

### Fibre-Cement

Fibre-cement – which is manufactured using sand, cement and cellulose (wood) fibre – is used in a number of cladding applications in domestic buildings. The most common exterior uses are as stucco plaster substrate, cladding sheets, cladding planks, weatherboards, and pre-finished soffit lining.

Fibre-cement is also designed for internal use as a rebated edge sheet for flush stopping and finishing, typically with ceramic tiles and as square-edged sheet for use over an existing floor as a tiling underlay.

© BRANZ 2007

Extraction and manufacture	
<b>Impact of extraction</b>	<p>Quarrying for aggregate may create dust, noise and a significant visual impact. However, less aggregate is needed than for concrete.</p> <p>Removal of sand has possible visual impacts and ecological impacts (also see the <a href="http://www.level.org.nz">www.level.org.nz</a> factsheet on plaster).</p> <p>Cement is a small but important component of fibre-cement. Industrial waste products such as fly ash, ground blast furnace slag and silica fume can be incorporated into specifically designed fibre-cement mixes to reduce amount of cement used.</p>
<b>Use of energy and other resources</b>	<p>Embodied energy of fibre-cement is quoted as 9.4 MJ/kg.</p> <p>Significant amounts of water are used in fibre-cement manufacture.</p> <p>Fibre-cement uses cellulose from sustainable (radiata pine) forests as reinforcing.</p>
<b>By-products/emissions</b>	<p>Cement manufacture releases significant amounts of carbon dioxide to the atmosphere.</p> <p>Cured fibre-cement sheet is inert.</p>
Sourcing	
<b>Material sources</b>	<p>Fibre-cement sheets and planks are made in Auckland from local sand/cellulose and from cement manufactured in NZ or imported. Fibre-cement sheets and planks are also imported from Australia and China.</p>
<b>Availability</b>	<p>Fibre-cement is readily available throughout New Zealand.</p>
<b>Cost</b>	<p>Initial costs are low to medium for standard sheets or planks.</p> <p>Maintenance costs (repainting) medium.</p> <p>Pre-finished material (generally for soffits) has higher cost but lower maintenance.</p>
<b>Transport to site</b>	<p>Fibre-cement is heavy to transport. Specialised truck-based lifting equipment is needed for palletted material.</p>
Construction/installation	
<b>Health and safety during construction/installation</b>	<p>Safety equipment is required when cutting with a masonry saw (ear muffs, safety glasses, mask and overalls) to eliminate risk of skin irritation and lung damage.</p>
<b>Ease of construction/installation</b>	<p>Fibre-cement is relatively quick to install. It requires supporting framing. Individual sheets and planks can be handled by workers on site.</p>
<b>Adaptability</b>	<p>Installed wall claddings are moderately easy to replace.</p>
Performance	
<b>Health and safety during life of building</b>	<p>Fibre-cement is inert, non-toxic and not prone to off-gassing of volatile materials. However, it will support toxic mould growth when wet (see below).</p>

<b>Structural capability</b>	Fibre-cement sheets can be used as structural bracing for timber frame construction – when used on the exterior of the building most products must be painted. Fibre-cement becomes more brittle with age.
<b>Expected durability</b> (assuming correct installation and maintenance)	Typically 25+ years – 50 years is required when used as structural bracing.
<b>Maintenance rating</b>	Medium for painted materials – cladding will generally require recoating every 8-10 years. Low for pre-finished material – a yearly wash down is all that's needed.
<b>Moisture resistance</b>	Unpainted fibre-cement will absorb moisture.
<b>Rot, mould and corrosion</b>	Lichens and mosses will grow on damp, weathered surfaces. Moulds such as the toxic stachybotrys may form in framing cavities behind wet fibre-cement.
<b>Thermal performance</b>	Thin sheets provide little thermal insulation or thermal mass.
<b>Sound insulation</b>	Thin sheets provide little sound insulation benefit – they can be used to add mass to a composite system.
<b>Fire performance</b>	Fibre-cement will not burn but does not perform well when exposed to fire.
<b>Waste disposal/recycling/re-use</b>	
<b>Re-use</b>	Fibre-cement can't generally be re-used as the sheets are usually damaged when removed.
<b>Recycling</b>	Not currently recycled.
<b>Waste disposal</b>	Fibre-cement is non-toxic to dispose of – it will ultimately degrade to its individual components.