Eifers™

Ecofil Concrete
Product Statement

THE LIGHTWEIGHT FILL FOR TIGHT SPOTS

Ecofil is the ideal lightweight concrete solution for rapid and workable application.

It's an advanced polymer-based fill that is a cost-effective and eco-friendly, an alternative to traditional filling methods and concrete. Easily pumped across long distances, Ecofil is highly flowable. It is perfect for time-critical applications and for when site access is limited.

What is Ecofil?

Ecofil is a structural fill produced by mixing cement slurry with stable, pre-formed hydrocarbon foam. **This mix creates an air-bubble filled cement product, making it a Controlled Low Strength Material** (CLSM) ideal for use as a lightweight backfill or lightweight concrete fill. The composition of Ecofil gives it great lift thickness, stability and flowability. It's also self-levelling, geotechnically very strong, and inexpensive.

ECOFIL CONCRETE REPLACES COARSE AGGREGATE WITH AIR.

The air cells must be resilient to withstand the rigours of mixing and pumping in various applications. Foam has the stability to be calculated as a solid but the properties to be placed as a low-density fluid material.

What can it be used for?

Ecofil is suitable for a wide range of uses and applications, including but not limited to:

- Retaining walls and reinforced earth walls
- Voids, tanks, sinkholes and abandoned mine shafts
- Decommissioned pipes and tunnels
- Service trenches
- Manhole backfilling
- Replacement for unstable soils
- Landslip repair fills
- Load reducing fill over underground structures
- Pervious sub-base
- Freeway fence panels

WHAT ARE ITS BENEFITS?

Environmental

The lowered cement content in Ecofil makes it an environmentally friendly alternative to traditional fill options. Minimal mobile plant movement also reduces the overall carbon footprint. Its composition is environmentally inert.

Cost-effective

A low-cost material that performs better than comparatively priced alternatives. The lowered cement content in Ecofil can give four times better value than traditional concrete and soil fills (depending on use).

OH&S

Using Ecofil reduces the machine and human interface, minimising health and safety risks.

Innovative

Can be produced in a range of densities to fit requirements, used in a diverse variety of environments, and applied to all kinds of fill situations.

Light

Can be up to one-fifth the weight of normal concrete, depending on the density required. Reduces strain on retaining walls, bridge approaches, and slip lanes. Gains strength over time without potentially overstressing sub-grade soil. Can withstand heavy vehicle pressure.

ECOFIL CONCRETE IS AN IDEAL SOLUTION FOR ANNULAR AND TUNNEL BACKFILL.

Ecofil is a highly flowable material able to fill an annular space completely. The solution is lightweight and efficiently pumps long distances at low pressures. It will not float the pipes or damage the liner for slip lining, and its shrinkage is less than 0.3%. The strength and density can be customised to project requirements with quick and easy installation that is environmentally safe.

Ecofil concrete has been pumped over 80 metres vertically and over 1,400 metres. It can accommodate any diameter pipe.

