardness/softness, operator reproducibility, and the scribing tool and it's condition.

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

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3. Definitions

3.1 Scribe—A scribe is a line, which cuts through all surface coatings and pretreatments and exposes the metal substrate to the environment.

4. Equipment and Test Materials

4.1 Scribe Tool—A straight shank, tungsten carbide tip lathe tool, Tool Style E-4 with a 0.4 mm (1/64-inch) nose radius.

4.2 Laboratory Scribing Fixture—See attached drawing of fixture with the test specimen (Figure 1) or equivalent.

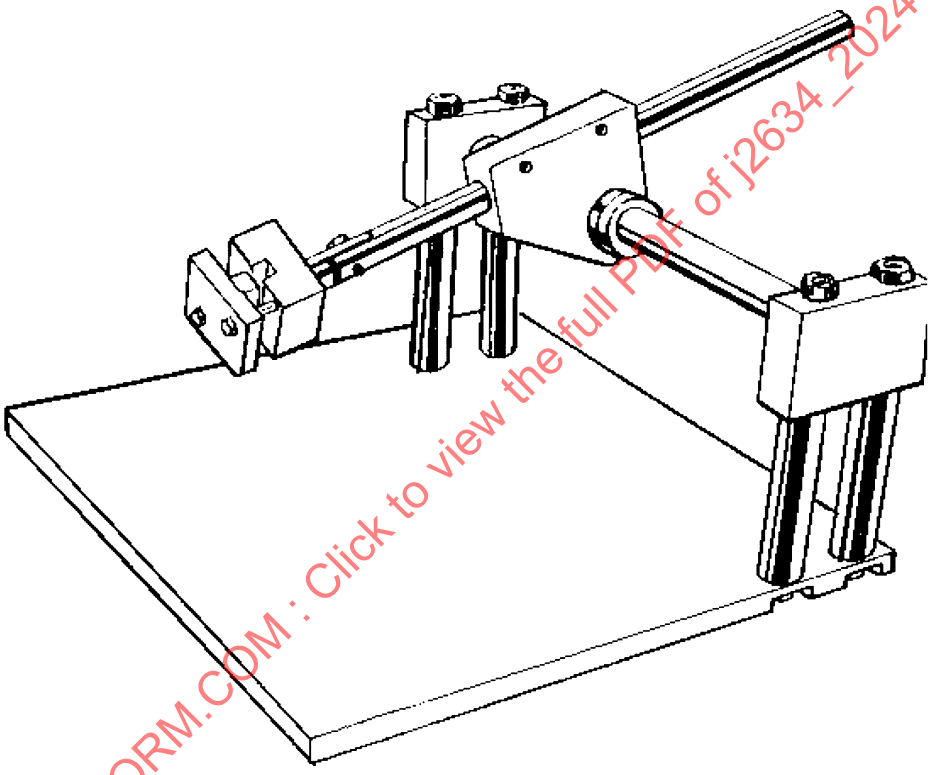

FIGURE 1—LABORATORY SCRIBE FIXTURE

4.3 Conductivity Meter—such as; Fluke 73 Series Multimeter, or equivalent.

4.4 Magnifying Glass—10X

4.5 Holding Assists/Fixturing—Holding devices such as wood blocks/shims are typically used to hold the specimen in place in a suitable configuration for scribing. Movement of the specimen during scribing may cause an irregular scribe.

5. ***Specimen Preparation—***Should the component be too large to fit in a test chamber or if it would significantly reduce the test capacity then a test section should be cut from the component. Care should be used to prevent damage to test surfaces.

When cutting the test section from a component/panel, it is recommended that the specimen be sized to fit within the fixture specimen mounting area.

NOTE 1—When preparing a wheel sample it is recommended to remove the back half rim section to reduce the required test space and to improve the ability to fixture the part for scribing.

NOTE 2—When scribing a wrought component it is important to consistently scribe with the same orientation and direction relative to the grain of the material to reduce part to part test variability.

6. ***Scribing Tool Preparation***

6.1 Fasten a sharp, straight shank tungsten carbide tip lathe-cutting tool at approximately a 45 degree angle to the specimen surface in the Laboratory Scribing Fixture, (Figures 1 and 2).

