



# Standard Practice for Evaluation of Aging Resistance of Pre-stressed Prepainted Metal in a Boiling Water Test<sup>1</sup>

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## 1. Scope

1.1 This practice can be used to evaluate the resistance of a pre-stressed prepainted metal panel to cracking and loss of adhesion, or both, after accelerated aging by boiling water. Most coil coated products are formed and bent into specific shapes to produce a final product. These operations introduce stresses, which may be relieved by cracking of the coating after aging.

1.2 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.*

## 2. Referenced Documents

2.1 *ASTM Standards:*<sup>2</sup>

[D2794 Test Method for Resistance of Organic Coatings to the Effects of Rapid Deformation \(Impact\)](#)

[D4145 Test Method for Coating Flexibility of Prepainted Sheet](#)

[E643 Test Method for Ball Punch Deformation of Metallic Sheet Material](#)

## 3. Apparatus

3.1 Boiling water bath big enough to hold formed test specimens.

3.2 10× magnifier (optional).

3.3 Scotch #610 adhesive tape or equivalent.

<sup>1</sup> This practice is under the jurisdiction of ASTM Committee D01 on Paint and Related Coatings, Materials, and Applications and is the direct responsibility of Subcommittee D01.53 on Coil Coated Metal.

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<sup>2</sup> For referenced ASTM standards, visit the ASTM website, [www.astm.org](http://www.astm.org), or contact ASTM Customer Service at [service@astm.org](mailto:service@astm.org). For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

## 4. Reagents

4.1 Deionized or other water, as agreed upon by customer and vendor.

## 5. Test Specimen

5.1 Bumped, bent, drawn or otherwise deformed samples, to be agreed upon between customer and vendor. These should be prepared according to Test Methods [D2794](#), [D4145](#), [E643](#), and/or prepared in a manner agreed upon by customer and vendor.

## 6. Procedure

6.1 Examine the test specimens for cracking, flowering and tape pick-off (adhesion loss), and record the results.

6.2 Place the formed test specimens in the boiling water bath for one (1) min. Different times may be used if agreed upon by customer and vendor.

6.3 Remove the test specimens and allow them to air dry and cool to room temperature.

6.4 Inspect the test specimens for cracking, flowering and adhesion loss, then repeat the tape adhesion test.

## 7. Report

7.1 Report the observations regarding cracking, flowering and adhesion loss.

7.2 The degree of cracking, flowering and tape pick-off allowed should be agreed upon by customer and vendor. Report cracking, flowering and tape pick-off noted before boiling water aging, and cracking and tape pick-off noted after boiling water aging. When known, report substrate, pretreatment, coating system, production or preparation date and any other information request agreed upon between vendor and customer.

## 8. Keywords

8.1 aging; bend; boiling water; coil; cracking; deformation; drawn metal; fabrication; flexibility; flowering; impact; pick-off; prepaint; stresses; tape-off

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