

Further Topics of ZCM

Material

- Product dimension and tolerance
- Color difference between production lots
- Weathering of the surface
- Self-repairing

Panel strength

- Wind load test
- Stiffener

Others

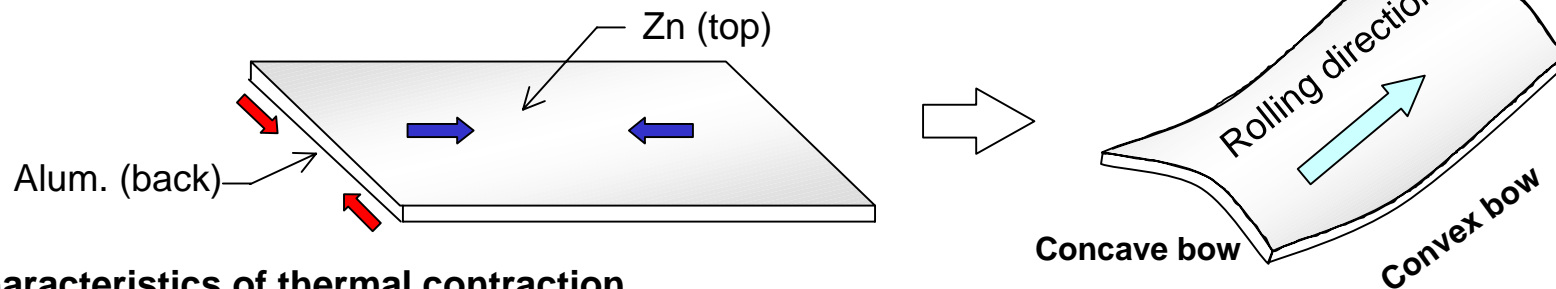
- Protective film
- Handling
- Maintenance method

Dimensions & Product Tolerance

- **Panel thickness:** 4 mm
- **Panel size:**
 - Width: 914 mm
 - Length: Less than 5000 mm
- **Product tolerance:**
 - Width: +/- 2.0 mm
 - Length: +/- 4.0 mm
 - Thickness: +/- 0.2 mm
 - Diagonal difference: Maximum 5.0 mm
 - Bow:
 - ZCM Z-Z; 0.5% (+/- **5mm/m**) of the length and/or width
 - ZCM Z-A; 0.8% (+/- **8mm/m**) of the length and/or width

Bow due to lamination of dissimilar metals

Thermal contraction after lamination process



Characteristics of thermal contraction

- Rolling direction (length): **Zn > Alum.**
- Parallel direction (width): **Zn < Alum.**

