Terra introduces OPUS: A road map to eco-friendly concrete

OPUS will reduce emissions in the USA. Every ton of OPUS Reagent replacing a ton of Portland cement, drives a 70% reduction in CO_2 & a 90% reduction in NOx emissions.

Terra's OPUS Reagent is an engineered cementitious material with a significantly lower carbon footprint than Portland cement. Only 0.283 tons of CO_2 is emitted for manufacturing a ton of OPUS Reagent compared to 0.922 tons of CO_2 per ton of Portland cement, driving a 70% reduction in CO_2. In addition, NOx emissions will be controlled, not to exceed 0.16 lbs/ton, while at a typical Portland cement plant NOx emissions range from 0.9 to over 3.0 lbs/ton.

Developed from plentiful & readily available silicate rocks, the OPUS Reagent is the foundation of all our products. Developing a suite of products allows a gradual increase of OPUS content as the world prepares for a new type of cement that will ultimately allow a complete Portland cement replacement. With every new product Terra brings to the market, emissions will be significantly reduced, while maintaining performance & cost competitiveness.

Step 1 - OPUS SCM™: An easy and established way to improve the environmental performance of concrete is to replace 10-25% of the cement content with a low-CO_2 Supplementary Cementitious Material (SCM). OPUS SCM™'s sole ingredient is Terra's OPUS Reagent.

Step 2 - OPUS SCM+™: OPUS Supplementary Cementitious Material Plus directly replaces 25-40% of Portland Cement in most common concrete mix designs. With appropriate mix design including admixtures, there is no compromise in properties and the mixes can be made cost competitive.

Step 3 - OPUS ACM™: OPUS Alternative Cementitious Material (ACM) is our future 100% replacement for Portland Cement. A game changer in concrete decarbonization! OPUS ACM™ is expected to be available late 2024.

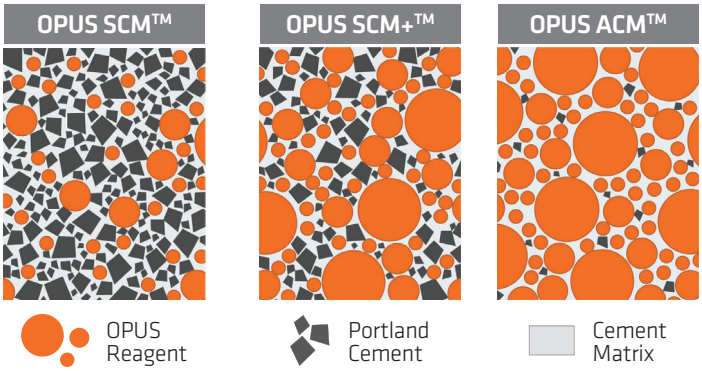
The OPUS impact for the USA further quantified

Market Share	CO_2 emission savings (metric tons per year)		
	OPUS SCM™(@20%)	OPUS SCM+™(@40%)	OPUS ACM™
10%	1,137,420	2,274,840	4,505,607
25%	2,843,550	5,687,100	11,264,018
50%	5,687,100	11,374,200	22,528,036
80%	9,099,360	18,198,720	36,044,858

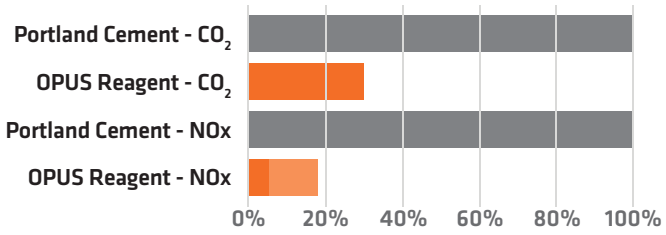
Using the **50% uptake** of OPUS ACM™ as reference case, the annual 22,528,036 metric tons of avoided CO_2 emissions equate to:

- taking 4,897,399 cars off the road
- the annual residential energy use of 7,960,437 people
- decreasing the USA's cement emissions by 27%

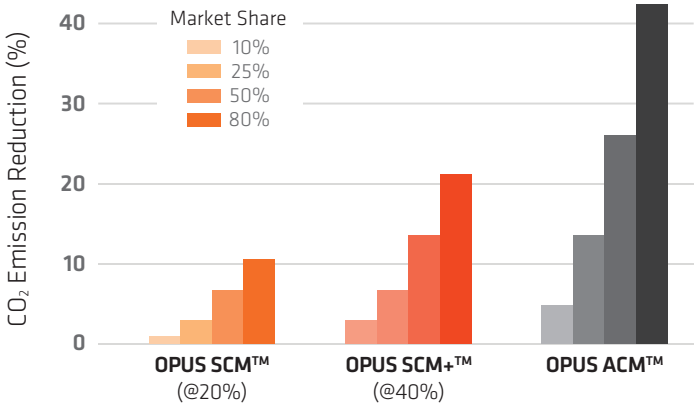
Reducing Portland cement content with OPUS



The OPUS Reagent: low CO_2 & NOx emissions



OPUS product adoption & CO_2 reduction



The USA's cement CO_2 emissions can be significantly reduced with the help of the OPUS product suite in the transition away from high Portland cement usage.

For additional information, please contact us:
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