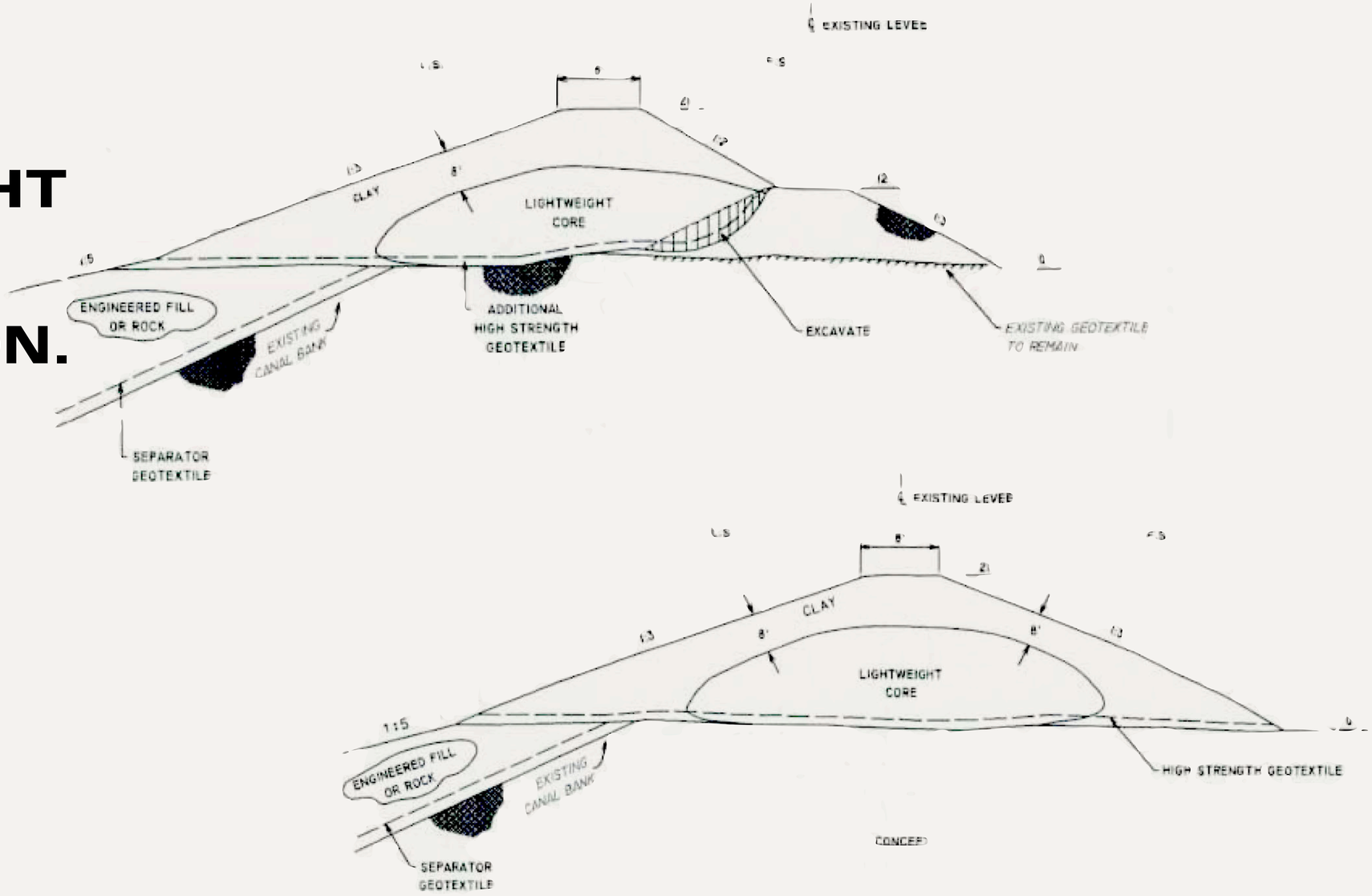
USE ECOFIL FOR SUBGRADE MODIFICATION WHEN EXISTING SOILS ARE UNDESIRABLE.

Ecofil concrete has many advantages for subgrade modification. It can reduce vertical dead loads, increase strength and stability with minimal weight, improve seismic stability, reduce settlement potential, increase bearing capacity and provide insulating benefits.

ECOFIL CONCRETE USED TO REPLACE UNSTABLE SOILS AT THE UNIVERSITY OF CONNECTICUT.

A football stadium constructed on unstable soils. Lightweight concrete sub-base was used to create a stable base and minimise differential settlement in the foundation. 30,600 m3 of 480kg/m3 material placed at 115 m3 per hour.

LIGHTWEIGHT CORE IN LEVEE APPLICATION.



ECOFIL CONCRETE IS IDEAL FOR RETAINING WALL BACKFILL.

Ecofil concrete advantages include: reduce lateral load, ease of placement, increased lift heights, reduced schedule impact, allows for design flexibility and engineered permeability.

TRENCH BACKFILL OPPORTUNITIES.

It allows for narrower trench and less disturbance to existing native material. Widths may be reduced to within 15cm of utility. It provides enough space to place the concrete in the pipe haunch areas properly. Eliminates backfill compaction and fills all voids.

IDENTIFY BURIED UTILITIES WITH A DYE.

Provides a clear indicator for future operators with different colour applications.

ECOFIL 25 IS FULLY EXCAVATABLE & VERSATILE.

CELLULAR CONCRETE MATERIALITY

Low-density concrete as defined by ACI523

Concrete made with hydraulic cement, water and preformed foam to produce a hardened material with an oven dry density of 363 kg per m3 or less.

Preformed foam

Preformed foam is created by diluting a liquid foam concentrate with water in predetermined proportions and passing this mixture through a foam generator.

