



ProZERO™ for Ready Mix Producers

What is ProZERO™?

ProZERO™ is a supplemental blended cement designed for producers who need to meet the demand for a low embodied carbon ready mix design that still works in the real world. It reduces embodied carbon while maintaining workable, field-proven performance.



At a Glance

- ✓ 1:1 cement replacement up to 40%
- ✓ Compatible with existing batching, handling, and supplier workflows
- ✓ Field tested across multiple concrete applications throughout the U.S.
- ✓ Capable of achieving carbon-negative concrete

Why Suppliers Use It

- ✓ Lower embodied carbon at targeted replacement levels
- ✓ Concentrated solution – a small % replacement achieves meaningful carbon reduction goals
- ✓ Finishability superior to conventional mixes
- ✓ 5% ProZERO™ replacement provides equivalent GWP reduction to 25% Fly Ash replacement

ASTM Compliance

Application	Standard
Ready Mix	ASTM C1157
Blocks	ASTM C90; ASTM C129; ASTM E84

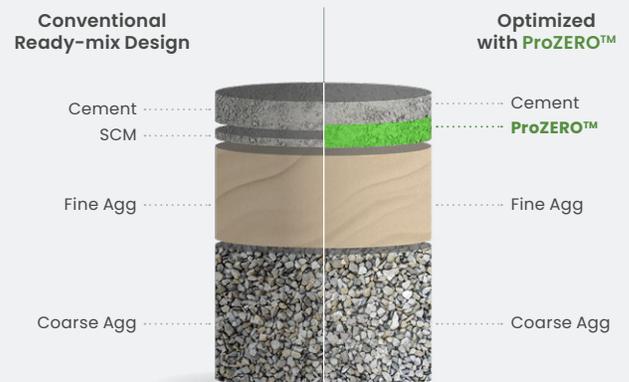
Estimated GWP Reduction by Replacement Level

Replacement Level	Estimated GWP
Baseline mix	223
10%	172
20%	96
30%	20
40%	-55



Estimates are based on a 611 lbs mix with 15% fly ash. Actual reduction depends on total cementitious content, local materials, and final mix design.

GWP = lbs CO₂ per cubic yard



Supplier & Ready-Mix Frequently Asked Questions

What's the dosage of ProZERO™ needed for a typical mix?

Dosage is based on project goals and mix specifications. For ready-mix producers, this is typically set by targeted cement replacement levels (10–40%). We work with suppliers to determine the appropriate replacement percentage needed to meet targeted GWP and carbon reduction goals within your local market.

Who does the testing prior to a pour?

We recommend that you or your lab conduct testing using your own materials and placement practices. We provide mix guidance and technical support throughout the process.

What do our ready-mix suppliers need to do to integrate your product into our mixes?

ProZERO™ integrates similarly to other OPC replacements (slag, natural pozzolan, fly ash, limestone, etc.). Suppliers can use existing handling and batching practices. We work with suppliers to determine the best delivery method. ProZERO™ has been delivered to partners, job sites, and batch plants via bags, super sacks, and bulker trailers.

Shelf life?

Materials are stable under standard conditions. Store dry and protected from moisture.

How much does it cost?

ProZERO™ is sold by the ton. Because ProZERO™ is a concentrated carbon reducer, the cost impact is determined by the replacement percentage in the concrete design. The cost per ton is \$850. Since ProZERO™ delivers high carbon-reduction efficiency, suppliers need a small amount in the mix design to achieve results.

Which sealer do we recommend?

We don't have a specific sealer requirement. Water- and saline-based sealers that have been tested have performed similarly to normal OPC.

Which aggregate do we recommend?

We have not seen adverse interactions with typical aggregates. Your local aggregate of choice will work. If using special or novel aggregates, additional testing may be required.

Lightweight concrete over metal deck

We expect this application to be viable, though it has not yet been formally tested. A trial batch is recommended prior to deployment.

Shipping

Trailer or bulker. Shipping is at the cost of the buyer, FOB Longmont CO.

Short ton or metric ton

Short ton.

Next Step →

Review the pages that follow to browse technical data for flowable fill, ready mix, and blocks, along with our technical data sheet.

Questions? Contact us and let us know.