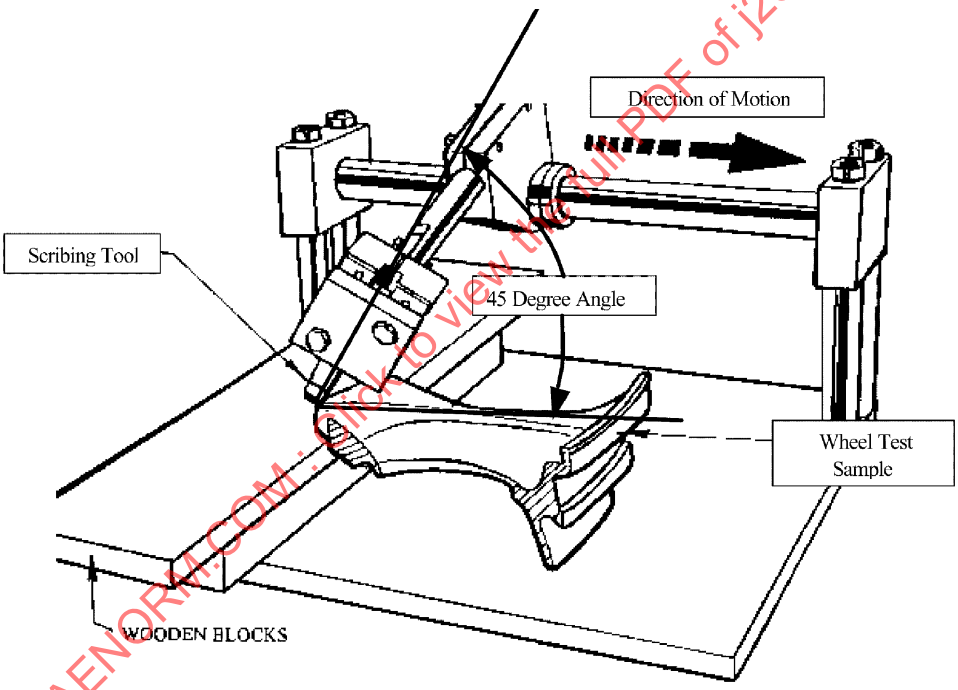

FIGURE 2—LABORATORY SCRIBE FIXTURE WITH TEST SPECIMEN

6.2 Inspect and verify the scribing tool sharpness. Visual review of the tool at a set frequency is necessary; use of an optical comparator is recommended. A correctly scribed specimen would appear uniform in contour, (See Figure 3). Note that a defective tool will not create a uniform “V” cut. (See Figures 4, 5, 6, 7)

