

Product Overview

HySSIL™ is a new, unique high strength, lightweight concrete building product developed through collaborative research projects with Australia's Commonwealth Scientific and Industrial Research Organisation (CSIRO) in response to requests from developers, architects and engineers for a product which can provide the properties of concrete at significantly reduced weight.

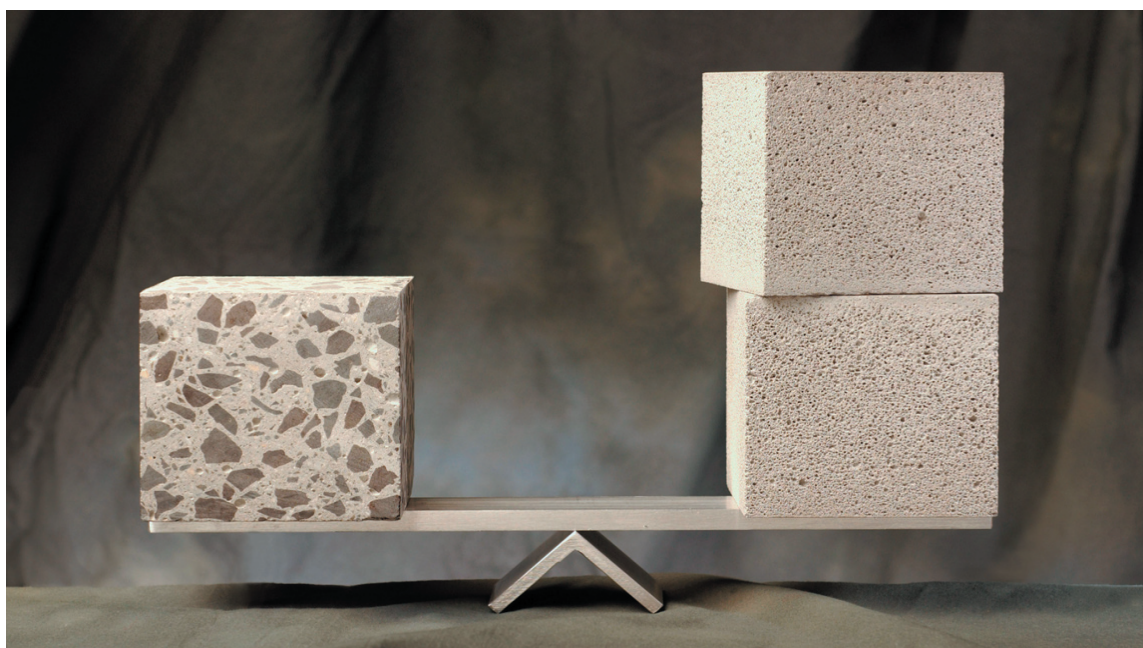
HySSIL™ is approximately half the weight of conventional aggregate based concrete at similar strength ratings which facilitates cost effective building designs and reduced transport and erection costs.

HySSIL™ also has five times the thermal resistance of conventional concrete which translates to energy efficient buildings and reduced building running costs.

HySSIL™ can be used in external and internal applications and can be produced as either load bearing or non-load bearing elements. It is designed to replace conventional in-situ and pre-cast concrete, bricks, blocks, autoclaved aerated concrete and other lightweight building products in a range of applications.

The first HySSIL™ products developed are pre-cast wall panels and associated systems, to be followed by flooring systems and blocks.

HySSIL™ has exclusive worldwide rights to the unique HySSIL™ technology, and is now seeking licences and partners in Australia and around the world.



Building better buildings for a sustainable world



High Strength Structural Insulative Lightweight

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The HySSIL™ Technology

Introduction

The HySSIL™ product comprises readily available cementitious materials, although crushed rock aggregates are not incorporated. The manufacturing process relies on a patented mix formulation, a strict mix sequence and an innovative aeration process technology.

The manufacturing process utilizes a purpose designed mixer and controlled batch sequencing process to achieve consistent quality in terms of structural soundness and smooth water-resistant surface finish.

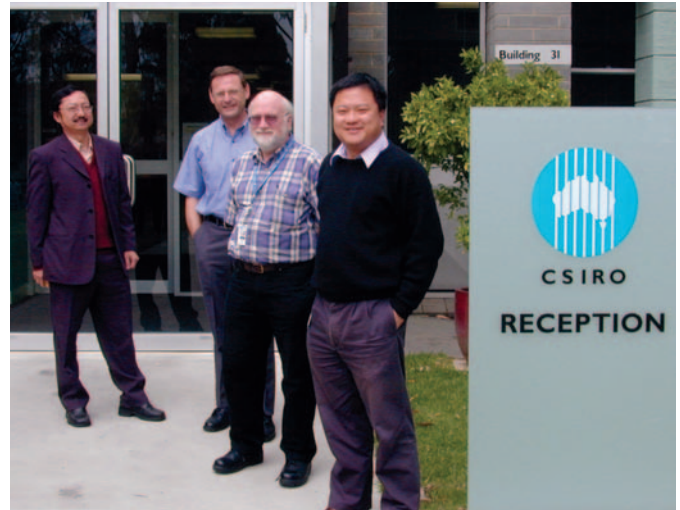
The cost of the HySSIL™ mix is comparable to the cost of a conventional concrete mix.

