GRANITE® COASTAL PVDF NORTH AMERICA QUALITY AND PERFORMANCE SPECIFICATION

ISSUED SEPTEMBER 2020

GRANITE® COASTAL PVDF coatings, the North American premium polyvinylidene fluoride (PVDF) system from ArcelorMittal designed for the harshest coastal environments.

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 North American coil coater.

Granite® Coastal PVDF paint system is a 2-coat system designed for sidewall (vertical) applications and roofing (non-vertical) applications in the building construction market that require demanding corrosion resistance performance for coastal environments (i.e. less than 1,500 feet from a fresh water or salt water coastline). Granite® Coastal PVDF combines excellent resistance to ultraviolet rays, exceptional color retention and resistance to chalking from salt spray.

The paint system is based on licensed polyvinylidene fluoride (PVDF) Kynar 500 or Hylar 5000 resin technology for the topcoat and on a thick film build polyurethane technology for the primer.

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®)

3.0 Paint Qualification Tests

3.1 Film Thickness

Paint film thickness will be measured by analysis of a precisely cut shallow angled crater. The exposed surface shall have a minimum topcoat dry film thickness of 18microns (0.7 mils) and a minimum dry film thickness of 25microns (1 mils). The unexposed or reverse side shall be a 2-coat system comprises of a primer and a backer of a dry film thickness which will vary in accordance with customer requirements.
Test Method: ASTM D5796

3.2 Film Hardness

The hardness of the paint film on the exposed surface will meet a minimum of HB, when 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. Pencil hardness is specified as the first pencil number that will not rupture the paint when tested as described above.
Test Method: ASTM D3363

3.3 Formability/Adhesion Test

When using a representative sample at 25°C +/-2°C (77°F) and using #610 scotch cellophane tape, the exposed surface of the paint system will show no loss of adhesion when subjected to a 2T 180° bend test.
Test Method: ASTM D4145.

The paint adhesion requirement is not applicable when the base metal is ordered to ASTM A653/A792 Structural Steel Grade 80 (550).

3.4 Gloss

The specular gloss of the topcoat surface shall be 30 +/- 5 gloss units when measured with a 60° Glossmeter. For non-standard gloss, the gloss range shall be mutually agreed upon prior to purchase.
Test Method: ASTM D523

3.5. Humidity resistance

After 1500 hours of exposure to 100% relative humidity at a temperature of 38°C (100°F) the exposed surface may show only a few scattered blisters no larger than No. 8 per ASTM D714.
Test Method: ASTM D2247

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4.0 Exterior exposure (weathering)

Each proven colour of Granite® Coastal PVDF will meet the following weathering standards. The standards shall only apply to buildings subject to normal atmospheric conditions free from aggressive fumes or chemicals and for locations up to, but not exceeding the shoreline. Weathering standards are limited to installations located in Canada and the Continental United States. Failures or damage resulting from corrosion at cut/bare edges or failure of the metal substrate are not covered by the Granite® Coastal PVDF weathering standards.

4.1 Film Integrity

Within the first 20 years after paint is applied, the exposed surface paint film shall have no evidence of cracking, flaking or checking to an extent that is apparent on ordinary outdoor visual observations.

4.2 Chalking

Within the first 20 years after paint is applied the degree of chalking will not exceed rating #8 for vertical (walls) and non-vertical (roofs) applications when measured per ASTM D4214

4.3 Colour Change

Within the first 20 years after paint is applied the change in colour will not be greater than five (5) colour units for vertical (walls) and non-vertical (roofs) applications. Colour measurements are to be made per ASTM D2244 and only on clean surfaces after removing surface deposits and chalk per ASTM D3964.

Colour change is measured using any accepted colour spectrophotometer designed to produce reflectance readings in the Tristimulus Filter System on X, Y and Z based on the CIE values of illuminant C and measured in Hunter L, a and b units.

5.0 Product Attributes and Applications

Granite® Coastal PVDF coatings are available in smooth finishes in a wide variety of customized colours, including energy efficient Solar Reflective (SR) formulations and Mica/Metallic finishes. Standard solid and metallic colours have also been developed for your convenience. Please inquire about samples or additional colours.

Granite® Coastal PVDF paint films have excellent flexibility, and are resistant to cracking and crazing during forming. However, precautions must be taken when processing due to an inherent softness of the PVDF resin that may result in metal marking. Use of chrome plated tooling is recommended.

The recommended minimum coating mass designations for use in exterior building applications are as stated in ASTM A755/A775M. Coastal PVDF paint meets the requirements of AAMA 2605-17A.

Due to the coil coating process and the paint technology, it is not possible for each lot of prefinished steel to be an identical colour match. Colour match problems can be minimized if the following procedures are followed:

- Orders for large projects which could involve more than one production order should be discussed with ArcelorMittal Dofasco Sales Representative at the time of the order;
- Ensure that each building is clad with material from the same production lot.
- Don't combine or mix Coastal PVDF Mica/Metallic colour panels with different rolling directions.

			Total Solar Reflective (TSR) and Solar Reflectance Index (SRI) tested on Hot Dip Galvanized and Galvalume™ Substrates			
			Galvalume™		Zinc Phosphate Treated Hot Dip Galvanized	
Description	QC Number		TSR	SRI	TSR	SRI
White	9807		0.70	85	0.66	80
Gentian Blue	9804		0.30	32	0.28	30
Tan	9937		0.27	28	0.26	27
Regent Grey	10097		0.46	53	0.43	49
Charcoal	10903		0.30	31	0.27	28
Copper Canyon (1) (2)	9976		0.34	37	0.32	34
Bright Silver (1) (2)	10285		0.53	61	0.51	58
Light Pewter (1) (2)	10286		0.50	56	0.47	52
Champagne Metallic (1) (2)	9974		0.38	48	.33	30

(1) Specular gloss for these colours is lower than the standard gloss range as per 3.4;
(2) Due to the nature of metallic pigments, this product is directional and requires the application of directional chevrons on the reverse side.