



1.0 Scope

This specification shall apply to hot dip metallic coated sheet steel prefinished with colours of proven durability and suitable for exterior exposure as delivered from the coil coater.

TagTough™ is a 3-coat system comprised of a corrosion inhibiting primer, a colour base coat and a clear coat. The colour layer is a high performance fluoropolymer based on licensed polyvinylidene fluoride (PVDF) resin Kynar 500® or Hylar 5000® (trade names for equivalent PVDF resins) technology. It is formulated with a minimum of 70% Kynar 500® or Hylar 5000® PVDF resins combined with acrylic resin and proven pigmentation for maximum colour retention. The clear coat is also a fluoropolymer coating type modified to provide graffiti resistance.

TagTough is available for PVDF topcoats only, in smooth finishes and customized colours approved by the mill.

TagTough steel is designed for sidewall and roofing applications in the construction market that are more demanding for aesthetic performance and that require a graffiti-resistant finish.

2.0 Base Metal

The base metal furnished before painting shall conform to one of the following specifications:

- (a) ASTM A653 / ASTM A653M for Zinc coated steel (galvanized)
- (b) ASTM A792 / ASTM A792M for 55% Aluminum-Zinc alloy coated steel (Galvalume®).

The recommended minimum coating mass designations for use in exterior building applications are as stated in ASTM A755/A755M.

3.0 Chemical Pretreatment

- 3.1 Microcrystalline zinc phosphate chemical pretreatment shall be applied to the hot dip galvanized base material prior to primer application.
- 3.2 Metal oxide conversion coating shall be applied to the 55% aluminum-zinc (Galvalume®) base metal prior to primer application.

4.0 Paint Qualification Tests

4.1 Film Thickness

Paint film thickness shall be measured by analysis of a precisely cut shallow angled crater. The exposed surface shall have a nominal dry film thickness of 40 microns (1.5 mils). The unexposed (reverse) side shall have a dry film thickness which will vary in accordance with customer requirements.

Test Method: ASTM D5796

4.2 Film Hardness

The hardness of the paint film shall be measured by means of Eagle/Berol turquoise T-2375 or equivalent pencils using a flat round head applied at a 45° angle to the paint film. A minimum hardness of HB shall be obtained. Pencil hardness is specified as the first pencil number that will not rupture the paint when tested as described above.

Test Method: ASTM D3363

4.3 Formability/Adhesion Test

When using a representative sample at 25°C +/-2°C (77°F) and using #610 scotch cellophane tape, the paint system will show no loss of adhesion when subjected to a 2T 180° bend test.

Test Method: ASTM D4145

This requirement does not apply to Grade 80 (metric Grade 550) material which is ordered as ASTM A653/A653M or A792/A792M.

4.4 Gloss

The specular gloss shall be 35 +/- 5 gloss units when measured with a 60° Glossmeter. When other than the standard gloss is ordered, the gloss range shall be mutually agreed upon prior to purchase.

Test Method: ASTM D523

4.5. Humidity Resistance

After 2000 hours of exposure to a cycle consisting of 20 hours condensation at 40°C and 4 hours drying at 55°C, the surface shall remain pristine in appearance with no blistering evident to 10x magnification.

Test Method: ASTM D4585

4.6 Graffiti Resistance

Graffiti resistance shall be assessed using a selection of commercial marking materials including, but not limited to, solvent and oil-based paint markers. When using a flat sample with no pre-existing surface conditions, selected marking materials shall be removed using manual pressure progressing from dry erasing/scraping to detergent (1% ASTM D2248 standard detergent) or solvent as necessary.

Test Method: ASTM D6578

5.0 Accelerated Weathering (QUVA)

After 2000 hours of exposure to a cycle consisting of 4 hours of UVa at 60°C followed by 4 hours of condensation at 40°C, each proven colour of TagTough shall meet the following specification:

Colour shall not change by any more than 2 Delta E units when measured using any accepted 45/0° spectrophotometer designed to produce reflectance readings in the Tristimulus Filter System of X, Y and Z based on the CIE L*a*b* values of illuminant D65 at 10°.

Test Method: ASTM D4587

6.0 Exterior Exposure (Weathering)

Each proven colour of TagTough will meet the following weathering standards for applications within Canada and the Continental United States in the absence of aggressive fumes and/or chemicals not normally encountered in the atmosphere.

6.1 Film Integrity

Within 35 years from the date of paint application, TagTough coating will not peel, flake or otherwise lose adhesion to an extent that is apparent by way of ordinary outdoor visual observation.

6.2 Chalking

Within 30 years from the date of installation, sidewall (vertical) panels of TagTough will not chalk more than a number eight (8) rating measured per ASTM D4214 Method A.

6.3 Colour Change

Within 30 years from the date of installation, sidewall (vertical) panels of TagTough will not change colour more than five (5) NBS units when measured per ASTM D2244 on clean surfaces after removing dirt and other surface deposits per ASTM D3964.

7.0 Product Attributes and Applications

TagTough steel features a factory-applied coating that is difficult to tag and washes easily. TagTough eliminates the need for graffiti removal products applied in the field.

TagTough has good flexibility and will be resistant to cracking and crazing during forming. However, precautions should be taken when processing and handling steel sheets due to an inherent softness of the clear coat resin that may result in superficial scratches down to the basecoat. Use extra care while handling steel sheets or building products. Use of a temporary protective film for demanding processes or during transport should be considered.

For more information on how to remove graffiti from TagTough, please request "TagTough Guidelines for Graffiti Removal" from your ArcelorMittal representative or find this document by visiting our website at <http://dofasco.arcelormittal.com/what-we-do/products/tagtough.aspx>

The specifications and other information contained in this document are provided for information purposes only, and do not constitute any warranty whatsoever, express or implied, by ArcelorMittal Dofasco or Baycoat, including, without limitation, with respect to the fitness, performance or merchantability of any product described herein, including but not limited to the anti-graffiti properties of the product. Upon the purchase of any of the products, the buyer shall be solely entitled to the benefit of the warranty contained in the seller's standard conditions of sale.