Curing is achieved by conventional wet curing or by low-pressure steam curing in the case of rapid turnover plants.

The costs of establishing a HySSIL™ manufacturing plant are inexpensive due to the small scale practical for the economic production of HySSIL™ and are comparable with a conventional precast concrete plant. The costs are less than one tenth of the costs of establishing competitive production plants such as an autoclaved aerated concrete plant, due to the elimination of the autoclaving process.

Patents

A patent application was made in early 2003, and patents are pending in the USA, Europe, China, South East Asia, Australia, New Zealand, the Middle East and a number of other countries around the world.



CSIRO, Highett, Victoria

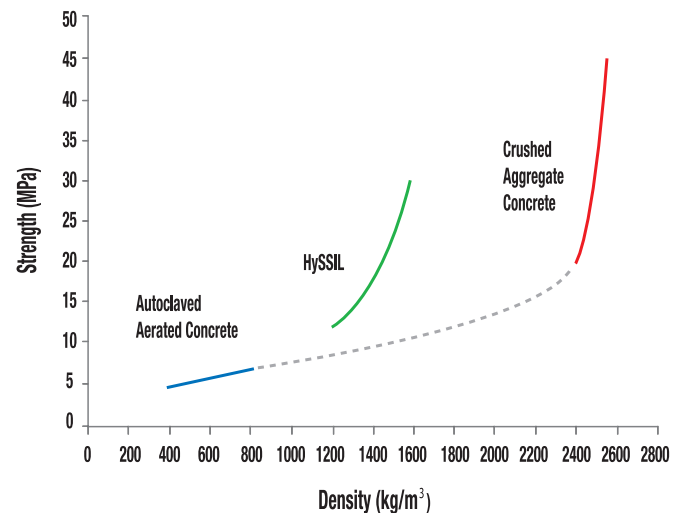
CSIRO, HySSIL™'s R&D partner

The CSIRO is Australia's leading industrial Research & Development organisation. The Manufacturing and Materials Technology Division of the CSIRO has an established track record in the development of high performance and environmentally sustainable materials, products and manufacturing processes for the building and construction industry.

These include the development of brown coal ash cement for concrete, high performance concrete for marine applications, recycled concrete, glass in premixed concrete and rapid microwave curing technology for pre-cast concrete.

The HySSIL™ project has brought together a diverse team of scientists, engineers and technologists with expertise in areas covering materials science, concrete technology, structural engineering, chemistry and manufacturing.

Strength Density Curve



General specifications

Panel sizes:	up to 20 m ²
Panel thicknesses:	ranging from 75 to 200mm
Density:	900 to 1,600 kg/m ³
Compressive strength:	8 to 25 MPa
Flexural strength:	up to 3.5 MPa at 28 days
Elastic modulus:	up to 11 GPa
Fire resistance:	exceeds 2 hours for 75mm thickness
Thermal conductivity:	0.3 – 0.6 W/mK
Water sorptivity:	d_{24} = 8 – 13mm @ 28 hours
Drying shrinkage:	500 microstrain @ 56 days
Pull out strength:	200 kg/metre



Demonstration HySSIL™ building panels at CSIRO, Highett, Victoria

Features and benefits

The HySSIL™ pre-cast wall panels incorporate a number of unique features and benefits:

▶ Structural and non-structural panels

- Structural applications include multi storey buildings
- Non-structural applications include external cladding, high noise reduction internal wall systems and road noise barriers

▶ Lightweight, high strength

- Enables lower cost building structures and foundations
- Essential properties for unstable foundation conditions and earthquake zones

▶ Cost competitive

- Competitive ex factory with pre-cast concrete and AAC
- Lower transport, handling and erection costs

▶ Exceptional thermal insulation properties

- Five times better than concrete
- Pre requisite for today's energy efficient buildings

▶ Excellent acoustic properties

- Comparable with concrete and superior to AAC
- Ideal for high sound reduction walls

▶ Smooth, robust surface finish

- Lower finishing costs than concrete and AAC
- Suitable for external applications

▶ Substantial fire ratings

- Superior to concrete
- Exceeds 2 hours for 100mm thick panel
- No toxic fumes

▶ High pullout strength

- Ideal foundation for masonry anchors
- Significantly higher than AAC

▶ Long term durability

- Drying shrinkage 40% less than concrete
- Water resistance superior to concrete and aerated concrete



Typical applications

HySSIL™ wall panels have a wide range of applications, particularly where light weight, high strength and energy efficiency are significant factors.

HySSIL™ can substitute for conventional pre-cast concrete in most building applications and is an effective building system for external walls and for internal walls requiring high sound reduction ratings.

- ▶ Housing
- ▶ Apartments
- ▶ Commercial office complexes
- ▶ Student accommodation
- ▶ Hotels & motels
- ▶ Recreational facilities
- ▶ Shopping centres
- ▶ Schools & universities
- ▶ Factories
- ▶ Community centres
- ▶ Hospitals
- ▶ Cinemas & concert halls
- ▶ Road noise barriers
- ▶ Coolrooms & wine storage facilities

Future developments into blocks and flooring systems will further broaden the range of applications.

Contact us

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