

Technical Data Sheet

EuraDesign PVDF 3L FEVE (Protec) on alu substrate

Version 2020-1

EuraDesign PVDF 3L cc are 3 layer coatings consisting of a primer layer, a PVDF basecoat, a partially surface covering PVDF design layer and a FEVE clearcoat. EuraDesign PVDF 3L FEVE (Protec) products are three-layer systems consisting of a primer layer, a PVDF basecoat, a PVDF design layer and a FEVE topcoat. The Protec build up adds an extra thick gauge primer layer for maximum corrosion performance

Substrate & pre-treatment					
Width	≤ 1620mm				
Thickness aluminium	0,3-1,0mm				
Pre-treatment	Chrome-free conversion				
Substrate (alloy/ temper)	3000, 4000, 5000 series (H4x) EN 573-3				
Front side finish	EN 1396				AAMA 2605 ⁽¹⁾
Resin chemistry	PVDF 70:30 base coat + design layers FEVE topcoat				
Film thickness (3L= 3 Layers)	1L	2L	3L	4L	
Standard build-up (areas without design coat)	-	-	32-36µm	-	ASTM D7091
Protec ⁽²⁾ build-up (areas without design coat)	-	-	37-41µm	-	
	EN 13523-1				
Design layer thickness (partial surface covering)	8-12µm EN 13523-1				8-12µm ASTM D7091
Colour match	Solid colours: ΔE(cmc) ≤ 1 Metallic + pearlescent colours: Visual OK ⁽³⁾ EN 13523-3; EN 13523-22				Solid colours ΔE(cmc): ≤ 1 Metallic + pearlescent colours: Visual OK ⁽³⁾ ASTM D2244; ASTM D1729-16
Specular gloss	10-90 gloss units (acc. to EN 1396 Table 3) EN 13523-2				10-90 gloss units ASTM D523
Pencil hardness	≥ F EN 13523-4				
Adhesion	≤ GT1 NEN-EN-ISO 2409				
Adhesion + rapid deformation indentation	≤ GT1 EN 13523-6				Class 5B ASTM D3359
Resistance to cracking on bending (T-Bend test on non-embossed material) ⁽⁴⁾	Temper	≤ H44	H46	H48	ASTM D4145
		≤ 1,5T	≤ 2,0T	≤ 2,5T	
	EN 13523-7				
Resistance to MEK solvent (rubbing test)	≥ 100 double rubs EN 13523-11				
Durability according to testing					
Colour and gloss retention on xenon exposure ⁽⁵⁾	ΔE(cmc) ≤ 3 ≥ 80% gloss retention ISO 16474-2 2000 hours				
Humidity resistance	Blistering: < B2 (S2) ISO 6270-1 1000 hours				Few blisters: size ≤ 8 ASTM D2247; ASTM D714 4000 hours
Filiform corrosion resistance	Class 3 Under creep longest filament: ≤ 2mm ISO 4623-2 1000 hours				
Resistance to salt spray fog	Class 3 Under creep average: ≤ 2mm Blistering: < B2 (S2) EN 13523-8 1000 hours				Scribe: rating ≥ 7 Blisters: rating ≥ 8 ASTM G85 Annex 5 2000 hours
Resistance to fluorescent UV light and water condensation	R _{UV4} ΔE(cmc) ≤ 3 / ≥ 80% gloss retention EN 13523-10 1000 hours				

