

# LOW CARBON CONCRETE

CONCRETE WITH SUSTAINABILITY IN MIND





# FIRTH LOW CARBON CONCRETE IS BETTER FOR THE ENVIRONMENT WHILE BEING THE SAME QUALITY & STRENGTH AS NORMAL CONCRETE.

Firth's commitment to reduce our environmental impact ensures that all standard concrete has a lower carbon footprint\*. This includes using a lower carbon cement made in NZ, with supplementary additives that enhance durability and reduce the level of embodied carbon (EC) in concrete mixes.



## Same strength, same performance, proven.

Firth low carbon concrete offers the combination of reduced embodied carbon with the highest quality standards of Firth concrete ensuring strength, performance, appearance, and workability are maintained. Firth's Environmental Product Declaration (EPD) provides transparency through a verified external assessment of Firth's manufacturing processes.

Download at [Firth.co.nz](http://Firth.co.nz)

# EC RATING

Firth has developed an EC RATING to track the Embodied Carbon reduction of Firth concrete relative to the Infrastructure Sustainability Council (ISC) 2020 baseline\* with Firth standard concrete already supplied at a minimum EC10 level - 10-20% carbon reduction.

Embodied Carbon Reduction % per m<sup>3</sup> of concrete

-10%

-20%

-30%

-40%

-50%

EC BASELINE

EC10

EC20

EC30

EC40

EC50

ECOMIX™

ECOMIX™+

	20 MPa	25 MPa	30 MPa	35 MPa	40 MPa	45 MPa	50 MPa
<b>EC BASELINE*</b> kg CO <sub>2</sub> eq./m <sup>3</sup>	284	313	347	391	441	495	550
<b>EC10</b> CO <sub>2</sub> reduction 10% to 20%	256	282	312	352	397	446	495
<b>EC20</b> CO <sub>2</sub> reduction 20% to 30%	227	250	278	313	353	396	440
<b>EC30</b> CO <sub>2</sub> reduction 30% to 40%	199	219	243	274	309	347	385
<b>EC40</b> CO <sub>2</sub> reduction 40% to 50%	170	188	208	235	265	297	330
<b>EC50</b> CO <sub>2</sub> reduction 50% +	142	157	174	196	221	248	275

YOUR EC20 RATING:

ECOMIX™

30 MPa CO<sub>2</sub> REDUCTION 20%

278  
CO<sub>2</sub> kg/m<sup>3</sup>

Informative only

\*Reduction in embodied carbon compared to 2020 EC Baseline (ISC) for ready-mix concrete provided by the infrastructure Sustainability Council from the Materials Calculator NZ 2.0.



## EC RATING CASE STUDY: PROFILE GROUP HAUTAPU FACILITY

Developed and built with sustainability in mind, Building A is the first completed for the on-going Profile Group development campus near Cambridge. Achieving a 5 Green Star Industrial Design rating and targeting a 5 Green Star Built rating, this impressive 49,000m<sup>2</sup> factory features an industrial floor with Firth low carbon concrete.

Concrete Volume: 4500 m<sup>3</sup>  
Concrete Strength: 35MPa

EC Baseline: 391 kg CO<sub>2</sub> eq. / m<sup>3</sup>  
Firth Concrete: 282 kg CO<sub>2</sub> eq. / m<sup>3</sup>  
EcoMix™ EC20 / 28%



SAVINGS:  
490 tonne of CO<sub>2</sub> equivalent





EcoMix™ can reduce carbon intensity between 20-40% against the EC baseline using lower carbon cement made in NZ and supplementary additives that enhance durability of concrete. Firth has developed tools and expertise in designing mixes to support designers and contractors to realise lower carbon results for their project.

## APPLICATION

Firth EcoMix™ can be used in a range of structural applications. For more details on product suitability, talk to our local Firth representative to assess the level of CO<sub>2</sub> reduction achievable for your project.



