

# FIRE-SAFE CLADDING: BUILDING A CULTURE OF COMPLIANCE





## INTRODUCTION

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The tragic Grenfell Tower disaster in June 2017 was a harsh awakening for the building industry to the dangers of polyethylene composite cladding. The incident saw a fire spread from the fourth to the twenty-fourth floor of the west London residential tower in 15 minutes. A disastrous combination of polyethylene cladding, flammable insulation, poor maintenance and a lack of sprinklers compounded the blaze and its consequences.<sup>1</sup> Despite 40 fire engines and more than 200 firefighters arriving on the scene to tackle the blaze,<sup>2</sup> the inferno claimed the lives of at least 80 people.<sup>3</sup>

The composite cladding covering the building was quickly identified as the accelerant. Containing highly combustible polyethylene, professionals liken this type of composite cladding to wrapping a building in petrol. Fire Engineer Tony Enright explained to ABC's Four Corners program:

"A kilogram of polyethylene will release the same amount of energy as a litre of petrol. But it gets worse than that because polyethylene is denser than petrol too so a kilogram of polyethylene is about 1.5L of petrol. If you look at a 1mx1m square section, that will have 3kg [of polyethylene], the equivalent of about 5L of petrol."

Despite the dangerous accelerant properties of the panels used in Grenfell Tower, they were not explicitly banned in the UK due to a loophole in regulations. The manufacturers of the panels stated they were not for use in tall buildings and the panels were specified against their recommended use.<sup>4</sup>

Composite panels consist of two 0.6mm aluminium skins, separated by an inner insulating core of highly combustible polyethylene. When exposed to a flame, the flammable glues

lose adhesion, causing the outer skins to deform and delaminate. Heat is then able to reach the core, which ignites and encourages the spread of flames.<sup>5</sup> In addition to the core and glues, paint products used on composite panels are often also highly flammable, creating a toxic mix.

### Groundhog Day: A Recurring Disaster

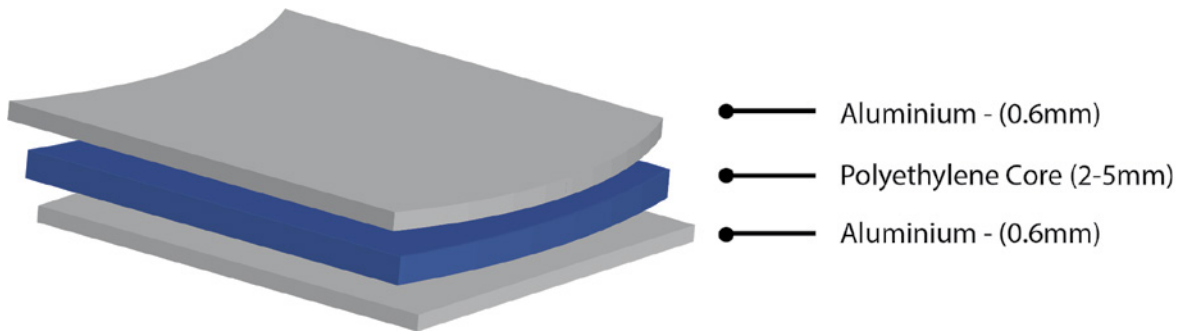
Dubai fell victim to a similar event in August 2017, when one of the largest residential buildings in the world - the unfortunately named Torch Tower - was engulfed in flames. It was the second blaze to hit the 79-storey skyscraper in two years and the flammable composite cladding panels used have been blamed for the rapid spread of fire.<sup>6</sup> Dubai responded by introducing new fire safety rules that require such cladding to be replaced with a fire-resistant alternative. Authorities have indicated that cladding on at least 30,000 buildings across the UAE will need to be replaced.<sup>7</sup>

To many, the Torch and Grenfell Tower fires acted as a grave reminder of events much closer to home. In November 2014, a fire raced up 13 floors in as little as ten minutes at Melbourne's Lacrosse building in Docklands. When firefighters arrived, the flames had spread rapidly, accelerated by the composite panels.

The event could have claimed hundreds of lives if not for the fortunate weather conditions and quick response from fire crews.<sup>8</sup> The cladding ran right up the building, contrary to the requirements of the Building Code of Australia (BCA), which prohibits use of a combustible product on the outside of a building of this type.<sup>9</sup> Its use was found to be a major regulatory failure, begging the question: how many other buildings have slipped through the cracks?

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## TYPICAL ALUMINIUM COMPOSITE CLADDING



## THE WIDESPREAD DANGER IN AUSTRALIA

These incidents shed light on a very real and widespread issue in Australia that the building industry has largely ignored until now. Recent studies have revealed the ubiquitous use of flammable cladding across the country. The Victorian Building Authority (VBA) has identified that up to 50% of new high rises in central Melbourne contain flammable cladding<sup>10</sup> and there may be a further 5,000 non-compliant buildings across the state. The issue has been on the radar of Melbourne authorities since the Lacrosse fire, but in the wake of Grenfell, the government announced it would accelerate its investigation into flammable cladding.

Across Australia, people are living in “virtual ticking time-bombs” as fire authorities warn that a Grenfell Tower-type catastrophe is inevitable unless widespread and necessary changes are made.<sup>11</sup> It is estimated that 2,700 buildings in Sydney use the same type of cladding as that of the Lacrosse fire<sup>12</sup> and the ACT Government recently confirmed combustible aluminium cladding is widely used in Canberra.<sup>13</sup> In Tasmania, the Justice Department’s consumer building and occupational services division has committed to a statewide audit.

