



DINCEL STRUCTURAL WALLING

RISK MINIMISATION FOR THE INSURANCE INDUSTRY



INTRODUCTION

Assets are insured for the purpose of recovery costs in the event of an incident. The natural incidents covered by insurance policies may include earthquakes, cyclones, floods and fires. The insurance industry in Australia protects itself by relying on the Building Code of Australia and its related standards. The current Australian standards have been written for conventional building materials which are fibre-cement sheets, bricks, blocks and conventional concrete. These materials are non-ductile, brittle, porous and subject to cracking and water damage easily.

On the other hand, there are very clear increases in natural and other disasters relating to the population increase and changes in life style which leads to potential man made issues. It is clearly seen that current conventional construction material science is significantly falling behind our needs. As a result, the building industry may end up either with no insurance or insurances at premium rates. Dincel eliminates insurance industries risks.

Some of the most important structure related insurance risks are:

- Leaking Buildings
- Flood damage
- Impact related damage
- Fire
- Cracking
- Water Damage

1. LEAKY BUILDINGS

([Download – Leaky Buildings](#)) for reasons and solutions.

During the year 2013 insurance companies started to exclude insurance cover for buildings/products displaying MOULD and FUNGI DEVELOPMENT.

“Refer – Tasman Underwriting, Clause 2.16 – LLOYDS”
<http://tasmanunderwriting.com.au/assets/tasman2011miscPlwdgMay11GRN.pdf>

2. FLOODS

Human expansion extends into the flood plains. In fact, the flood plains are changing due to climatic changes which require a new definition for flood plains. However, this is against the human expansion policy. This creates vulnerability for the insurance industry as the settlement areas that were not flood prone have suddenly become flood prone due to the unpredictability of climatic changes. The natural water courses are already known hence the immediate area around the natural water courses. The structures that are not near the natural water courses have received extreme rare structural damages due to back-water flooding, i.e. no impact damage. The damages to these buildings and the total structural replacement have occurred because conventional materials absorb water which cause mould problems. Mould cannot be treated in a short time period hence as experienced in the 2005 USA Cyclone Katrina, the buildings were demolished and replaced because of mould infestation.

Refer ([Download – Flood Recoverable Buildings](#)) for Dincel’s solution on how the structural replacement costs can be avoided with waterproof Dincel Walls.

3. IMPACT RELATED BUILDING DAMAGES

Tsunamis, cyclones, earthquakes and buildings in near proximity to natural water courses fall into this category.

Tsunamis, like floods, create impact related damage or collapse and end up with mould problems which lead to the demolition of the buildings.

Cyclones and hurricanes are normally resisted by conventional concrete structures. However, water damage occurring because of cyclones will also be subjected to mould related structural damages.

Earthquakes have become very common news lately. It appears that the occurrence of earthquakes is also increasing with natural disasters like floods, cyclones and bush fires.

Earthquakes are like release valves that occur at the tectonic plate boundary. Historically, the magnitudes of earthquakes very rarely reach magnitude 9 because of ongoing activity at the tectonic plate boundary. **Some may think that Australia is not within the tectonic boundary hence is immune to earthquakes.** On the contrary, the Australian building authorities do not believe in this main stream belief hence, commencing from 2007, the Australian Earthquake Standards have adopted the New Zealand Code of Practice which is a country located on the tectonic plate boundary.

When an earthquake's magnitude exceeds a certain level, as experienced in the recent Christchurch, New Zealand earthquake, conventional building materials (bricks, blocks) display damage due to their non-ductile and brittle nature. **It has been reported that masonry reinforced block walls were crushed under the earthquake loads.**

DinCEL is a ductile and non brittle construction system which is certified up to magnitude 9 earthquakes. Please read [\(Download – Building Solution for Earthquake Prone Regions\)](#).

The magnitude 9 earthquake force is a very significant load. As DinCEL is certified by this magnitude of strength, it can then easily be considered as a solution other than impact related forces such as cyclones, hurricanes, etc.