TYPES OF FOAM BY ACI STANDARDS

ACI 523
Ecofil
Concrete

ACI 229
CLSM

Preformed

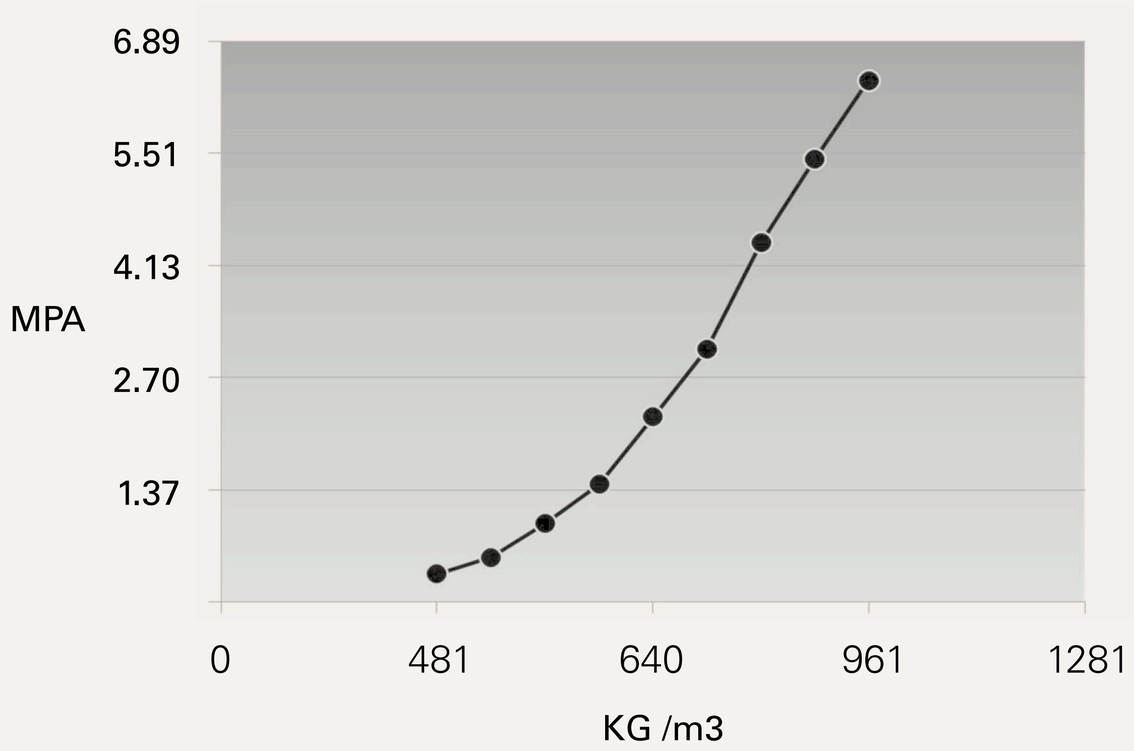
Produced by Foam Generator

Agitated

Produced by the mixing action of a concrete mixer

Ecofil concrete can be flowable fill (ACI 229 – Chapter 8) but flowable fill (CSLM) cannot be Ecofil concrete because of the density being higher than 800kg/m3.