ProZERO™ Carbon Negative Blend

Achieve Decarbonized Ready Mix.

Substitute 10–40% of OPC for use in ready mix or precast products

The result? Attributes superior to conventional cement



Example Ready Mix Design

Optimized with ProZERO™ Carbon Negative Blend

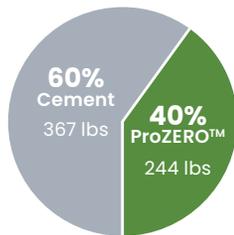


Cementitious
611 lbs

Fine Agg.
1373 lbs

Coarse Agg.
1740 lbs

Reduced with ProZERO™



-56 GWP

lbs CO₂ per cubic yard

0.45 WC RATIO

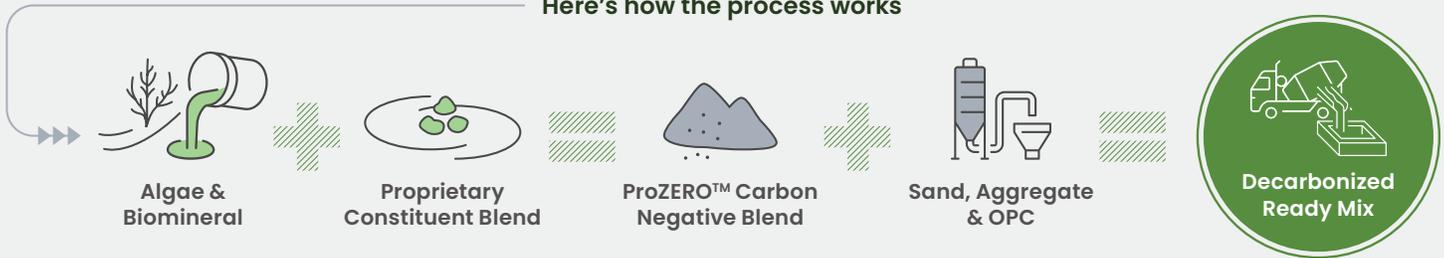
Advantages:

- ✓ Cement replacement targeting **>100% reduction in GWP**
- ✓ 5% ProZERO™ can achieve GWP reductions comparable to ~25% fly ash
- ✓ Enables higher cement utilization while maintaining similar GWP performance
- ✓ Achieves ASTM C1157 Ready Mix Specifications
- ✓ Rheology - Improved
- ✓ Finishability - Superior
- ✓ Savings on in-place cost

Break history

3 - Day	7 - Day	28 - Day
1,857 PSI	2,920 PSI	4,597 PSI

Here's how the process works



Low-carbon cement without disrupting operations

www.prometheusmaterials.com



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Specify for ProZERO™ Blend. Yield Carbon Negative Flowable Fill.

When flowable fill cementitious is supplemented with ProZERO™ Carbon Negative Blend, embodied carbon is reduced, while maintaining attributes superior to conventional cement.

ProZERO™ Carbon Negative Blend can replace up to 40% of total cementitious. The higher percent replacement the lower embodied carbon.



Applications:

- Back fill:** trenches, conduit encasements, structural fill
- Structural fill:** Foundation sub-base, floor slab base
- Other:** Underground storage tanks, erosion control

Advantages:

- ✓ Alternative to compacted granular fill
- ✓ Can go carbon negative, like case study below



Typical Concrete Proportions

What happens when you replace a percentage of your cementitious with ProZERO™ Carbon Negative Blend?

Case Study



October 2024

Goal: Removability Modulus (RE) of 1-1.5 at 28 days

Outcome: ProZERO™ met the spec at 1.37

ProZERO™ flowable fill placed and mixed with 50% of total cementitious replaced

- ✓ Reduced cementitious load content by 1/3
- ✓ 7-9 inch slump
- ✓ Removability modulus 1-1.5



7 - Day	28 - Day	56 - Day
130 PSI	150 PSI	160 PSI

*PSI is tunable to your flowfill project needs

Collaborate with Prometheus to design a custom mix that works for your project and your low embodied carbon goals.



Prometheus Materials provides sustainable building materials that accelerate the world's future to carbon negative.