Durability according to outdoor exposure				
Outdoor corrosion resistance	Class 3 Under creep average: ≤ 2mm Blistering: ≤ B2 (S2) EN 13523-21 3 years 90° North Seaside Bohus-Malmö			
Colour and gloss retention on natural weathering ⁽⁵⁾	ΔE ≤ 3 ≥ 80% gloss retention EN 13523-21 2 years 45° South Florida			ΔE ≤ 5 ≥ 50 % gloss retention ASTM D2244 10 years 45° South Florida
Resistance to chalking on natural weathering ⁽⁵⁾	≤ 8 % EN 13523-21 2 years 45° South Florida			Whites: rating ≥ 6 Colours: rating ≥ 8 ASTM D4214 10 years 45° South Florida
Warranty indication (final warranty upon request)				
Technical warranty ⁽⁶⁾		Non coastal	Coastal ⁽⁷⁾	
	PVDF 3L FEVE	40 year	20 year	
Aesthetical warranty ⁽⁸⁾	Zone A: 10 years Zone B: 7 years Zone C: 5 years			
Notes for further processing				
Heat resistance	Maximum 80°C for 30 minutes or up to 170°C for maximum 30 seconds (ACM processes)			
Stress whitening	This paint system may show a light degree of “stress-whitening” after bending of the coated aluminium, mostly only visible in darker colour shades. Stress-whitening is white colouring in individual areas under tension where polymer chains reorganize due to stretching. This is only a visual deviation, which does not have any technical influence, quality constraints or impact on warranties			

⁽¹⁾ AAMA 2605 specifications are applicable only to specific Euramax finishes

⁽²⁾ Protec is a high build primer (10µm) that improves corrosion resistance in extreme environments (coastal, airports, chemical industry etc.)

⁽³⁾ Metallic and pearlescent colours are batch and paint directional sensitive. Material for a building project must be ordered in one batch and should be installed in the same paint direction

⁽⁴⁾ The minimum flexibility depends on the coated substrate

⁽⁵⁾ Indicative values only. The UV durability performance will depend on the colour saturation/ type (e.g. light vs bright, solid finishes vs metallic)

⁽⁶⁾ The original paint surface that is directly exposed to the elements will not peel, blister, chip, check or crack (except for the minor cracking that may occur on edges or break bends at the time of fabrication) over more than 5% of the total surface over the technical warranty period. The technical warranty value will be equivalent to a maximum of 100% of the purchase price according to Euramax Coated Products terms and conditions

⁽⁷⁾ Coastal areas are located within 1500 meter from a salt water environment. For coastal areas we recommend an extra gauge (Protec) primer layer

⁽⁸⁾ The aesthetical warranty conditions will depend on the colour and project location and is subject to a warranty value reduction over the warranty period of the product (see appendix A, B and C for more details on aesthetic warranty)

Appendix A: Geographical warranty zones depending on Northern Latitude (NL) and Southern Latitude (SL)



Zone A: All countries situated > 45° NL and > 45° SL (e.g. Scandinavia, Great Britain, the Netherlands, Belgium, France, Switzerland, Austria, Germany)

Zone B: All countries situated between 45° and 30° NL and between 45° and 30° SL (e.g. France, Portugal, Spain, Italy, Greece, Turkey)

Zone C: All countries situated < 30° NL and < 30° SL (e.g. Guadeloupe, Cameroon, Saudi Arabia, Oman)

Appendix B: Aesthetic performance overview per geographical zone

Topcoat performance	Test specification	Zone A 10 years	Zone B 7 years	Zone C 5 years
Reduction in dry film thickness	EN 13523-1	≤ 3µm	≤ 3µm	≤ 4µm
Residual gloss	EN 13523-2	≥ 85%	≥ 80%	≥ 65%
Colour diff. ΔE for solid colours	EN 13523-3	≤ 3	≤ 5	≤ 8
Chalking %	ASTM D659-80	≤ 10	≤ 20	≤ 50

Appendix C: Aesthetic warranty value reduction over warranty period

Limited aesthetic warranty value over warranty period; % of full warranty refund						
5 Year	Year 1-2	Year 3	Year 4	Year 5		
	100%	50%	25%	10%		
7 Year	Year 1-3	Year 4	Year 5	Year 6	Year 7	
	100%	80%	60%	40%	20%	
10 Year	Year 1-5	Year 6	Year 7	Year 8	Year 9	Year 10
	100%	85%	70%	55%	40%	25%