TYPICAL STRENGTH CURVE OF ECOFIL CONCRETE



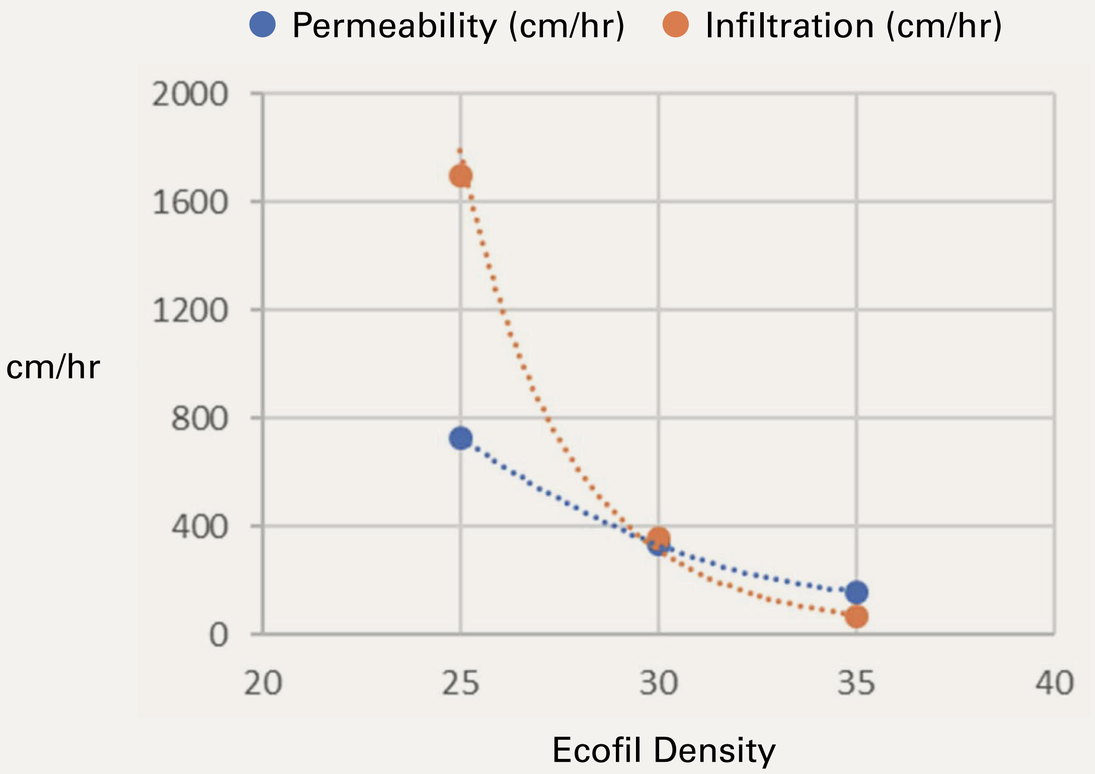
Foam technology has made huge advancements with stable bubble technology.

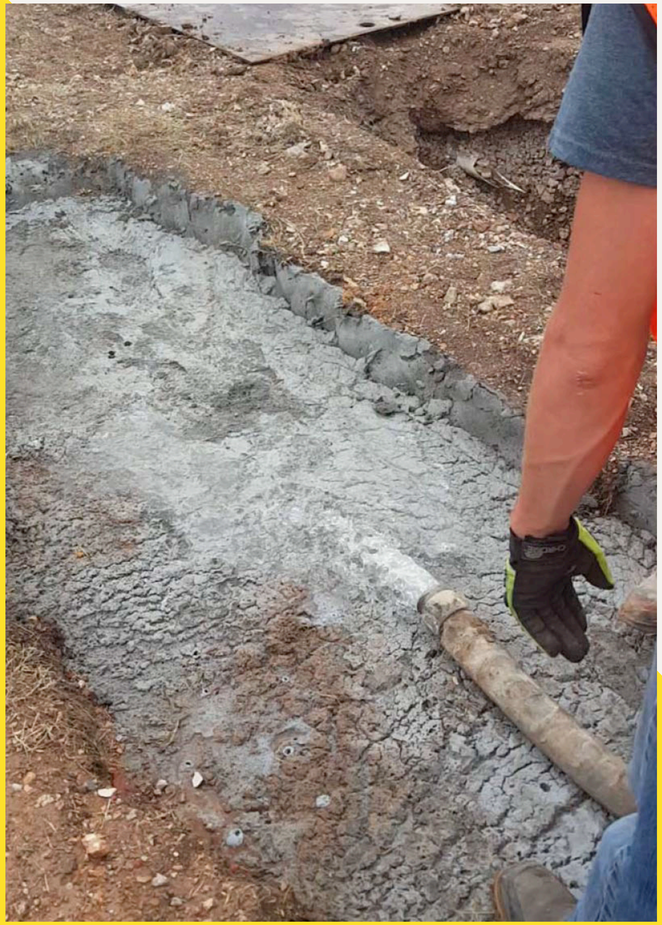
- up tp 2.2m lift thickness
- Pumping distance increased to more than 1,000 metres
- Permeability is also an option
- Thicker material
- Higher fly ash usage and slag cement usage

PERMEABLE VS. NON-PERMEABLE.

