

COMMERCIAL CARPARK

DURABILITY STATEMENT

The durability of ComFlor with an exposed soffit is dependent on the protection provided by the coating and the type of exposure it is subjected to. It has been determined (by 'exposure farms' and monitoring of existing buildings) that a Z275 coating can provide full and satisfactory service for the design life (and beyond) of many buildings, dependant on the building's macro and microclimate exposure.

A successful outcome is determined more by the designer, constructor and end user than the product itself.

A satisfactory durability design is achieved through the combination of design and coating options. Coating options include:

- 275 g/m² of zinc (Z275) which is the standard ComFlor coating. This is suitable for use in Low and Medium corrosion environments
- Z450 which approximately doubles the life of standard Z275 for minimal extra cost.
- Paint or other proprietary coatings to supplement the zinc (particularly for the most corrosive of environments such as near surf)
- Smart design contributes to maximising life via minimising dampness and correct ventilation.

However, it is realistic to expect that regular washing and probable repair or recoating will be required within the design life of the structure as the protective coating sacrifices over the years – the rate of which depends on the microclimate.

The two corrosion mechanisms are through the slab itself 'top down' & from below.

Top Down Conditions

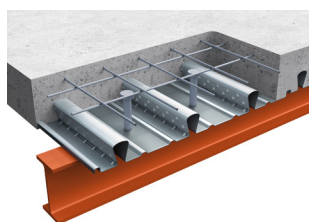
Top down water ingress due to cracks or percolation has minimal effect on the durability of a ComFlor slab. The interface between the concrete and the top of the ComFlor sheet is an inert environment and unless activated by exposure to oxygen, no corrosion will occur. The areas susceptible to top down corrosion are those where water can escape, (thereby exposed to oxygen) namely:

- the laps
- screw locations
- where planned penetrations or damage has perforated the ComFlor sheet.

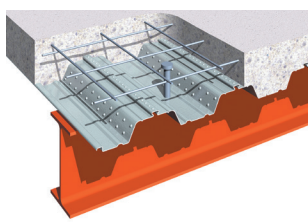
Top down corrosion is mitigated by utilising all or some of the following – in approximate order of importance:

- Proper concrete grade/pour/curing practise
- Appropriate crack control reinforcing
- Adequate falls so water sheds effectively
- Crack healing agents within the concrete mix
- Seal cracks of concern.

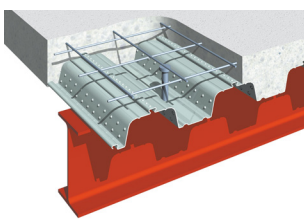
The extra level of protection provided by a waterproof membrane may be required or chosen for some applications.



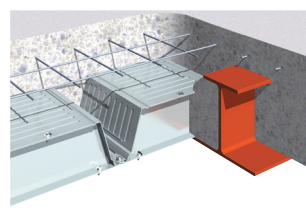
ComFlor SR



ComFlor 60



ComFlor 80



ComFlor 210

Soffit Conditions

The main mode of corrosion will be to the soffit of the ComFlor due to windblown moisture and the collection of dirt and chemical compounds from vehicular activity.

Generally, an exposed soffit can be divided into two functioning zones. There is a third zone where the soffit is continuously wet but this is not a workable solution, as it is due to bad detailing or construction and is a building quality issue rather than a product issue – so must be avoided at all times.

Internal zones are determined as those areas that are protected from prevailing moisture laden wind due to a beam/wall blocking the airflow and tend to never get wet, therefore are of lesser concern for durability.

External Unwashed zones are classed as those areas around the outer perimeter of the building that can have moisture and particulates blown in direct contact with the underside of the ComFlor sheets, and tend to go through a cycle of regular wetting but completely dry between wettings. Unwashed relates to the absence of the natural cleaning mechanism that direct rainwater would otherwise provide.

These external unwashed areas can be painted with an appropriate product as part of the construction process – the outside few metres of the soffit (to the next internal beam) along with any metal edge formers used during construction. An alternative is to wash down the soffits on a regular basis to remove dirt and particulates that moisture would otherwise adhere to, ultimately leading to spot corrosion.

Life to First maintenance (LFM) – a small percentage of visible rusting is a visual issue rather than a structural concern. In very rough terms a LFM of 10-13 years can

be expected for an external unwashed zone using the Z275 coating. This is highly dependent on the microclimate and can be extended by regular washing and/or painting. Consult industry documents such as AS/NZS 2312 and HERA report R4-133 for detailed instructions and academic expectations.

End of Coating life (ECL) – exhibits as a high percentage of exposed rust with possible degradation of structural material. This is an undesirable state for the ComFlor to reach. Any red rust must be removed and treated at the earliest opportunity.

The above is a generalised statement. For a specific project a detailed study would be required, considering the specific exposure class, site conditions and building use parameters in order to ascertain more accurate guidance.

The generalised information provided above has been sourced from various reference materials, including:

- Durability of Galvanised Coil Products in External Applications (Raed El Sarraf, HERA, September 2010)
- HERA Report R4-133 (The Coatings Guide)
- AS/NZS2312 (The Coatings Standard)
- AS2309 (The Galvanising Standard)
- NZS3404.1 (The Steel Standard)
- NSZ3604 (The Timber Standard)

The academic durability for a given protective coating in a specific environment can be assessed in further detail by referencing these publications and designers are encouraged to do so to satisfy themselves on the durability of their design in the specific location of the project.

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