## Why choose EcoMix™?



Verified and measurable way to reduce the Embodied Carbon footprint of your project



Recognised and support Greenstar, Homestar and Infrastructure Sustainability Council rating criteria

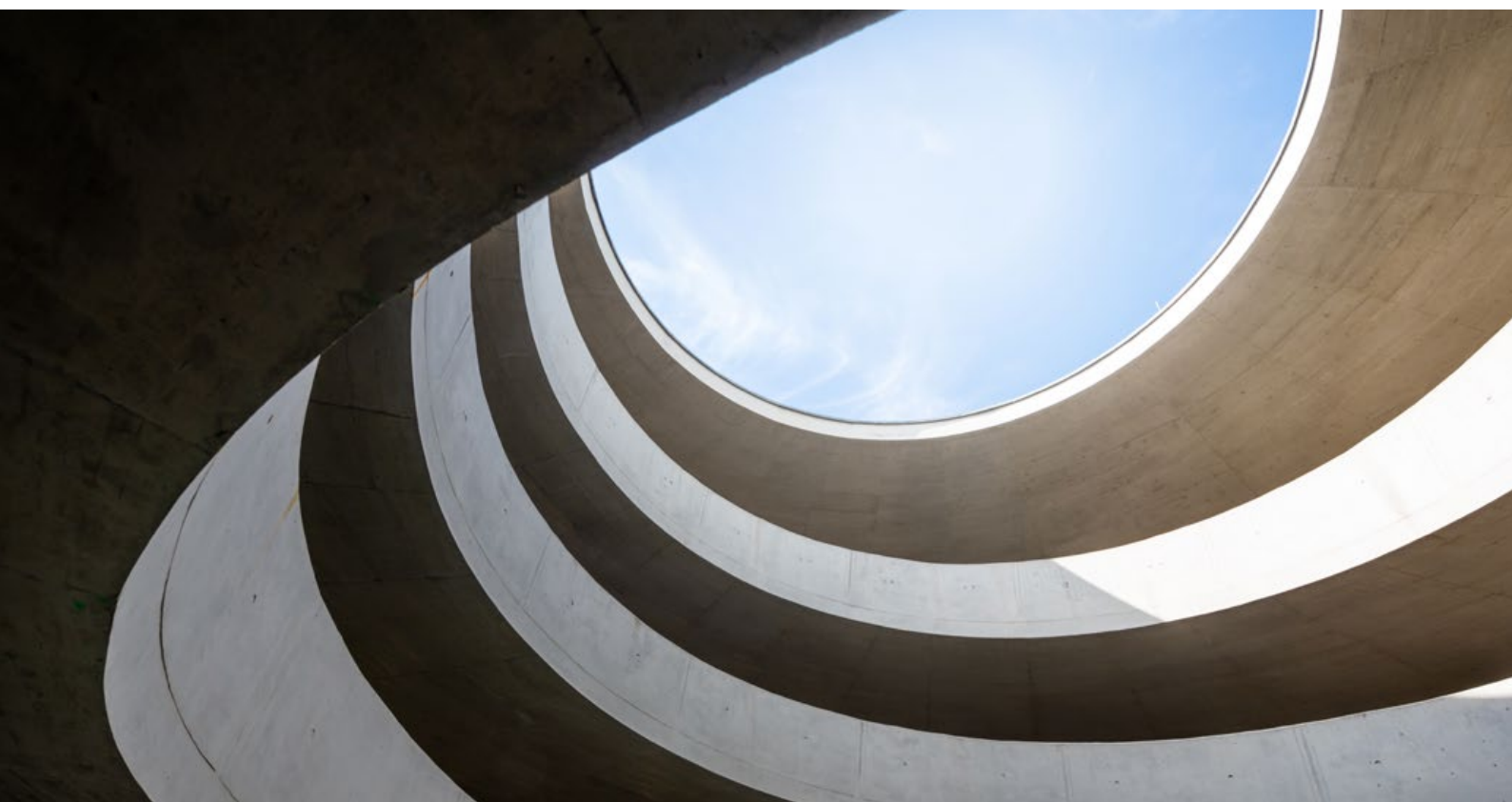


Suitable for multiple mix types, applications and across strength grades between 20 to 50 MPa

EcoMix™+ can reduce carbon intensity over 40% against the EC baseline. Engineered with higher proportion of cement replacement additives, Firth can support designers and contractors to achieve maximum sustainability outcome for their project.

