

ZCM is different from ACM in many aspects which have to be taken into consideration well in advance of executing a project.

### ZINC PATINATION PROCESS AND PRE-WEATHERING

Zinc is a natural metal which upon exposure to outdoor elements, develops a protective zinc-carbonate patina layer. Over time, the patina will mature into a rich blue-gray patina which incorporates elements of its surroundings to provide a finish unique to its location. Pre-weathering is the process of utilizing a non-pollutant phosphate treatment to accelerate the natural patination process that zinc undergoes. Pre-patina finishes are manufactured to varying tones and hues and enable panel surface finishes, upon installation, to achieve a look which would only otherwise be achieved numerous years after installation in its outdoor environment.

### MINIMIZING OPTICAL TONE VARIATION

Titanium Zinc is an alloyed natural metal which is cast into ingots, rolled into its coil format, and pre-patinated via the pre-weathering process. Due to inherent variations during each step of the process, ZCM panels will be subject to slight variations in optical tone, even within the same production batch. Optical differences between production batches will be more pronounced therefore it is very important to order all the required material for a singular project at the same time to ensure it is sourced from one production lot.

### THERMAL EXPANSION AND CONTRACTION

Aluminum Composite Material expands and contracts with temperature fluctuations in a uniform manner in all directions. Zinc Composite Material will expand and contract differently with the metal grain versus against the metal grain. Great care must be taken during design to accommodate for differing vertical and horizontal expansion coefficients in wall design.

# ALFREX PRODUCT COMPARISON

ZCM versus ACM



Fire Resistant & Non-Combustible Cladding

	ALFREX FR ZINC COMPOSITE MATERIAL	ALFREX FR ALUMINUM COMPOSITE MATERIAL
<b>SKIN ALLOY</b>	Titanium Zinc Alloy	Aluminum 3003 H14
<b>SKIN THICKNESS</b>	Top Side 0.028" (0.7mm)	Top Side 0.020" (0.5mm)
	Bottom Side 0.028" (0.7mm)	Bottom Side 0.020" (0.5mm)
<b>CORE MATERIAL</b>	Mineral Filled Fire-Resistant Core	Mineral Filled Fire-Resistant Core
<b>STANDARD THICKNESS</b>	4.0mm (0.157")	4.0mm (0.157")
<b>STANDARD WIDTHS</b>	39.37" (1000mm)	62" (1575mm)
	48" (1220mm)	50" (1270mm)
<b>CUSTOM WIDTHS</b>	Not Available	Minimum 42,000 SF
<b>WEIGHT</b>	2.92lbs/SF (14.26kg/sqm)	1.51lbs/SF (7.37kg/sqm)
<b>FINISHES</b>	Natural & Pre-Weathered Finishes	70% PVDF Kynar Resin Coil Coatings
<b>COEFFICIENT OF THERMAL EXPANSION ASTM D696</b>	Lengthwise (With Metal Grain) $12.2 \times 10^{-3}$ in/in/°F (@-22-86°F)	$1.44 \times 10^{-3}$ in/in/°F (@-22-86°F)
	Widthwise (Against Metal Grain) $9.4 \times 10^{-3}$ in/in/°F (@-22-86°F)	
<b>PRODUCTION MINIMUMS</b>	Made to order for each specific project	Standard colors from finished goods or made-to-order
	Minimum production quantity of 2,200 SF per production run	Standard color minimum production quantity 1,000 SF
	Production runs are classified as a specific finish and product width manufactured from the same batch of zinc coil.	Custom color minimum production quantity of 2,300 SF
<b>FINISHED GOODS</b>	NO	YES
<b>CUSTOM COLORS</b>	NO	YES
<b>STANDARD COILS STOCKED</b>	NO	YES
<b>MATCHING FLAT SHEET</b>	YES <i>From zinc manufacturer</i>	YES
<b>BOND INTEGRITY WARRANTY</b>	YES	YES
<b>FINISH WARRANTY</b>	NO	YES

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	ALFREX FR ZINC COMPOSITE MATERIAL	ALFREX FR ALUMINUM COMPOSITE MATERIAL
STORAGE AND HANDLING	It is essential to review the technical support documentation of both elZinc and RHEINZINK for detailed recommendations	Standard storage and handling procedures per experienced MCM fabricators
	Zinc is a much heavier, softer metal versus aluminum with higher sensitivity to moisture exposure, standing water conditions, and deformation due to improper storage, stacking, and handling. Employees must use gloves and sleeves to avoid fingerprinting and marking.	
FINISH DIRECTIONALITY	Extremely high due to visible metal grain. Always install sheets in the same direction.	Extremely high for Mica and Metallic colors. Always install sheets in the same direction.
PRODUCTION BATCH SENSITIVITY	Extremely high between coils	Coil coated solid colors - low
		Coil coated Mica and Metallic colors - high
TONE VARIATION	Slight optical variations are expected since a natural metal such as zinc has minor fluctuations in alloy and grain throughout a coil	Low to non-existent with coil coatings
FINISH AGING	Patina formation will progress at different rates based on environmental factors resulting in some variation between panels depending on their location on a building	Coil coated finishes will age differently based on degrees of UV exposure
CLEANING & MAINTENANCE	It is essential to review the technical support documentation of both elZinc and RHEINZINK for detailed recommendations.	Standard cleaning procedures using mild detergents per Alfrex's published recommendations
	DO NOT USE TRADITIONAL CLEANING AGENTS used in construction.	
	Any stains, fingerprints, or other discolorations which are not removed immediately will be permanently incorporated into the patina  After installation, periodic cleaning is not recommended other than a freshwater rinse	
CONTACT WITH DISSIMILAR METALS	More sensitive than aluminum	Aluminum or stainless-steel fasteners & rivets
	Stainless steel fasteners & rivets only	Use standard industry practices for separating panel surfaces from dissimilar metals with shims or other materials for that purpose
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STANDING WATER CONDITIONS	Highly susceptible to permanent staining and corrosion	Susceptible to corrosion