Test Procedure for

MEASUREMENTS OF DRY FILM COATING
THICKNESS ON STEEL

TxDOT Designation: Tex-728-I

Effective Date: August 2016

1. SCOPE

1.1 This method describes the apparatus (magnetic thickness gauges) and procedure for measuring thicknesses of dry film paint or other coatings (galvanizing, fusion bonded epoxy, etc.) on steel.

2. PRECAUTIONS

2.1 Follow the gauge manufacturer's instructions when using magnetic thickness gauges.

2.2 Do not:

- take readings closer than 0.5 in. from edges, holes, and inside corners, unless the gauge has been calibrated for such use;
- use gauge on items of small radius of curvature unless the gauge has been calibrated for such use;
- use gauge in heavy vibration areas;
- use gauge in heavy electrical areas, such as near arc-welding machines, or near any magnetic fields;
- use gauge for any purpose for which it is not recommended;
- use gauge in any position that is not recommended; or
- take readings in areas that are coated with dirt, grease, corrosion, flux, acid spots, dross, oxides, etc. Coatings must be completely cured prior to performing thickness measurements.

3. APPARATUS

3.1 Standard Gauges, used to measure coating thickness (dry paint film, galvanizing, fusion bonded epoxy, etc.), adjustable to measure directly and exactly the known thickness of a shim placed on uncoated material similar to that bearing the coating to be measured. These gauges must be readable to at least ± 0.1 mil over the range of the instrument. Examples: Elcometer 456; PosiTector 6000; QuaNix 1500, 4200, 4500.
3.2 Standard Thickness Shims, used for adjusting standard gauges, made of non-magnetic material, with a known thickness uniform over its entire area and accurate within the manufacturer's established tolerances.

3.3 Approximating Gauges (optional), used to measure thickness of coatings other than dry paint film (galvanizing, fusion bonded epoxy, etc.), readable with no adjustment required. Examples: Elcometer 211; Mikrotest FIM; PosiTest FM.

4. **PROCEDURE**

4.1 **Paint Films:**

4.1.1 Locate an uncoated area on the coated steel item being checked, or utilize an uncoated base similar to that bearing the coating to be measured.

**Note 1**—Base metal surface must be prepared in the same manner as the coated steel item.

4.1.2 Place a standard shim of the required thickness on the uncoated base.

4.1.3 Adjust the standard gauge to indicate the known thickness of the shim, following the manufacturer's instructions.

4.1.4 With the standard gauge adjusted and using the same base location, measure the thickness of a second shim having a known thickness within 5 mil of the shim used for adjustment. The standard gauge must indicate the known thickness of the second shim within ±0.2 mil.

4.1.5 Measure the paint film thickness at selected locations. Record the test locations and film thickness.

**Note 2**—Check the accuracy of the standard gauge periodically during use.

4.2 **Other Coatings (Galvanizing, Fusion Bonded Epoxy, etc.):**

4.2.1 Use standard gauges or approximating gauges for measuring thickness of coatings other than dry paint film.

4.2.2 When using standard gauges, adjust each gauge as stated in Sections 4.1.1 through 4.1.4.

4.2.3 Follow the gauge manufacturer's instructions when taking readings from the dial or scale.

4.2.4 Record the readings on the appropriate Department worksheet.

**Note 3**—Check the accuracy of the standard gauge periodically during use.

5. **ARCHIVED VERSIONS**

5.1 Archived versions are available.