Block Parameters

Block Dimension	8 in (W) × 8 in (H) × 16 in (L)
Block Composition	65% Type II 35% ProZERO TM
GWP	≈ 0 kg CO ₂ / kg block



- A** 8" Width
- B** 8" Height
- C** 16" Length

Example Data of Final Block - GWP Varies Based on Block Formulation & Region

Physical & Performance Data

Property	Required	Actual
CMU Net Area Compressive Strength (Avg.)	2,000 PSI	3,310 PSI
Minimum Faceshell Thickness	1.00 in (min)	1.35 in
Minimum Web Thickness	0.75 in (min)	1.49 in
Equivalent Web Thickness	2.25 in (min)	3.57 in
CMU Net Cross-Sectional Area	64.4 sq. in.	66.3 sq. in.
Variation - Width	±0.125 in (max)	-0.012 in
Variation - Height	±0.125 in (max)	0.015 in
Variation - Length	±0.125 in (max)	0.021 in
Absorption	15.0 (Avg., Max)	9.3 pcf
Density (Oven Dry)	>125 pcf	126.8 pcf

Independent Third-Party Validation

Statement from independent third-party testing laboratory (CTL Thompson): These samples meet ASTM C90 and C129 specifications for normal weight, loadbearing and nonloadbearing concrete masonry units.

Sustainability Without Sacrifice

ProZEROTM can eliminate ~100% of embodied carbon found in traditional concrete masonry units (CMU's). Our unique process combines microalgae-grown limestone with a proprietary constituent blend to create a sustainable supplement for conventional cements.



Algae & Biomaterial



Proprietary Constituent Blend



ProZEROTM Carbon Negative Blend



Sand, Aggregate & OPC



Carbon Negative Concrete Materials

Our Solution by the Numbers

Compared with Fly Ash and Slag

Data Center Hyper-Scaler Tasked Prometheus with 35% reduction in GWP. Relative to the national NRMCA 2019 benchmark for 4,000 PSI concrete				
	National Mix	Fly Ash	Slag	ProZERO™
Cement	475 lbs	389 lbs	447 lbs	540 lbs
Fly Ash	83 lbs	192 lbs	-	-
Slag	23 lbs	-	134 lbs	-
ProZERO™	-	-	-	41 lbs
Course Aggregate	1,614 lbs	1,614 lbs	1,614 lbs	1,614 lbs
Fine Aggregate	1,395 lbs	1,395 lbs	1,395 lbs	1,395 lbs
Mixing Water	305 lbs	305 lbs	305 lbs	305 lbs
Air%	6%	6%	6%	5-6% (naturally entrained)
Air Entraining Admix	1 oz	3 oz	3 oz	NA
Water Reducer	3 oz	3 oz	3 oz	3 oz
Accelerator	15 oz	18 oz	15 oz	15 oz
% Cement Replacemnt	-	33%	23%	7%
GWP Target	263	171	171	171

*GWP = kg CO₂ per cubic yard
 *3,895 lbs of concrete per cubic yard
 *581 lbs total cementitious materials

5 trucks of cement with ProZERO™ in this mix design

ProZERO™ is \$850 per ton

Key Takeaways

Concentrated Solution. Meet the demand. Keep the cement. Lose the carbon.

- Only use *7% of ProZERO™ and keep the cement to achieve the outcome
- In this example, fly ash doesn't work and slag is notoriously hard to finish at this replacement level
- No added air entraining admix needed
- 5-6% air naturally entrained

ProZERO™ is a concentrated solution, so you need a lot less

- Completely compatible with cement and concrete infrastructure.
- Thoroughly field tested by customers

*ProZERO™ can go up to 40% replacement depending on mix design

SAFETY DATA SHEET

Section 1: Identification

Product Name: ProZERO™

Chemical Name/Synonyms: No information available

Details of the supplier of the safety data sheet:

Prometheus Materials Inc.
1350 Kansas Avenue
Longmont, CO 80501

In emergency call 911.

