

DURABILITY & MAINTENANCE

Compliance

When supplied and installed in accordance with the manufacturers specifications and design parameters, the SPEEDFLOOR transportable concrete floor can be reasonably expected to meet the performance criteria set out in clause B2, Durability of the New Zealand Building Code for a period of 50 years.

Serviceable Life

Speedfloor is a composite floor system using both steel and concrete. The two elements must be treated and maintained separately.

Steel

The rollformed joist and perimeter channel is manufactured from steel coated with either 275g/sqm or 450g/sqm of zinc. If they reside in a clean and dry environment they will require no maintenance. If they are exposed, they will require a minimum of maintenance to ensure the expected performance is achieved. Guidelines for this maintenance are;

1. Keep surfaces clean and free from continuous contact with moisture, dust and other debris.
2. Periodically inspect for any signs of surface corrosion. Remove any by-products of the corrosion by mechanical means and spot prime the exposed steel substrate with an approved steel primer. Repaint the area using an appropriate paint manufacturer's recommendations.
3. All cut edges will initially form a dark red by-product which will in time change to black and then to grey. This is not surface corrosion and is not detrimental to the performance of the product. It is simply a sign that zinc migration is taking place.

Concrete

Special attention is paid to the concrete mixture and the placement of the concrete in the Speedfloor system to minimise the likelihood of shrinkage cracks occurring during the initial curing period. The slump is specified at 60mm and a super-plasticiser is used to improve workability during placement. An expanding agent can be used to reduce the effect of shrinkage during the initial cure and a curing compound is used to help control the curing process.

Specifications

- Zinc coating Weight – 275g/m² (Z275) or 450g/m² (Z45)
- Complying with – AS 1397:2001
- Steel grade – G250, G300, G350, G450, G500 or G550
- Steel thickness range – 2.0 – 3.0 mm
- Bend diameter – G250, G300 ≥ 2T. G450, G500, G550 ≥ 4T





Galvanized steel

Galvanizing generally refers to hot-dip galvanizing which is a way of coating steel with a layer of metallic zinc. Galvanized coatings are quite durable in most environments because they combine the barrier properties of a coating with some of the benefits of cathodic protection. If the zinc coating is scratched or otherwise locally damaged and steel is exposed, the surrounding areas of zinc coating form a galvanic cell with the exposed steel and the coating essentially re-seals itself. Even for large areas the surrounding zinc continues to significantly impede corrosion of the base metal. This is a form of localized cathodic protection - the zinc acts as a sacrificial anode.

Because the galvanized coating is metallurgically bonded to the steel, under no circumstances can moisture travel under the coating to create an accelerated corrosion cell.

Reaction between Galvanized surface and concrete

Zinc reacts with wet concrete to form calcium hydroxyzincate accompanied by the evolution of hydrogen. This corrosion product is insoluble and protective of the underlying zinc (provided that the surrounding concrete mixture is below a pH of about 13.3). Research has shown that during this initial reaction period until coating passivation and concrete hardening occurs, some of the pure zinc layer of the coating is dissolved. However, this initial reaction ceases once the concrete hardens and the hydroxyzincate coating has formed.



BUILDING CODE PARAMETERS

Australia

The Building Code of Australia Volume 2 sets out the following requirements for coatings of steel frame products

	Area 1	Area 2	Area 3
Where	Within building envelope	Outside building envelope	Where 1 & 2 do not apply
Location	More than 300 metres from breaking surf	More than 1 kilometre from still water	
	and	and	
	Not in a heavy industrial area	More than 10 kilometres from coast with breaking surf	
		And	
		Not in a heavy industrial area	
Coating	Minimum Z275 or AZ150	Minimum Z275 or AZ150	More than Z275 or AZ150

NOTE: The building envelope is deemed to be a space in the building where the steel frame does not have direct contact with the external atmosphere, other than for normal ventilation purposes. Areas not within the building envelope include floor framing members where there is no continuous perimeter subfloor walling.

New Zealand

Corrosion map to NZS3404.1	ISO 9223	Typically	Location	Characterised by	Residential /Dry	Internal		Open front		Awning
						Damp	High humidity	Protected	Open	
Seaspray	C5	*Within 200m of breaking surf	*West coast, South Island	Heavy salt deposits, almost constant smell of salt spray in the air.	1	3	4	4	4	4
		*Within 100m of breaking surf	*West coast, North Island		1	3	4	4	4	4
		*Within 50m of breaking surf	*Other coasts		1	3	4	4	4	4
	C4	200m up to 500m or more inland from breaking surf. In the immediate vicinity of calm salt water such as harbour foreshores.	*West coast, South Island	Medium salt deposits, Frequent smell of salt in the air.	1	3	4	4	4	4
50m up to 500m or more inland from breaking surf. In the immediate vicinity of calm salt water such as harbour foreshores.		All other coasts	1		1	3	4	4	4	
Zone 1	C3	500m to 1km from breaking surf. In the immediate vicinity of calm salt water such as estuaries.	*West coast of both islands and South coast of South Island.	Little salt deposits, occasional smell of salt in the air.	1	1	3	4	4	4
		500m to 1km from breaking surf. In the immediate vicinity of calm salt water such as estuaries.	*East coast of both islands, South coast of North Island and all harbours.		1	1	3	3	4	4
		1km to 20 km from salt water	*West coast of both islands and South coast of South Island.		1	1	3	4	4	4
Zone 2	C2	1km to 5km from salt water	*East coast of both islands, South coast of North Island and all harbours.	Minor salt deposits, no smell of salt in the air.	1	1	2	3	4	4
		20km to 50km from salt water.	*West coast of both islands and South coast of South Island.		1	1	1	2	3	3
Zone 3		5km to 50km from salt water	*East coast of both islands, South coast of North Island and all harbours.	No marine influence.	1	1	1	2	3	3
		Inland more than 50km from salt water.	Both Islands		1	1	1	1	1	1

Note, all environments may be extended inland by prevailing winds and local conditions.

Key

1	Z275
2	Z450 or Z275 and one of the paint systems P1 – P5 applied when new.
3	Z275 and one of (P3, P4 or P5) applied when new, or P1 or P2 applied when new and recoated every 15 years.
4	Z275 and one of (P3, P4 or P5) applied when new and then recoated every 15 years