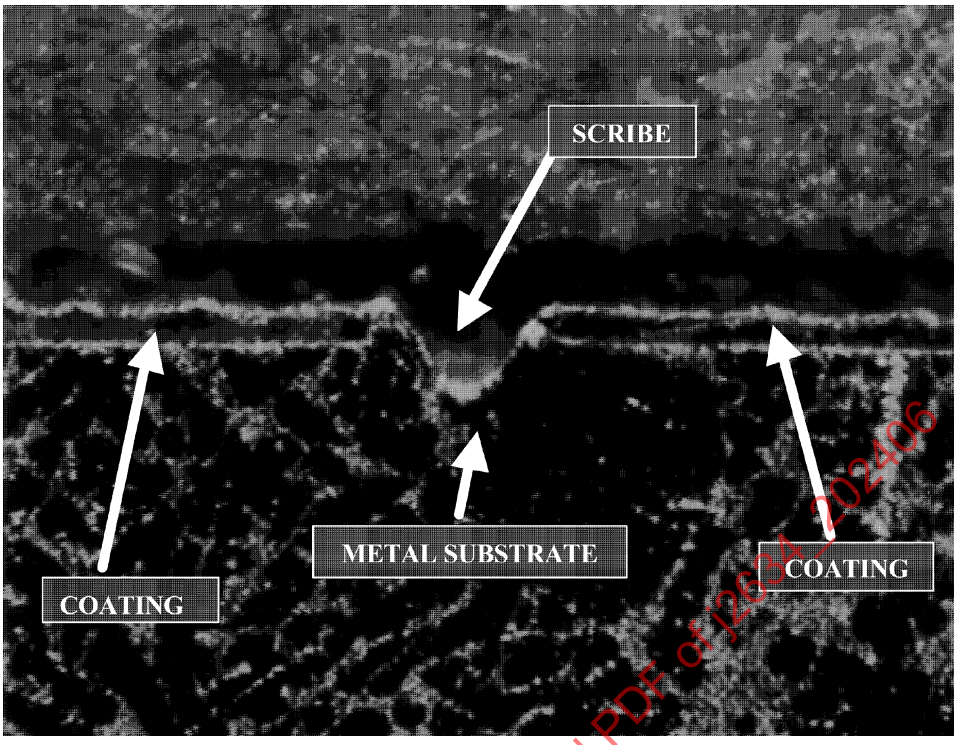

FIGURE 3—CORRECT SCRIBING, UNIFORM AND SYMMETRICAL SCRIBE

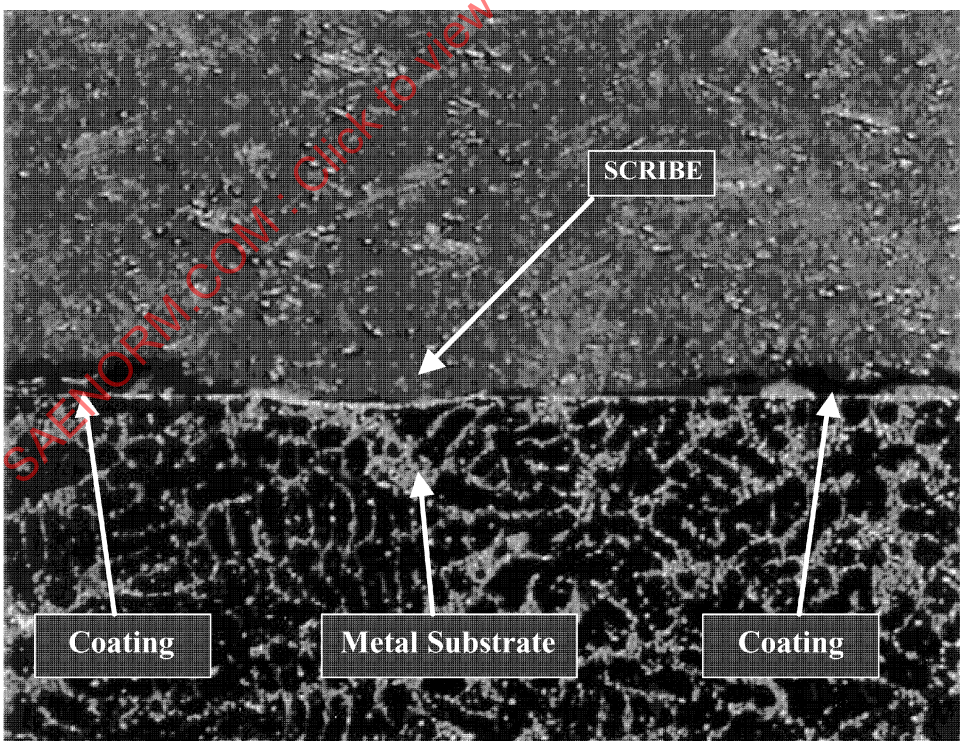

FIGURE 4—A BROKEN SCRIBE TOOL RESULTS IN NO V-NOTCH AND THE PAINT FILM IS REMOVED ON THE SURFACE