## APPLICATION

Firth EcoMix™+ is available in higher strength concrete for a range of structural applications. For more details on product suitability talk to our local Firth representative to assess the CO<sub>2</sub> reduction achievable for your project.



## Why choose EcoMix™+?



Verified and measurable way to reduce the Embodied Carbon footprint of your project



Recognised and support Greenstar, Homestar and Infrastructure Sustainability Council rating criteria



Suitable for multiple mix types, applications and across strength grades between 30 to 50 MPa



# EC<sup>3</sup>

## EMBOIDED CARBON CONCRETE CALCULATOR

With its new verified Embodied Carbon Concrete Calculator (EC<sup>3</sup>), Firth can now evaluate and design concrete mixes at a plant specific level to meet a customer's desired Embodied Carbon (EC) anywhere in the country.



EC<sup>3</sup>
EMBOIDED CARBON CONCRETE CALCULATOR

Plant Name	Plant #	Grade	Mix Code
Tokoroa Certified	53	30	AP30:18AW

Life Cycle Impact Assessment Indicators

Per 1m<sup>3</sup> of Firth Ready-Mixed Concrete

		TOTAL
Global Warming Potential	kg CO <sub>2</sub> eq.	260
Ozone Depletion Potential	kg R11 eq.	2.60E-12
Acidification Potential	kg SO <sub>2</sub> eq.	0.368
Eutrophication Potential	kg PO <sub>4</sub> eq.	0.0869
Photochemical Oxidant Creation Potential	kg C <sub>2</sub> H <sub>4</sub> eq.	0.014975
Abiotic Depletion Potential, Elements	kg Si <sub>2</sub> eq.	7.26E-06
Abiotic Depletion Potential, Fossil	MJ	1.272
Primary Energy Use, Renewable	MJ	333
Primary Energy Use, Raw Materials	MJ	0
Primary Energy Resource Use, Total	MJ	333
Primary Energy Use, Non-Renewable	MJ	1,345
Primary Energy Use, Non-Renewable, Raw Materials	MJ	0
Primary Energy Use, Non-Renewable, Total	MJ	1,345
Secondary Material Use	kg	2.91
Renewable Secondary Fuel Use	MJ	215
Non-Renewable Secondary Fuel Use	MJ	0
Fresh Water Use	m <sup>3</sup>	7.25
Hazardous Waste Disposed	kg	3.39E-06
Non-Hazardous Waste Disposed	kg	149
Radioactive Waste Disposed	kg	0.00136
Components for Reuse	kg	0.006537
Materials for Recycling	kg	0
Material for Energy Recovery	kg	0
Exported Energy, Electrical	MJ	0
Exported Energy, Thermal	MJ	0

EC RATING

Firth EC rating represents a % reduction of CO<sub>2</sub> footprint relative to the EC Baseline\*

- EC10
- EC20
- EC30
- EC40
- EC50

EC20

CO<sub>2</sub> REDUCTION: 10-20%

25%

\*The 2020 EC Baseline (EC) measure has been provided by the New Zealand Sustainability Council from the Material Calculator 2.0

thinkstep  
GmbH

The methodology and assumptions used in this calculator are the same as those described in the Firth Environmental Product Declaration for ready-mixed concrete (RMC) region of the 21-2020. Refer to the EPD for further scope of the assessment. The information covers up to 1m<sup>3</sup> of EC ready-mixed concrete. The information presented represents a total estimate of the environmental footprint of the concrete as delivered to the site. The results are the result of a number of assumptions, including the use of secondary materials to reduce the carbon footprint of the concrete. The results are the result of a number of assumptions, including the use of secondary materials to reduce the carbon footprint of the concrete. The results are the result of a number of assumptions, including the use of secondary materials to reduce the carbon footprint of the concrete.

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LEARN ABOUT OUR SUSTAINABLE CONCRETE JOURNEY AT [FIRTH.CO.NZ](https://www.firth.co.nz)