

## MPROOF system

The name "MPROOF system" identifies a prepainted steel with high scratch resistance and superlative uv stability; the paint cycle is a combination of high thickness primer and a polyurethane top coat added with ceramic and acrylic beads that guarantee a very good resistance to the external aggression.

This finished product has been mainly developed for roofing and cladding installed in high altitude, where irradiation and thermal shock could be severe; it is mainly used in the field of the housebuilding, particularly for walls at sight, coverages, sandwich panels and gutter. Steel substrate is covered by 275 gr/sqm of zinc, thus with an average foreseen duration of at least 15 years\*.

### Physical characteristics:

Cold rolled steel, depending on the final quality required by customer, is subject to Hot Dip Galvanizing as per euro-norm and, in order to achieve the highest guarantee over the life of finished products, the zinc coverage shall never be lower than 275 gr/mqs.

The painting cycle foresees a non-chrome treatment of nitro-cobalt salts and a passivation of zirconium salts of the galvanized steel: this set of treatments will support the application of 16 µm of black primer high resistance and 22 µm of super-polyester paint to form a total dry layer of nominal 36 µm of organic protection. For the lower side the application of 5 micron of primer and 5/7 µm of foamable backcoat is foreseen or, under specific request by the customer, of the same painting cycle used on the upper side. The colour matching / reproduction is very high despite the environmental philosophy of Marcegaglia S.p.A imposes the use of non-toxic paints only, that is formulated without any use of toxic pigments as for instance chromate, molybdate and lead salts pigments.

### Chemical and quality characteristics

<b>Salt spray resistance</b> (EN 13523-8)	The test is performed with reference and according to Euro Norm and does not allow for blisters on the cross more than 2 mm per edge (total 4 mm) and, on the surface, more than the degree 8 from the ASTM D714 scale after 750 hours exposure
<b>Umidity resistance</b> (EN 13523-25)	The test is performed with reference and according to Euro Norm and does not allow for blisters more than the degree 8 from the ASTM D714 scale after 2000 hours exposure
<b>T-bend test</b> (EN 13523-7)	The test determines the adhesion of the paint to the steel which must not exceed 1,0 T, and it is performed by tearing with adhesive ribbon the bending itself and the elasticity of the paint that must not crack over 1,5 T
<b>Specular gloss</b> (EN 13523-2)	Measured with a gloss-meter having the incidence radius of 60° and must be within 15 ± 10 gloss
<b>Hardness</b> (Scratch Test EN 13523-12)	It is measured according the Euro Norm and has to be ≥ 2.5 kgs
<b>Resistance to solvent</b> (EN 13523-11)	After 100 double rubbing (50 for metal colours) with cotton pad, soaked in Mek (metil-etilchetone) and pressure of about 1 Kg., the paint must not show any discrepancy nor defect

### Product, thickness and UV resistance according to EN10169

MARCEGAGLIA CYCLE	Zn COVER	PRIMER TK.	TOP COAT TK.	RUV CLASS
MPROOF	Z275	MP319 16 µm	22 µm	RUV 4

(\*) Provided both Parties have reached an agreement and in presence of our evaluation of the installation site.

## Durability in terms of rust perforation and paint peeling

MPROOF	Years DURABILITY	ENVIRONM.		ALTITUDE* (m s.l.m.)				
		RC2	RC3	Up to 900 m	from 900 to 1300 m	from 1.300 to 1.700 m	from 1.700 to 2.100 m	Over 2.100 m
SIDE	Corrosion	15	12	100%	90%	70%	50%	E
	Adhesion	10	8	100%	90%	70%	50%	
ROOF	Corrosion	15	10	100%	90%	70%	50%	E
	Adhesion	10	5	100%	90%	70%	50%	

\*over 42° lat. Nord / E= not automatic

## Color deviation

MPROOF	Years DURABILITY	ENVIRONM.		ALTITUDE* (m s.l.m.)				
		RC2	RC3	Up to 900 m	from 900 to 1300 m	from 1.300 to 1.700 m	from 1.700 to 2.100 m	Over 2.100 m
SIDE/ROOF	RUV 4 acc.to EN10169: dE< 3, GR>80%	Color class: 1,2,3		5	4	3	2	E
		Color class:: 4,5		2		1		E
SIDE/ROOF	RUV 4 acc.to EN10169-2	Color class:e: 1,2,3 <b>5 years</b>		dE <3	dE <4	dE <6	dE <8	E
				GR >80	GR >60	GR >40	GR >30	
		Color class: 4,5 <b>2 years</b>		dE <3	dE <4	dE <6	dE <8	E
				GR >80	GR >60	GR >40	GR >30	

\*over 42° lat. Nord / E= not automatic

## Color classification

L* >	C* < 10	Category 1
	10 < C* <	Category 2
	20 < C* <	Category 3
	C* > 30	Category 4
60 < L* <	C* < 10	Category 2 Except category superior
	C* < 25 and -11 < A* < and -5 < B* <	
	C* < 30 and -16 < A* < and -5 < B* <	Category 3 Except category superior
	C* > 30	Category 4
L* <	C* < 30	Category 3
	C* > 30	Category 4
$C^* = (A^{*2} + B^{*2})^{1/2}$		

Category 1: light colors

Category 2: medium colors

Category 3: dark colors

Category 4: sharp colors

Category 5: metallized colors

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