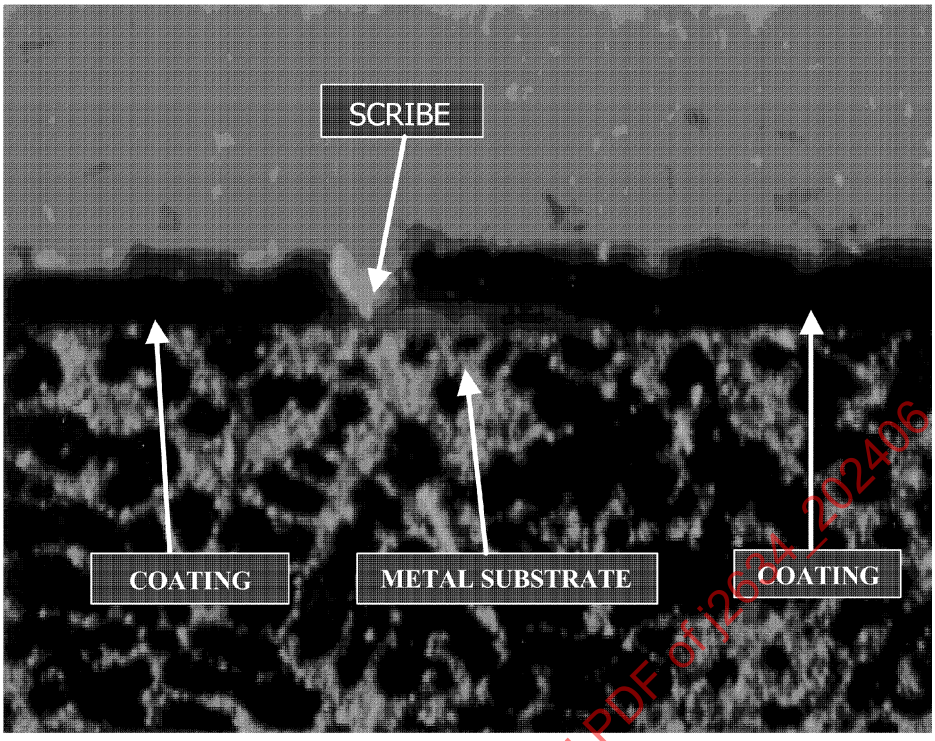

FIGURE 5—SCRIBED WITH INSUFFICIENT PRESSURE TO CUT THROUGH TO SUBSTRATE

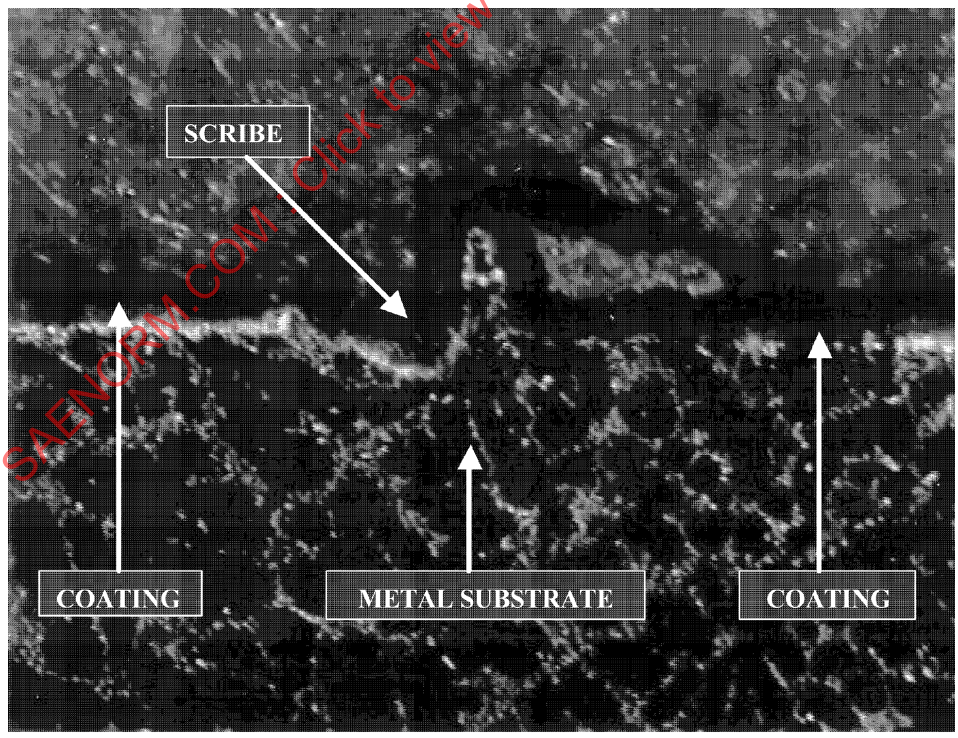

FIGURE 6—SLANTED SCRIBE, INCORRECT ANGLE, NON-UNIFORM