Refer to Earthquake Testing in the following link [\(Download – Earthquake Testing\)](#)

FIRES

The Concrete Mix Specification significantly affects the fire performance of a structural wall/column. Majority of the concrete mix specified in the Australian construction market do not comply with AS3600 [\(Download\) Compliance of Concrete Mix Specification with AS3600](#).

Hydro Carbon Fires

The vulnerability of hydro carbon fires are not covered by the BCA and AS3600 Concrete Structures Code [\(Download – DinCEL Solution for Hydro Carbon Fire\)](#). Exposure to hydro carbon fires for structural protection is a clear potential issue not covered by AS3600. **This reveals another risk factor for the insurance industry.**

Bush Fires

The other common natural disaster is bush fires. Dry climate conditions result in bush fires. Human expansion now results in populations living very close to bushland. The areas near or within the bush areas are socially attractive locations, however are also dangerous locations due to possible bush fires.

The Australian bush fire prone construction standards are significantly upgraded however these solutions are far from achieving real solutions unless the type of building materials are considered. The best suitable building materials are bricks, masonry blocks and concrete. Any other type of materials cannot offer a real solution.

Realistically, the bush fire areas commonly have difficult access problems which significantly reduce the use of conventional materials like bricks, blocks and concrete walls requiring heavy formwork items. These issues make DinCEL the best solution for bush fire conditions due to its lightweight forms and concrete which can be pumped from long distances. DinCEL is certified by CSIRO even under the worst possible bush fire conditions.

[\(Download – DinCEL Wall Fire Assessment. DinCEL complies with the Building Code of Australia's Fire Requirements\)](#).

DinCEL is a polymer formwork and the polymer forms are only required at the time of concrete pouring which may burn (in fact char) during a fire. **This does not result in any structural damage as the only attention that is required after a bush fire event is the cosmetics such as building finishes, paints, renders, claddings, etc. The presence of DinCEL will eliminate the risk of a structural replacement for the insurance industry.**

5. CRACKING

Cracking of wall materials is unavoidable unless walls are jointed at very close centres which is not practical, causes further problems and economically not viable. Materials such as bricks, blocks and concrete are porous and through their capillary nature absorb water/moisture. The effects of temperature and moisture content of brittle materials make the shrinkage and temperature crack control impossible. Even the slightest ground/foundation movement and settlement of floor slabs cracks the brittle materials such as bricks. Naturally, these brittle materials, including reinforced concrete, have no possibility of remaining uncracked when they are subjected to nature's forces like earthquakes, cyclones, mine subsidence, vibrations, etc.

Dincel's resilience has been tested to be at least twice that of conventional reinforced concrete members. The capability of resistance of magnitude 9 earthquakes is proof that Dincel will resist significant nature's forces without even cracking. The shrinkage and temperature cracking is not an issue for Dincel as it has already been built for up to 140m long walls without any joints or cracks showing.

Refer [\(Download – Common Engineering Questions, Items 1, 2, 4 and 11\)](#) to understand why cracking and crack control is not an issue with Dincel.

The presence of Dincel will eliminate the crack maintenance issue for the majority of circumstances. This will eliminate the insurance claims risk for the insurance industry.

6. WATER DAMAGE

This problem is the most common issue for the insurance industry. This problem cannot be avoided with the currently used materials such as fibre cement, bricks, blocks and reinforced concrete. All these materials absorb water/moisture through their capillary action.

Dincel is the only waterproof wall system to avoid this problem. The following documents explain "waterproofing" and its importance.

[\(Download – Leaky Buildings – Are Fibre-Cement Sheets Suitable\)](#)

[\(Download – Sustainability Q11 – Why Dincel can eliminate the need for a breathable wall\)](#)

[\(Download – Finishes\)](#)

[\(Download – Waterproof Walls\)](#)

[\(Download – Dincel Wall Waterproofing Warranty\)](#)

[\(Download – Sustainability Q6 – What will be the life expectancy of Dincel Wall\)](#)

Waterproof Dincel eliminates all possible water damages, concrete cancer, decay and rot. The presence of Dincel will therefore eliminate water damage risk for the insurance industry.

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