VMBUILDINGSOLUTIONS

TECHNICAL DATA SHEET

VM ZINC ®

VM BUILDING SOLUTIONS AUSTRALIA, through VMZINC building products offers the highest quality standards in production:

VMZINC is a metal consisting of **pure Zinc (99,99%)** alloyed with small quantities of titanium and copper. It is commonly named **TITANIUM ZINC**. It corresponds to the Z1 classification, which is the highest quality of Titanium Zinc in the **European Standard EN 1179**. Copper and titanium are added to increase the rolled zinc's mechanical properties.

VMZINC Titanium Zinc is a high quality product: with the evolution of the rolling process, the metal is rolled at constant thickness and dimensional tolerances which are respected by conforming to the **European standard EN 988 « Zinc and zinc alloys - Specification for rolled flat products for building »** which specifies requirements for rolled flat products for building purposes.

This standard has been in force since 1997 and is used by 18 European countries. It summarises and supersedes former national standards including:

- French standard - NF A55-201 & A55-211
- British standard - BS 6561 type A
- German standard - DIN 1706 and 17770
- Netherlands - NEN 7065

EN 988 lays down very strict specifications regarding the composition of the rolled zinc and its physical, mechanical, and dimensional characteristics. When it comes to quality VM BUILDING SOLUTIONS does not compromise. In fact, VM BUILDING SOLUTIONS has **its own standards** that are even more stringent that EN 988: **the PREMIUM ZINC quality label, developed and enforced by VM ZINC® since 2002.**
This label demands stricter specification for some measurements, particularly flatness and chemical

European EN 988 and PREMIUMZINC quality requirements are met as shown in the following table:

PREMIUMZINC, the quality label for VM ZINC®		
Controlled characteristics	PREMIUMZINC standard	EN 988 Standard
Chemical composition		
Zinc	Z1 with Pb and Cd	Z1
Copper	0.08-0.2%	0.8-1.0%
Titanium	0.07-0,12%	0.06-0.2%
Aluminium	≤ 0.015%	≤ 0.015%
Dimensional characteristics (tolerances)		
Thickness	± 0.02 mm	± 0.03 mm
Width	+ 2 / -0 mm	+ 2 / -0 mm
Length	+ 5 / -0 mm	+ 10 / -0 mm
Curvature	≤ 1.5 mm/m	≤ 1.5 mm/m
Flatness	≤ 2 mm and omega ≤ 0,6	≤ 2 mm
Mechanical characteristics (in the direction of rolling):		
0.2 % yield strength	110-150 N/mm	≥ 100 N/mm
Modulus of elasticity	90,000 N/ mm²	90,000 N/ mm²
Tensile strength	152-190 N/mm	≥ 150 N/mm
Breaking elongation	≥ 40%	≥ 35%
Bending test (at 180°C)	No cracking at fold	No cracking at fold
De-bending after bending	No cracking at fold	No cracking at fold
Creep resistance (during one hour under a load of 50 N/mm²)	≤ 0.08%	≤ 0.1%
Bending at 4°C	No cracking	-
Stamping (test according to Erichsen)	7.5 mm without cracking	-
Vickers hardness	≥ 45	-

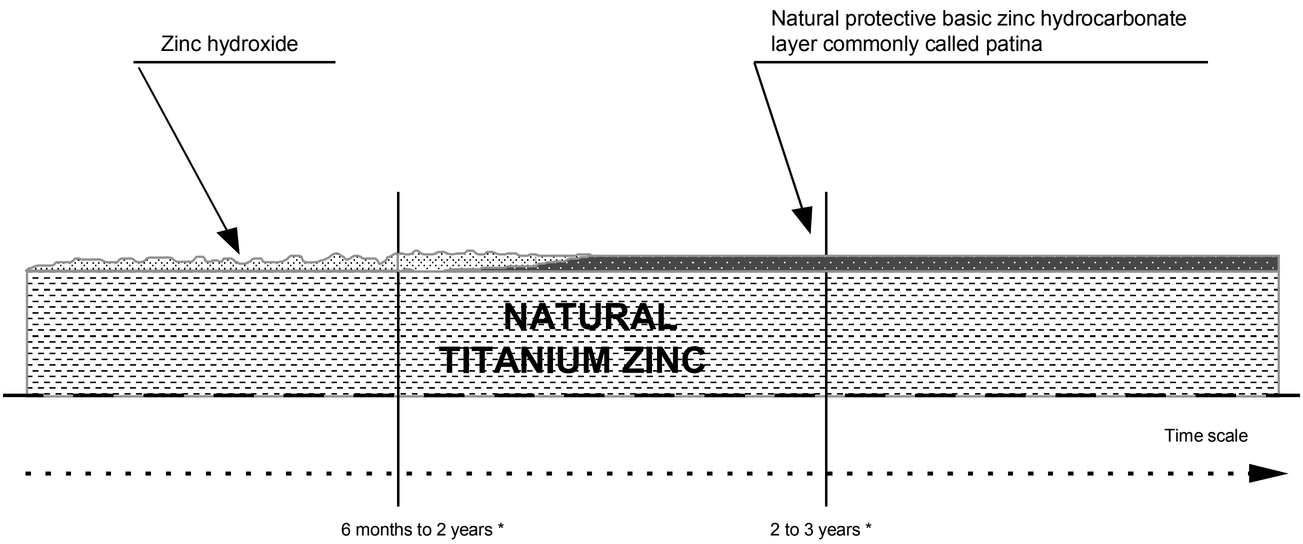
VMZINC is a **malleable** material ideally adapted for buildings where **long-lasting cladding** is required. Indeed, the most important characteristics of VMZINC is its inherent capacity to **self-protect against corrosion**: it forms a natural protective light-grey layer, called **patina**, which is insoluble in water. It has inherent qualities of durability, and **is capable of withstanding the harshest climatic conditions.**

NATURAL WEATHERING PROCESS OF TITANIUM ZINC:

The resistance of Zinc to corrosion stems from the **formation of a protective layer** called patina, which prevents the access of oxygen to the surface of the metal.

As soon as the natural VMZINC is laid, the presence of water (H2O) zinc and oxygen provokes a chemical reaction to form a **zinc hydroxide** which reacts in contact with carbon dioxide (CO2) to produce a protective **zinc hydroxicarbonate layer** and has the famous light grey colour of the zinc.

The titanium zinc must be laid in such a way that allows the creation of the patina, especially on the underside of the zinc. If the zinc stays in direct permanent contact with water, the zinc oxide layer cannot be formed in zinc hydroxicarbonate patina and will not protect the zinc. That is why it is very important to control the condensation formed on the underside of a zinc roof to make sure that this condensation is not permanent



Phase one = formation of zinc hydroxide and then zinc hydroxycarbonate in the presence of relevant quantities of oxygen – contained in water- and carbon dioxide.

Phase two = the zinc hydrocarbonate layer increases progressively while the zinc hydroxide disappears. This dense and protective patina of basic hydroxicarbonate is a great protection again corrosion.
*Note * This approximate time scale will depend on local climatic conditions (exposure of the titanium zinc roofing material to wind and sun) and environmental conditions (type and amount of air pollutants, ...).*

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