Color Difference Between Production Lots

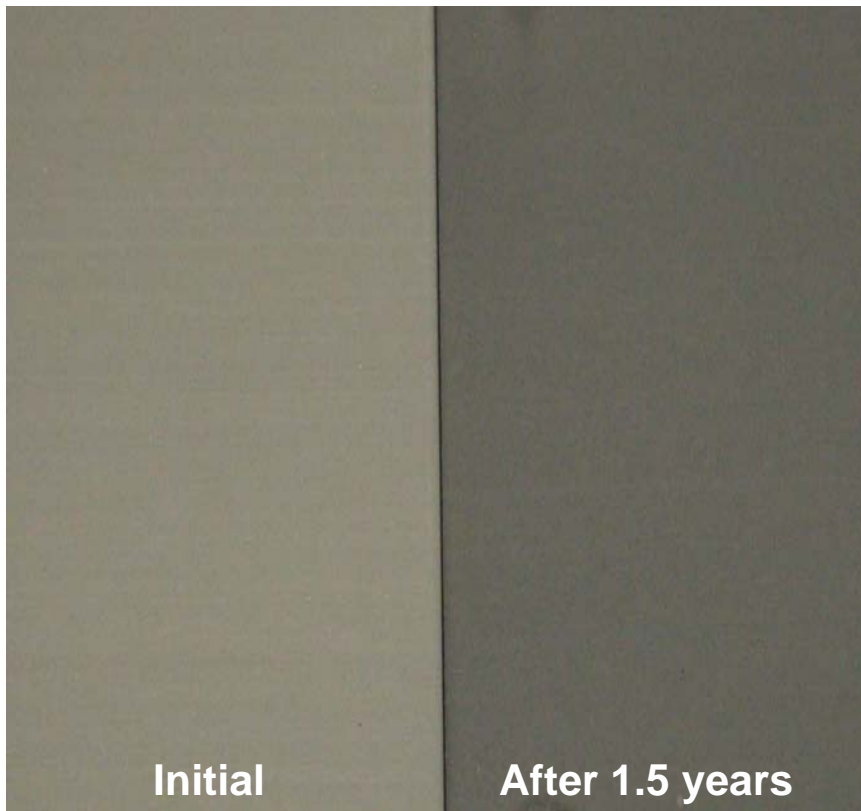


Colors among production lots

If you require uniform color of zinc,
it is recommended to place an order at one time.

Weathering of the Surface

Natural color change: Zinc surface is gradually turned to dark gray.



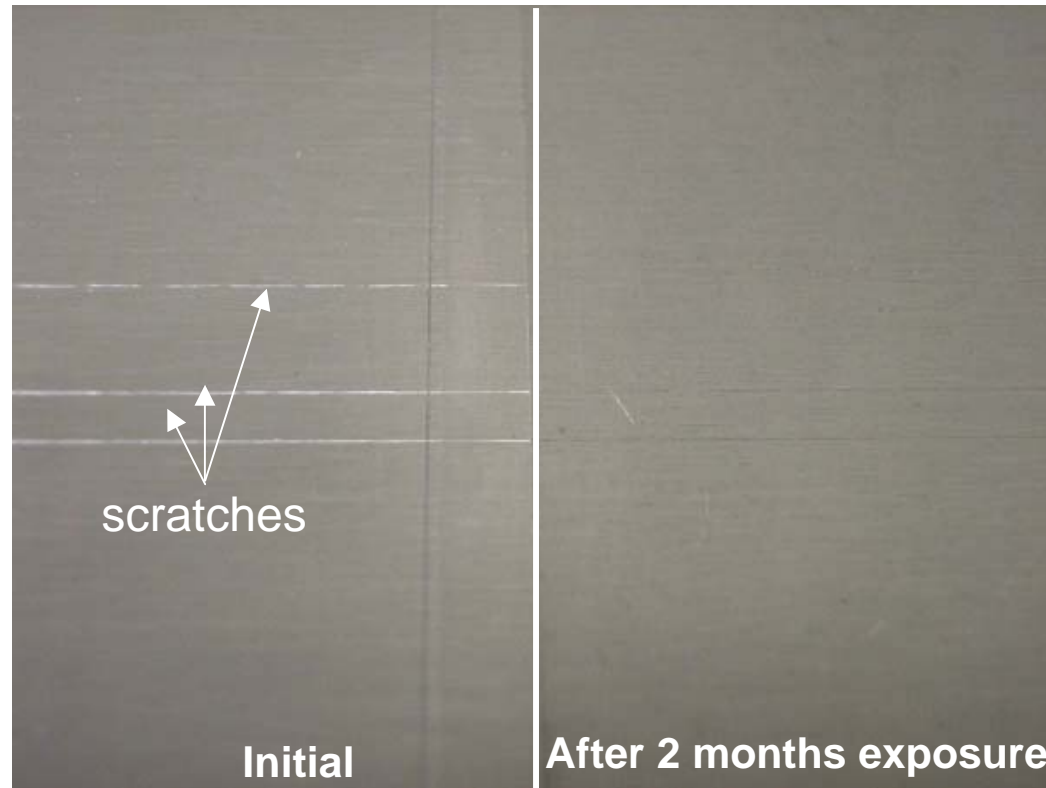
Exposure in rural area



Exposure in coastal area

Self-Repairing

Zinc surface is self-repairing by weathering.



In case of small scratches,

The naturally produced layer will gradually repair them over time.

