

Building Sustainably with CO₂ncrete

PRESENTORS:

NRMCA DIL SUSTAINABILITY TEAM

KEY TOPICS



UNDERSTANDING
SUSTAINABILITY
AND CARBON



CONSTRUCTION
INDUSTRIES
CARBON
FOOTPRINT



SUSTAINABLE
PRACTICES IN
THE READY-MIX
INDUSTRY



INNOVATIVE
TECHNOLOGIES



PROMOTION

What is “SUSTAINABILITY”???



UNDERSTANDING
SUSTAINABILITY
AND CARBON

- ▶ Sustainability focuses on meeting the needs of the present **environmentally** without compromising the ability of future generations to meet their needs.

WHAT IS CARBON?

- ▶ By products: (Inorganic) Limestone, dolomites, and carbon dioxide & (Organic) coal, peat, oil, methane, clathrates



WOOD

Deforestation

- ▶ 15% of global greenhouse gas emissions.
- ▶ Demand vs Supply

Transportation

- ▶ Harvested lumber -Mills -Retailers
- Destination

Bio Sequestration

- ▶ One acre of new forest ~ 2.5 tons of CO₂
- ▶ As lumber decays it will release internal carbon previously stored



CONSTRUCTION INDUSTRIES
CARBON FOOTPRINT

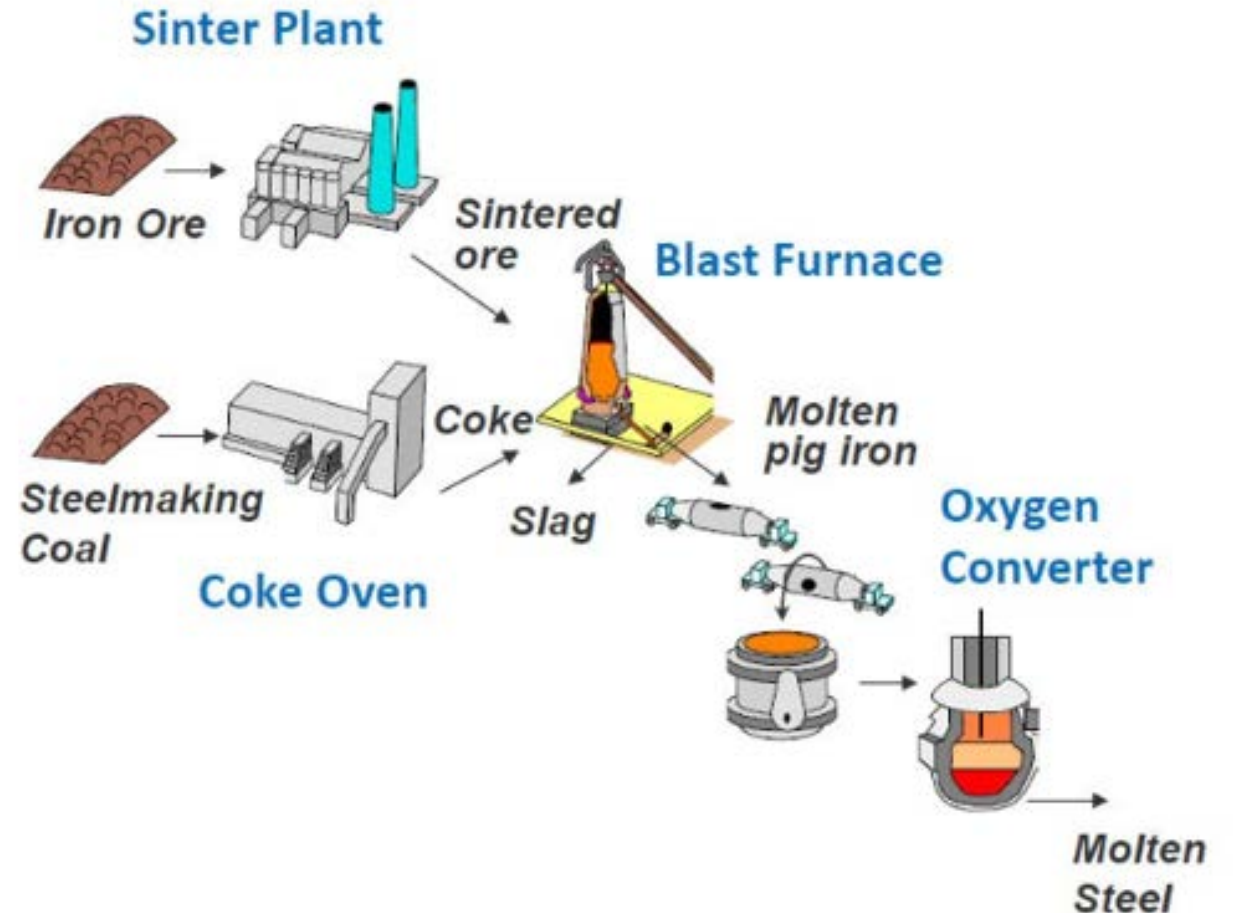


STEEL

- ▶ 5% of the world's greenhouse gas emissions.
- ▶ In 2018 2 billion tons of steel was produced globally.
 - ▶ 50% utilized by construction industry
- ▶ 2.4 tons of CO₂ per 1 ton of steel produced
- ▶ Recycle Rates
 - ▶ 95% for automotive sector
 - ▶ 85% for construction
 - ▶ 70% for packaging



CONSTRUCTION INDUSTRIES
CARBON FOOTPRINT



CONCRETE



CONSTRUCTION INDUSTRIES
CARBON FOOTPRINT

Cement

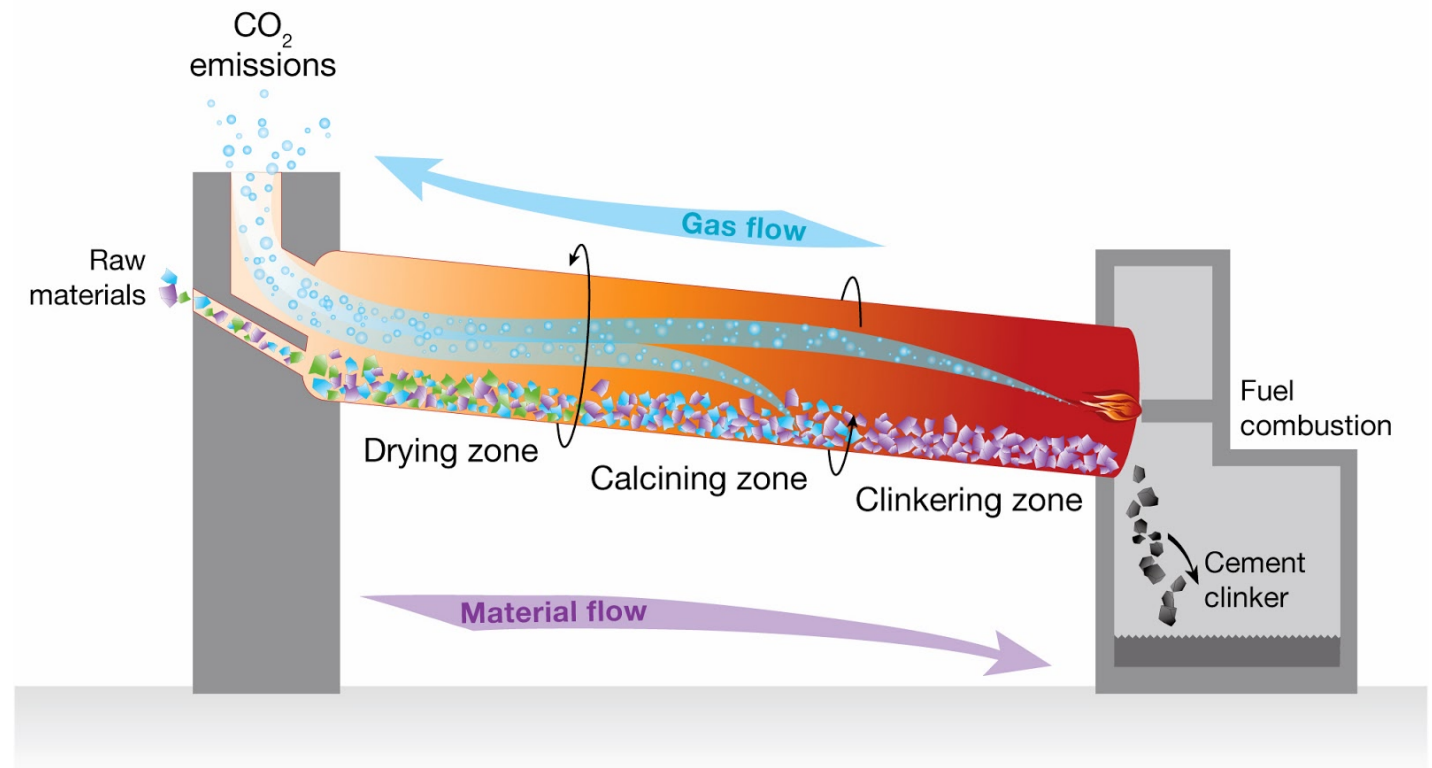
- ▶ 8% of the world's CO₂ output.
- ▶ **ONE** ton of cement produces nearly **ONE** ton of carbon dioxide