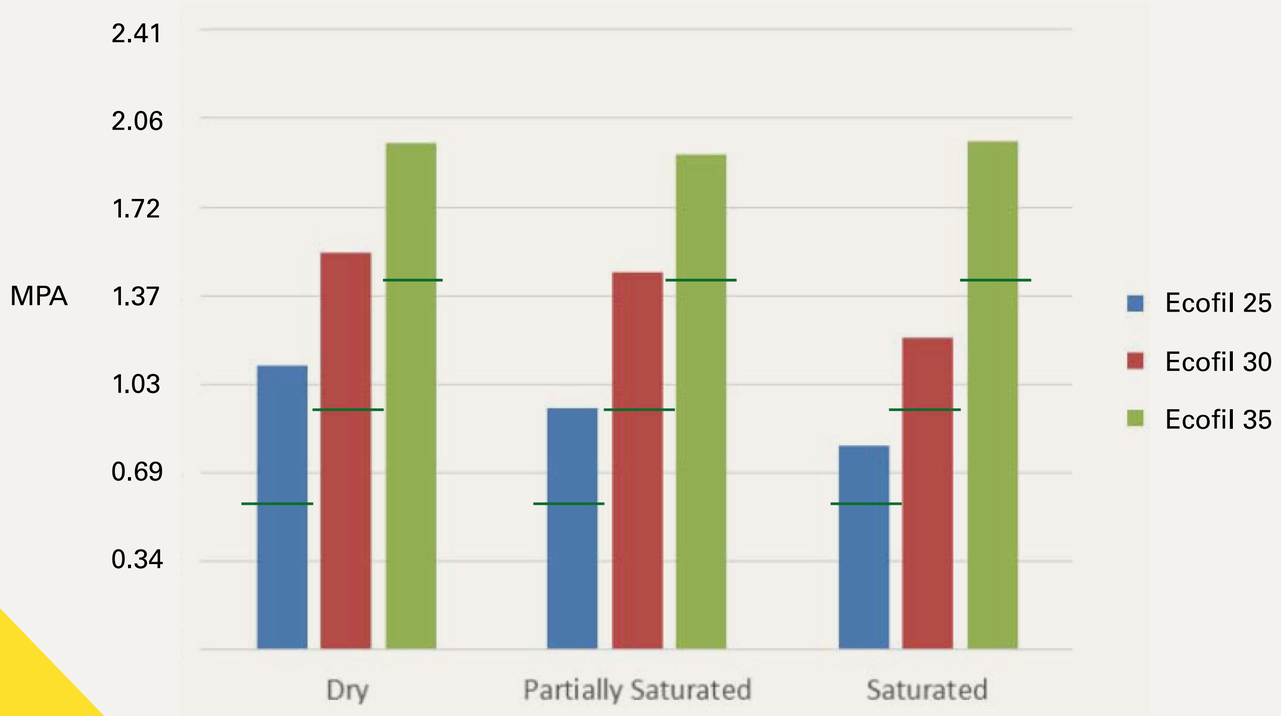
Permeable and non-permeable aerated concrete feature different air-entrainment technologies. In non-permeable concrete, a bubble structure is maintained by use of a differing pore-forming concentrate. In permeable concrete, the bubble structure is coalesced to allow water to pass through.

PLDCC PERMEABILITY / INFILTRATION





PLDCC COMPRESSIVE STRENGTH - UMKC



Ecofil Properties

	Density (kg/m3)	Strength (MPA)	Strength (KPA)
Ecofil 30	480	1.0	1000
Ecofil 40	650	2.3	2300
Ecofil 45	720	3.1	3100
Ecofil 50	800	4.4	4400
Ecofil 55	880	5.4	5400
Ecofil 60	950	6.50	6500

Why use Eifers for Ecofil?

Eifers are the **experts in time-critical civil construction works**, with a specialised focus on rapid deployment concrete technologies. We can produce the slurry required for Ecofil on the spot and all day with our fleet of volumetric Mobile Mixers. While others wait for trucks to roll up, we can produce 600 cubic metres of Ecofil in a 4-hour shift. We have the materials, machines and methodologies to enable you to get it done sooner using Ecofil.

Eifers is a family-owned Australian company with an agile and innovative approach to civil construction.

Founded by the Eifermann family in 2003 Eifers grew from a small business base to a company focused on civil construction and critical infrastructure works. Eifers stands apart by being the experts in time-critical concrete, providing services to public and private sector clients across industries and environments including airports, roads, rail, urban development and utility infrastructure. Eifers utilises materiality, machines and methodologies to complete works faster and safer, giving clients value for money results.

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