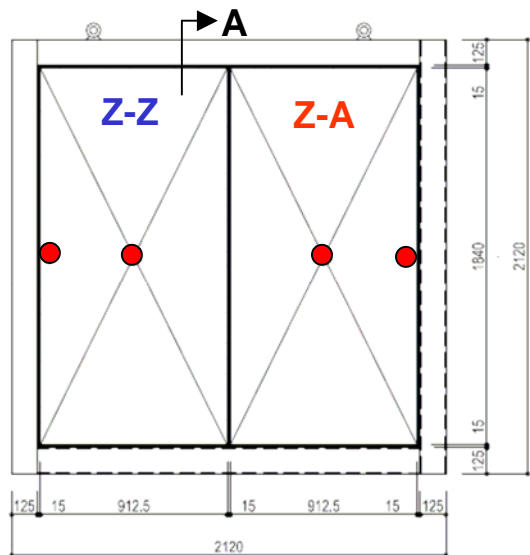
Panel Strength by Wind Load Test (1)

1. Specimens

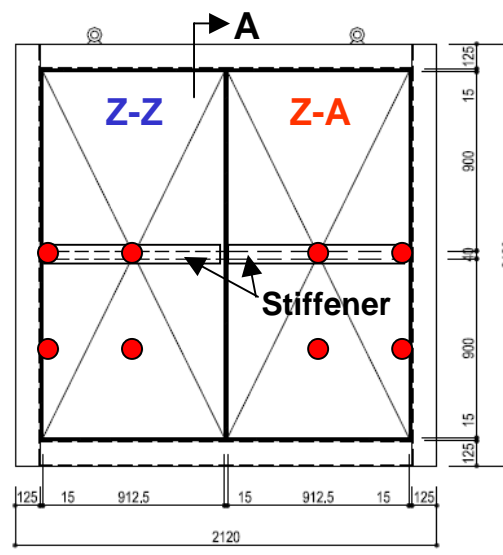
- Panel type: ZCM Z-Z & Z-A
- Panel size: 880 x 1820mm (tray type panel with alum. angles)
- Stiffener: no stiffener / one stiffener (alum. RHS 25x40x1.5mm)

2. Test method

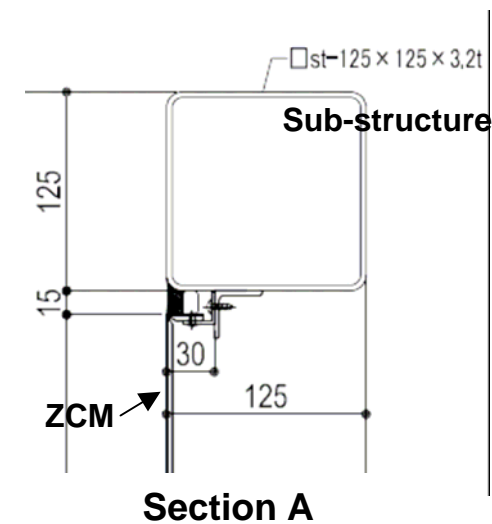
- Wind loading: 0 → 1K → 0 → 2K → 0 → 3K → 0 → 4K → 0 → 5K → 0 Pa
- Measurements: stress and deflection