Aggregates

- ▶ Pollution
- ▶ Energy consumption
- ▶ Transportation

Water

- ▶ Stormwater Runoff
- ▶ Potable Water



CONCRETE (cont)



SUSTAINABLE PRACTICES IN
THE READY-MIX INDUSTRY

- ▶ Locally Produced!!!
- ▶ Supplementary Cementitious Materials (SCMs)
- ▶ Recycled Aggregates
- ▶ Recycled Concrete
 - ▶ ASTM C1798 - Specification for Returned Fresh Concrete
- ▶ Recycled Water
 - ▶ ASTM C94 - Specification for Ready-Mixed Concrete
 - ▶ ASTM C1602 - Specification for Mixing Water
- ▶ Thermal Mass
- ▶ Urban Heat Island Reduction
- ▶ Durable & Resilient
- ▶ Environmental Protection Declaration Reports



Fly Ash | Slag | Silica Fume | Metakaolin



CARBON CURE™



INNOVATIVE
TECHNOLOGIES

▶ Technology

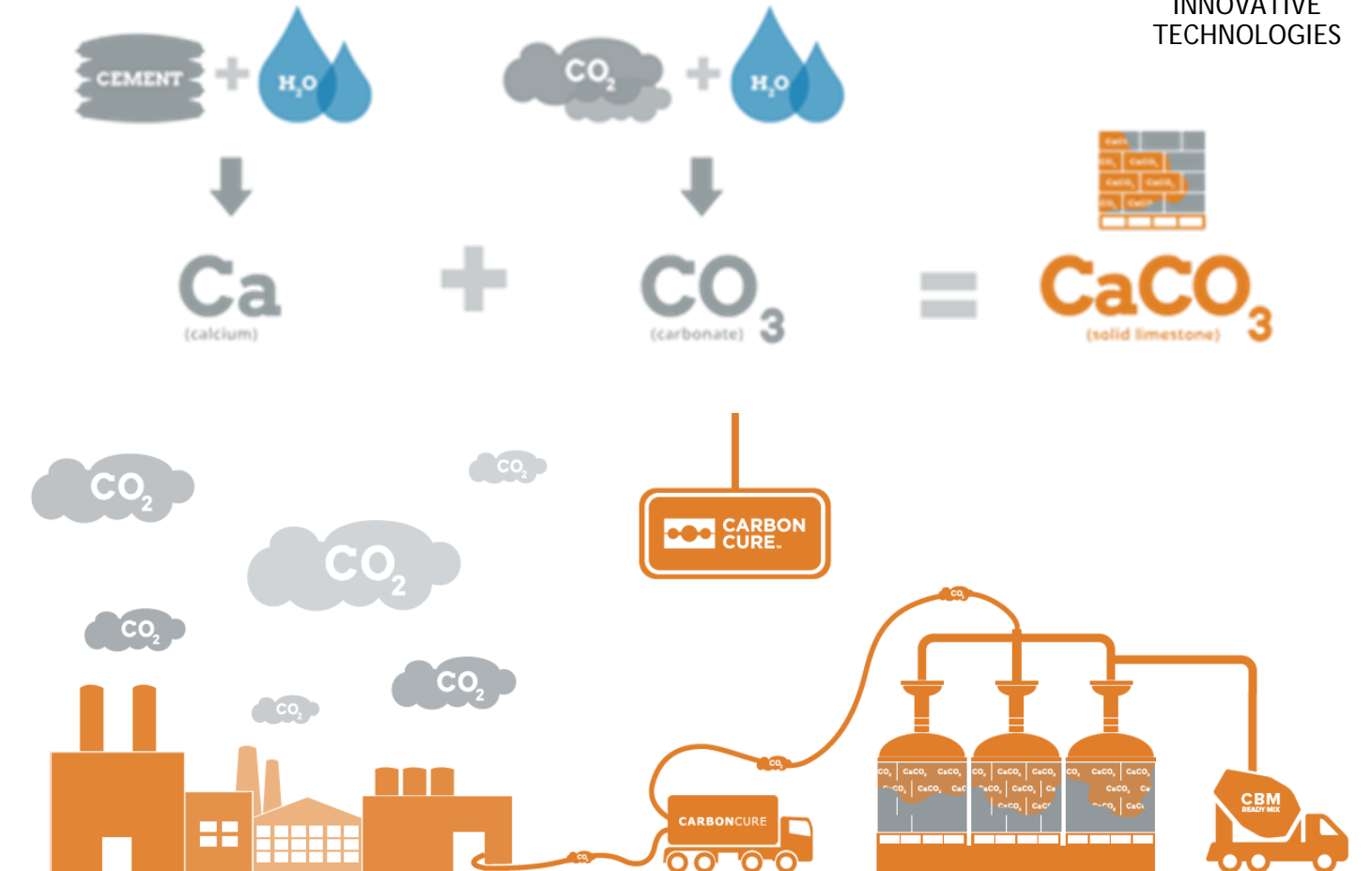
- ▶ Locally sourced CO₂
- ▶ injected into a concrete mix, where it chemically converts to a mineral.

