Tex-728-I, Measurements of Dry Film Coating Thickness on Steel

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Section 1

Overview

Effective dates: August 1999–February 2008.

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

Units of Measurement

The values given in parentheses (if provided) are not standard and may not be exact mathematical conversions. Use each system of units separately. Combining values from the two systems may result in nonconformance with the standard.

Section 2

Precautions

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

Do Not:

- take readings closer than 12 mm (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 they are not recommended
- use gauge in any position which was not recommended
- take readings in areas which are coated with dirt, grease, corrosion, flux, acid spots, dross, oxides, etc. Coatings must be completely cured prior to performing thickness measurements.

Section 3

Apparatus

The following apparatus is required:

Standard Gauges used to measure dry film coating thickness must be of the type that can be adjusted 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 shall be readable to at least ± 3 µm (0.1 mil) over the range of the instrument.

EXAMPLE: Elcometer 345; Nordson DFG100F; PosiTector 2000, 6000; QuaNix 1200, 2200, 7200

- Standard thickness shims shall be used for adjusting standard gauges. The shim must be made of non-magnetic material with a known thickness uniform over its entire area and accurate within the manufacturer's established tolerances.

Approximating Gauges used to measure dry film coating thickness must be of the type which are read directly with no adjustment required.

EXAMPLE: Elcometer 211; Mikrotest FIM; PosiTest FM

Section 4
Procedures

Paint Films

Use standard gauges for measuring paint film thickness and adjust to read the exact thickness as follows:

Paint Films	
Step	**Action**
1	Locate an uncoated area on the coated steel item to be checked, or utilize an uncoated base similar to that bearing the coating to be measured. NOTE: Base metal surface must be prepared in the same manner as the coated steel item.
2	Place a standard shim of the required thickness on the uncoated base.
3	Adjust the gauge to indicate the known thickness of the shim, following the manufacturer's instructions.
4	With the gauge adjusted and using the same base location, measure the thickness of a second shim having a known thickness within 125 µm (5 mils) of the shim used for adjustment. The gauge must indicate the known thickness of the second shim within ± 5 µm (0.2 mil).
5	Measure the paint film thickness at selected locations. Record the test locations and film thickness. NOTE: The accuracy of the Standard Gauge should be checked periodically during use.

Other Coatings (Galvanizing, Fusion Bonded Epoxy, etc.)

Use Approximating Gauges to measure the thickness of other coatings as follows:

Other Coatings (Galvanizing, Fusion Bonded Epoxy, etc.)	
Step	**Action**
1	Use Approximating Gauges for measuring thickness of other coatings by reading directly with no required adjustment.
2	Follow the gauge manufacturer's instructions when taking readings from the dial or scale.
3	Record the readings on the appropriate TxDOT worksheet. NOTE: The accuracy of the Approximating Gauge should be checked periodically during use.