No stiffener



One stiffener



Section A

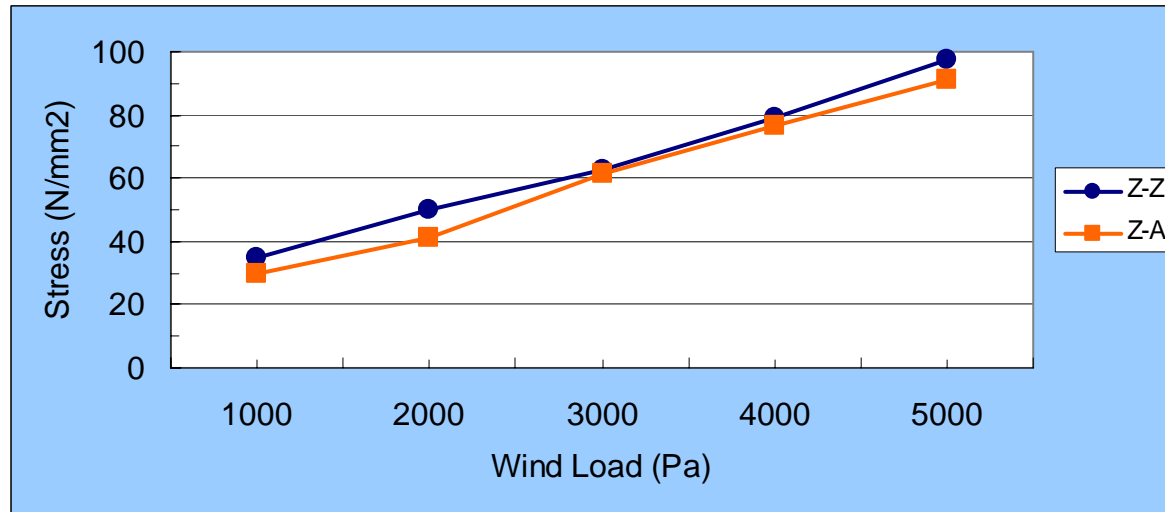
● Measured points

Panel Strength by Wind Load Test (2)