▶ Benefits

- ▶ Increased Strengths
- ▶ Mix Optimization

▶ A net reduction

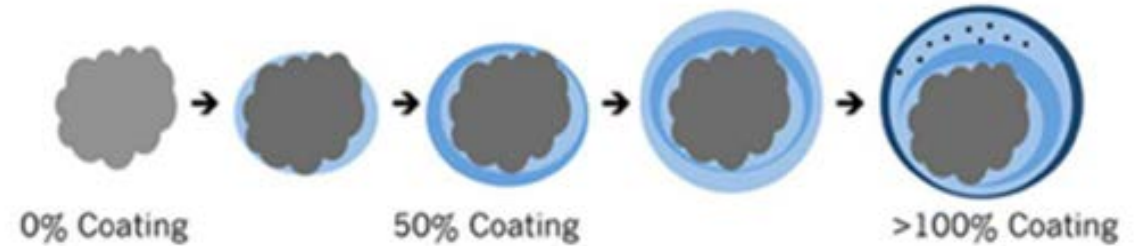
- ▶ 25 lbs. of CO₂ per cubic yard of concrete.





▶ Technology

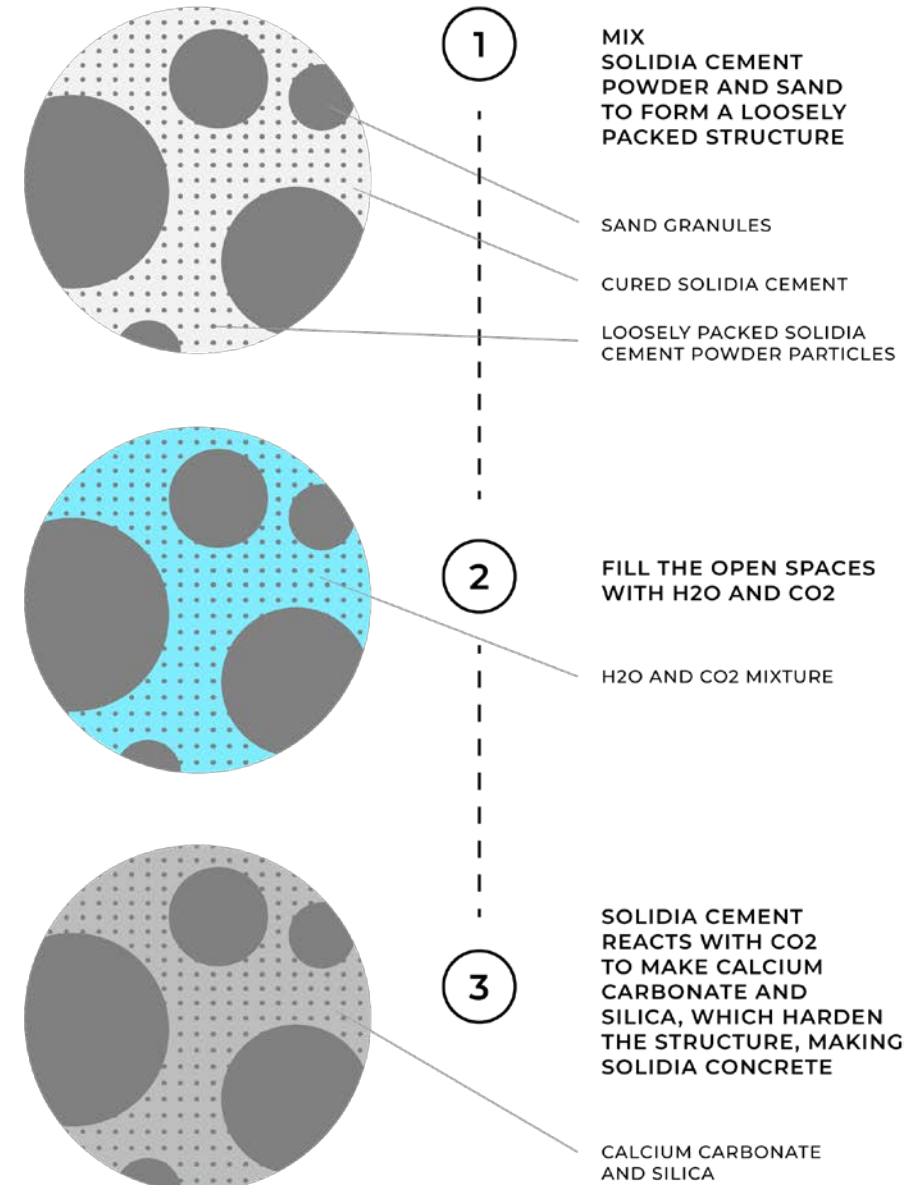
- ▶ transforms waste CO₂ into synthetic limestone aggregates.
- ▶ can be used as a replacement for sand, gravel, and stone
- ▶ Every ton of Blue Planet's synthetic aggregate contains 970 lbs. of captured CO₂.





- ▶ Two technologies: cement and carbon capture
- ▶ Cures in 24 hours with CO₂, rather than 28 days with water.
- ▶ This process captures up to 661 lbs. of CO₂ per ton of Solidia cement used.
- ▶ 70% lower compared to Portland cement-based concrete.

A COMPLEX TECHNOLOGY MADE SIMPLE



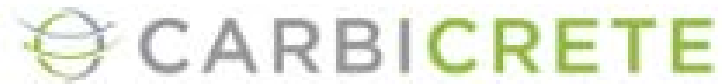
INNOVATIVE
TECHNOLOGIES



OTHER TECHNOLOGIES



INNOVATIVE
TECHNOLOGIES



SUSTAINABILITY

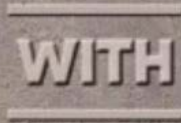


PROMOTION

NRMCA EPD Program

PAVE  AHEAD

DURABLE. SUSTAINABLE. **CONCRETE.**

BUILD  WITH STRENGTH

A COALITION OF THE NATIONAL READY MIXED CONCRETE ASSOCIATION



NRMCA NATIONAL READY MIXED
CONCRETE ASSOCIATION

TO LEARN MORE...

- ▶ <https://www.carboncure.com/>
- ▶ <http://www.blueplanet-ltd.com/>
- ▶ <https://www.solidiatech.com/>
- ▶ <https://carbon.xprize.org/prizes/carbon>

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