For information about this SDS, use this department contact phone#: 804-573-1297

Section 2: Hazard(s) Identification

Classification of the substance or mixture

Skin Irritation - 2
Eye Irritation - 2A
Carcinogen - 1A
Specific Target Organ Toxicity (STOT-Repeated Exposure)- 2 (Respiratory)

GHS Label elements, including precautionary statements



Hazards not otherwise classified (HNOC) or not covered by GHS

None

Precautionary Statements

May cause cancer by inhalation.
Causes damage to lungs, kidneys and autoimmune system through prolonged or repeated exposure by inhalation. Causes skin irritation and serious eye damage.

Section 3: Composition/ Information on Ingredients

Chemical Name	Synonym	CAS#	Conc.
Proprietary biomaterial blend	Calcium carbonate	471-34-1	0-50%
	Bio-Charcoal	16291-96-6	0-50%
	Ash	68131-74-8	0-50%

Lightweight alumina silicates	1302-93-8	0-50%
Crystalline silica	14808-60-7	0-50%
Amorphous calcium aluminosilicates	68131-74-8	0-50%

Section 4: First-Aid Measures

After skin contact: Wash hands.

After eye contact: Flush eyes with water and consult physician as necessary.

After inhalation: Move person to fresh air and consult physician.

After swallowing: Avoid swallowing.

Section 5: Fire-Fighting Measures

Suitable extinguishing agents: Water spray, carbon dioxide, dry chemical, alcohol-resistant foam

Hazardous combustion products: Not flammable or combustible

Special protective equipment for firefighters: As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

Section 6: Accidental Release Measures

Personal precautions: Use personal protective equipment as preferred.

Measures for environmental protection: Not a hazardous material to the environment.

Measures for cleaning/collecting: Unused material should be disposed of in approved city or department waste containers. No hazardous disposal required.

Section 7: Handling and Storage

Handling: Avoid generating excessive dusts or fragments. Wear protective eyewear if fragments are generated.

Storage: Keep materials stored in dry, well-ventilated place. Do not store with oxidizers and strong bases

Section 8: Exposure Controls/Personal Protection

General protective and hygienic measures: Handle in accordance with good industrial hygiene and safety practices

Breathing equipment: No protective equipment is needed under normal use conditions.

Protection of hands: No protective equipment is needed under normal use conditions.

Eye protection: No protective equipment is needed under normal use conditions. Rough handling may cause fragments to come loose. Wear protective eyewear if handling accordingly.

Section 9: Physical and Chemical Properties

Form: Solid granular or powder

Odor: Slight earth-like odor

Odor threshold: No information available

pH: >8

Melting point/melting range: No data available

Boiling point/boiling range: Not applicable

Flash point: Not applicable

Evaporation rate: Not applicable

Flammability:

Upper/lower flammability or explosive limits: No data available

Auto ignition temperature: No data available

Solubility in/Miscibility with water: No information available

Section 10: Stability and Reactivity

Reactivity: None known, based on information available

Chemical stability: Stable under normal conditions

Conditions to avoid: Avoid dust formation

Incompatible materials: Non-reactive

Hazardous decomposition products: None under normal processing

Section 11: Toxicological Information

Acute toxicity: No acute toxicity information is available for this product

Potential routes of exposure/potential health effects

Skin: No data available

Eye: No data available

Inhalation: No data available

Ingestion: No data available

Carcinogenic effects:

Trace amounts of respirable crystalline silica may cause cancer, California Prop.65

Mutagenic effects: No data available

Reproductive toxicity: No data available

Sensitization: Skin and respiratory irritant

Target organs: Respiratory

Section 12: Ecological Information (non-mandatory)

Ecotoxicity: No data available

Mobility: No data available

Biodegradation: No data available

Bioaccumulation: No data available

Section 13: Disposal Considerations (non-mandatory)

Waste material must be disposed of in accordance with the national and local regulations.

Section 14: Transport Information (non-mandatory)

DOT regulations: Not dangerous goods

ICAO/IATA Class: Not dangerous goods

Section 15: Regulatory Information (non-mandatory)

US Federal Regulations

SARA Section 355 (extremely hazardous substances): This material does not contain any components within section 355.

SARA Section 313 (specific toxic chemical listings): This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313

Section 16: Other Information

PROZEROTM

ProZEROTM Carbon Negative Blend

**Low-carbon cement
without disrupting operations**

www.prometheusmaterials.com



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and learn more

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