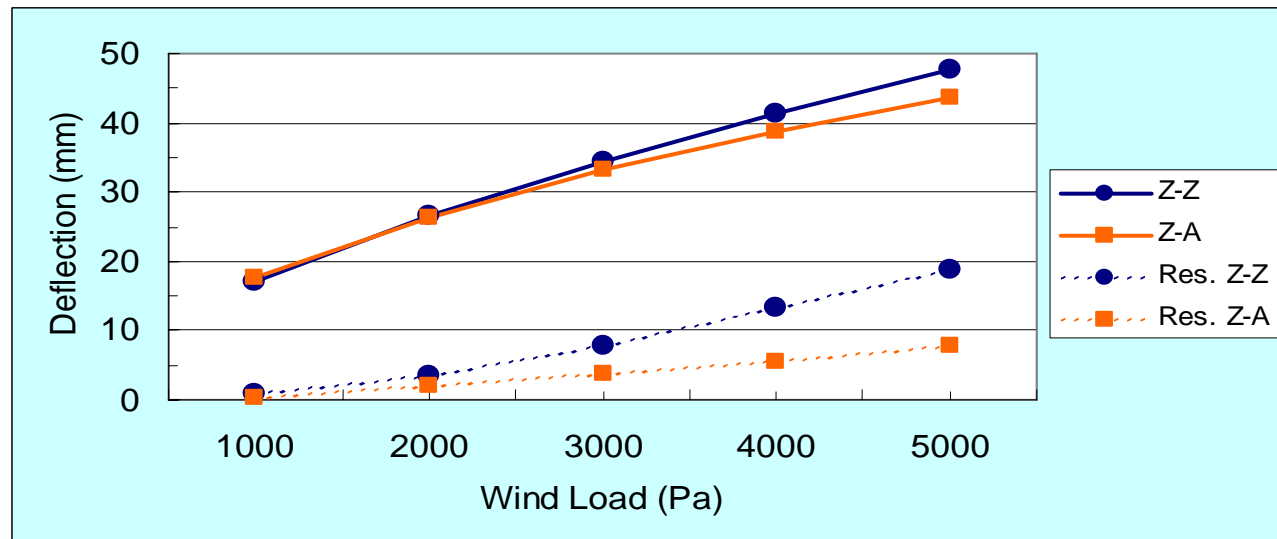
3. Test results

< No stiffener >

Stress



Maximum & residual deflection

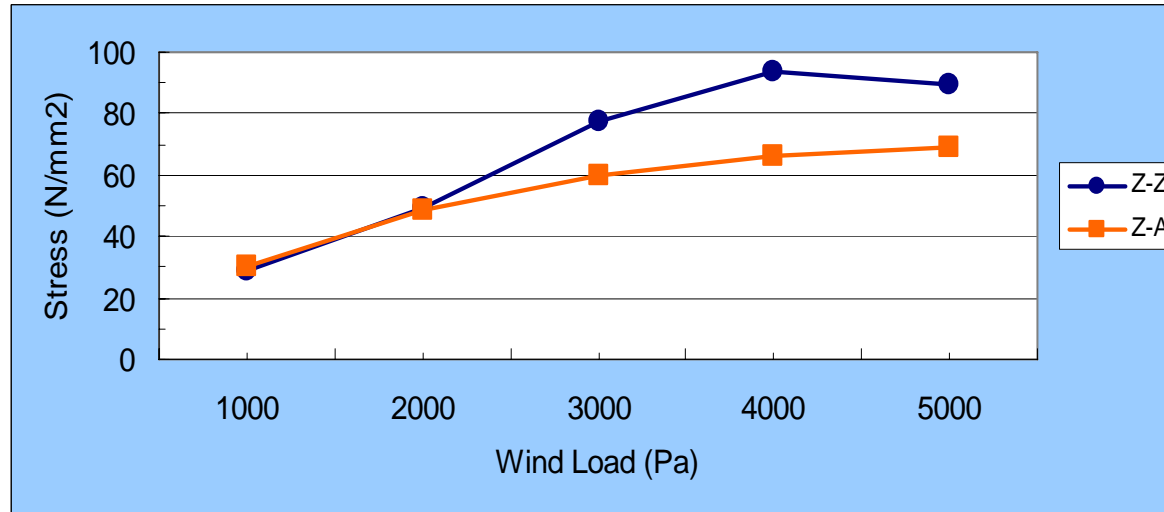


Panel Strength by Wind Load Test (3)