### How Did This Happen?

When composite cladding arrived on the Australian market, it appealed to architects and builders as a cheaper alternative and its flammability was not as widely known. The construction boom of the past two decades, mixed with an increasingly price-driven environment feeding an insatiable appetite for cheaper products, saw what was once used as a decorative design feature become a structural element.<sup>14</sup> The deregulation and privatisation of the building industry added fuel to the fire as price drove choice while

cheap products manufactured overseas flooded the market. We now know that suppliers of composite cladding knew their products were highly flammable and continued to take advantage of Australia’s ambiguous building standards despite safer cladding being widely used in Europe and the USA.<sup>15</sup> To make matters worse, Fire Protection Association Australia has warned that some Chinese suppliers of cladding material are making false claims about complying with Australian standards.<sup>16</sup> Since the combustibility of the material is dependent on its core - which is not visible once it is installed - it can be impossible for the naked eye to tell the difference between combustible and non-combustible cladding.

### The Clock Is Ticking

A Senate inquiry into non-conforming building products was established in 2015 following the Melbourne Lacrosse fire. An interim report on the implications of the use of non-compliant external cladding materials in Australia was tabled on 6 September 2017.

The report recommends an immediate total ban on the importation, sale, and use of polyethylene core aluminium panels in Australia. The Economics References Committee has also called for:

- increased accountability of designers, developers, suppliers, and installers
- the introduction of a national licensing scheme for all building practitioners
- a penalties regime for non-compliance with the National Construction Code, such as revoked accreditation and financial penalties.<sup>17</sup>



## GETTING IT RIGHT

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Increased scrutiny and accountability is forcing the industry to be more diligent in specifying fire-safe cladding. The Princess Alexandra Hospital in Queensland is taking the lead by proactively stripping its combustible cladding now that the dangers are more evident.<sup>18</sup>

Architects and specifiers can ensure they are choosing non-combustible cladding products by being properly informed about industry standards and opting for products from respected Australian manufacturers. Imported materials making false claims about fire safety are misleading specifiers and builders,<sup>19</sup> however architects can request test certificates from manufacturers to ensure products comply with the relevant Australian Standards.

### The Relevant Standards

Before specifying a cladding product, check it has been independently tested to comply with the following Australian Standards:

AS1530.1: a test of the combustibility of building materials and one of the methods for evaluating the potential fire hazard of building products.<sup>20</sup> It is a small-scale material fire test which involves immersing a small sample of the material in a furnace held steady at 750°C. A material can be deemed non-combustible by conducting an AS1530.1 standard combustibility test and satisfying the criteria outlined in the test method.<sup>21</sup>

AS1530.3: refers to the flame retardant qualities of building materials, components and structures and is a determination of ignitability, flame propagation, heat and smoke release. The test material is put into a frame and a gas fired ceramic panel is placed 850mm from the material and is moved closer every 30 seconds until it is 175mm away. The test measures the material's performance under radiated heat.<sup>22</sup>

AS3837: measures the response of materials exposed to controlled levels of radiant heating with or without an external igniter. It is used to determine the ignitability, heat release rates, mass loss rates, effective heat of combustion, and smoke release of materials and products. It is required by the National Construction Code for materials used as building linings.<sup>23</sup>

### The Solution: Solid Aluminium Panels

The risks of using composite panels are now obvious, but what is the alternative? Specifiers can no longer make decisions based solely on price and need to find safe, fit-for-purpose cladding materials. Solid aluminium panels are the solution. Made from extruded aluminium which is then powder coated, solid aluminium products do not contain combustible materials or a flammable core. Aluminium is inherently non-combustible and its powder coating will only char when exposed to a heat source. Solid aluminium cladding has the additional advantages of strength, durability, flexibility, lightness, low maintenance and corrosion-resistance.<sup>24</sup> One reputable Australian supplier of compliant, fire-safe solid aluminium cladding is Deco.



## DECO

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Deco are Australian market leaders in sublimation for powder coatings and provides a range of finished Australian-made aluminium building products. Delivering innovative finishing technology to the Australian building industry since 2004, Deco's solid aluminium panels have been independently tested by the CSIRO and comply with AS1530.1, AS1530.3 and AS3837.

Each Deco product is available with 'DecoWood' finishing; a super durable, marine grade woodgrain finish on aluminium that combines the natural beauty of timber with the durability to perform in extreme environmental conditions.

All products and finishings are non-combustible and products that have been CSIRO tested and comply with the National Construction Code.

DecoClad: Exterior cladding featuring the DecoWood timber finish. Low maintenance, DecoClad provides long lasting good

looks and is suitable for residential and commercial applications. Other Deco products include:

DecoBatten: Aluminium battens with the DecoWood timber finish. Available in a variety of sizes and fixing options.

DecoDeck: Aluminium decking with a slip-resistant DecoWood timber-look finish. It is ideal for use in bushfire-prone areas, near the ocean and around pools.

DecoSlat: Aluminium slat fences, gates and screens coated with the DecoWood finish. No painting or staining required, DecoSlat combines the natural beauty of timber with the strength of aluminium.

Other product ranges include windows, doors, louvres and shutters.

For more information, visit [www.deco.net.au](http://www.deco.net.au).





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