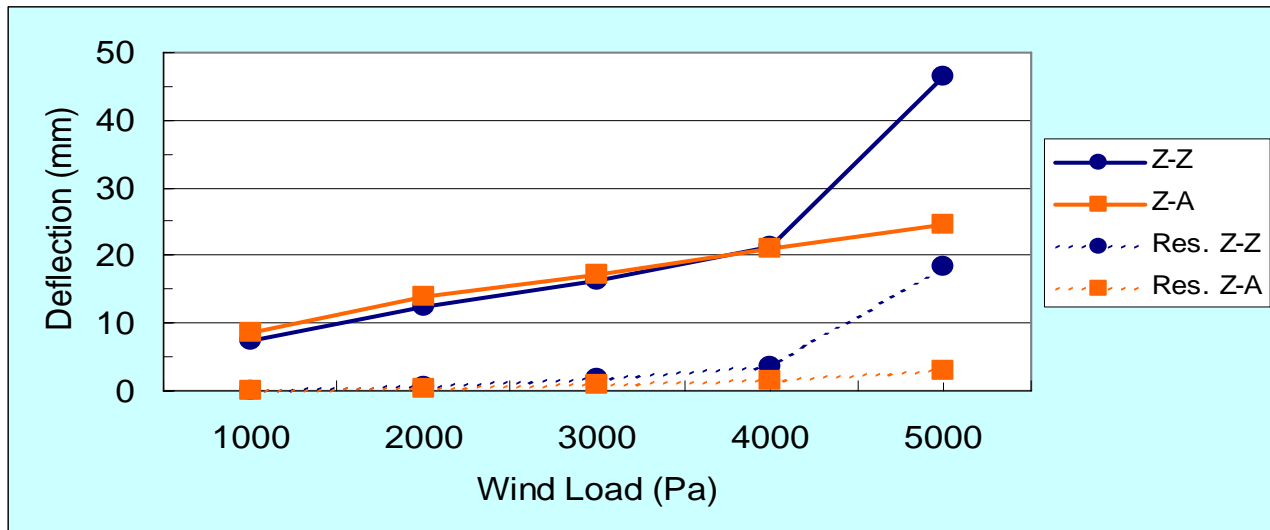
3. Test results

< One stiffener >

Stress



Maximum & residual deflection



Panel Strength

Recommendation for interval of stiffener
to avoid an obvious residual deflection

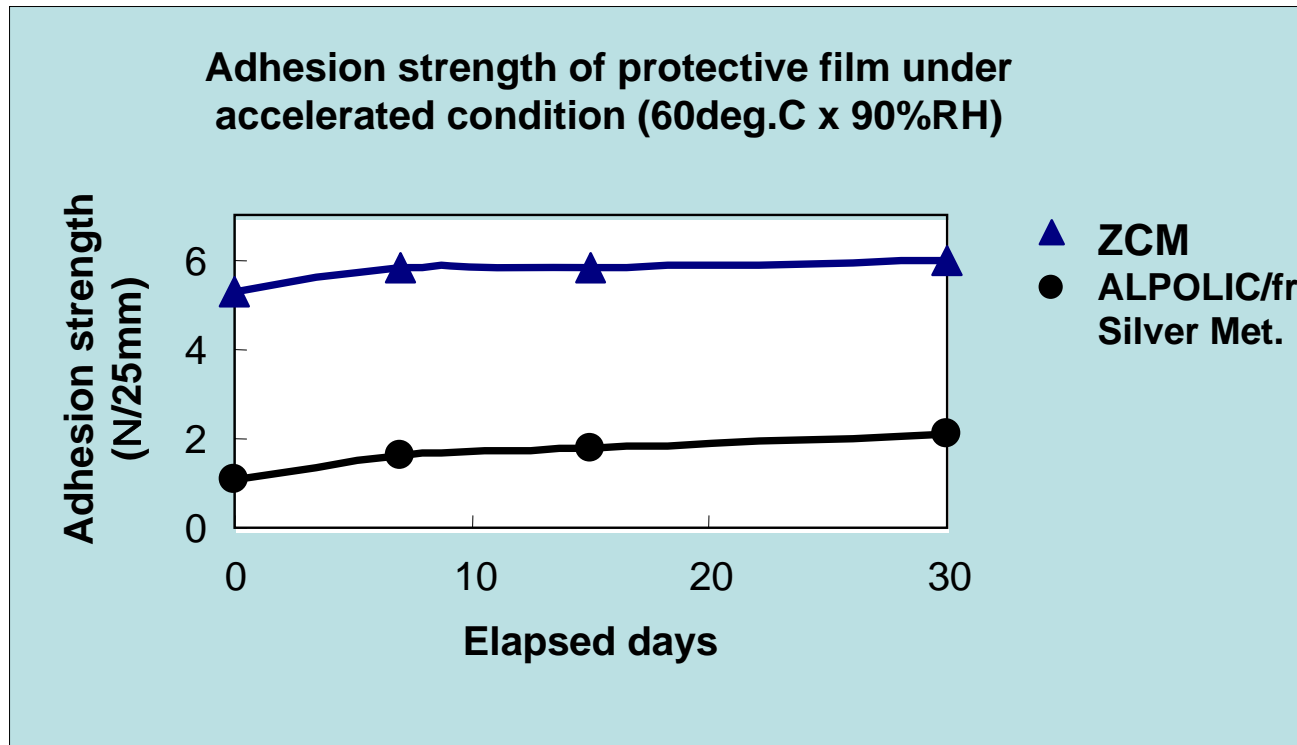


Panel type	Wind Load (Pa)	Interval of stiffener (mm)			Assumed permissible stress*
		Width: 900	Width: 750	Width: 600	
ZCM Z-Z	1000	2700	-	-	77 N/mm ²
	2000	1060	1250	-	
	3000	770	860	1050	
	4000	520	650	780	
	5000	440	500	660	
ZCM Z-A	1000	-	-	-	105 N/mm ²
	2000	1410	2250	-	
	3000	1000	1120	-	
	4000	720	880	1090	
	5000	570	760	850	

* In case of strength calculation

Protective Film

The adhesion of protective film applied to ZCM is stronger.



Normal protective film could be hard to remove.
A thicker protective film is used for ZCM.

Handling

When you handle a **long ZCM** panel, **hold the middle** of the panel in addition to both ends, because ZCM is heavier than ALPOLIC/fr 4mm and tends to have a large **warping with its dead load.**

Maintenance Method

- **Do not need special cleaning** on the ZCM surface in normal external atmospheric conditions. The surface layers protect base metal from corrosion.

- **Chemical corrosion:**

Chemical substances, adhering and accumulating on zinc alloy, might cause white or black stains. These stains often occur with acid cleaners for ceramic tiles, chemical components from hot spring, and salty components in coastal area. In these cases, we have to remove the chemical substances with **water rinse** to avoid accumulation.

- **Fingerprint**

It is very difficult to remove fingerprints on zinc alloy. Therefore, do the fabrication work using glove in order not to leave fingerprints on zinc surface.

Questions?

Thank you very much!