

Rapid Set Offers a Greener Hydraulic Cement **New**

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Cypress, Calif. – January 20, 2010 – According to recent studies, Rapid Set® is a greener hydraulic cement primarily because it has a much smaller carbon footprint than portland cement. In its manufacturing process, it generates far less carbon dioxide (CO₂)[\[i\]](#).



There are a number of reasons for the exceptional “green” characteristics of Rapid Set® cement and concrete. In the case of cement production practice, the emissions of carbon dioxide gas result from two aspects of the high-temperature manufacturing process.

1. First, in the cement kiln, the raw materials (limestone, clay, etc.) decompose, releasing large amounts of CO₂.
2. Second, the combustion of fuel (generally coal) with air in a cement kiln, also releases carbon dioxide, much the same as carbon dioxide gas is emitted from the exhaust pipe of a vehicle that is burning gasoline or diesel fuel.

In the case of portland cement, approximately 40% of emitted CO₂ results from the burning of the fuel in a kiln, and 60% comes from the decarbonation of the limestone.[\[ii\]](#) A recent estimate for carbon dioxide emissions for portland cement production is 0.9 pounds of CO₂ per pound of ground portland cement.[\[iii\]](#)

An analysis of Rapid Set® manufacturing raw materials composition, pyroprocessing techniques, and cement grinding has established **a baseline emission rate of 0.61 pounds of CO₂ per pound of Rapid Set® cement produced, broken down as follows:**[\[iv\]](#)

- **Only 0.21 pounds of CO₂ per pound of cement from fuel (coal) combustion because its burning temperature is approximately 220°C lower than that of portland processes.**
- **Only 0.40 pounds of CO₂ per pound of cement from thermal decarbonation of calcium carbonate (limestone).**

Rapid Set® also reduces the impact of cement production on the environment:

- The reduced burning zone temperature needed to form Rapid Set® clinker has the additional advantage of producing lesser amounts of smog-producing oxides of nitrogen.
- The softer and more friable nature of Rapid Set® clinker also lends itself to much easier

grinding and a lower grinding mill energy consumption.

- Hardened Rapid Set® concrete is much more durable than portland cement concrete, and has a particularly greater resistance to sulfate or other types of chemical attack. Due to its very rapid strength producing ettringite formation, lower porosity, and subsequent internal self-desiccation, Rapid Set® is extremely impervious to carbonation, freeze-thaw susceptibility, and acid rain leaching. Thus, it has a proven record of field performance that exceeds the normal useful life span of portland cement concrete.
- A number of recycled products, such as waste calcium sulfate from chemical plants and recycled aluminum products (up to 20% by weight of the raw materials) enter into its composition. This improves the sustainability of the cement.

Rapid Set® cement and concrete provides lower emission of green house gases, lower emissions of smog-producing nitrogen oxides, increased lifespan leading to lower frequency of repairs or replacement, and improved sustainability through the use of recycled raw materials.

[i] *Klemm Report 2008*

[ii] *Green in Practice: Technical Brief 102*, 2008 PCA Publication, <http://www.concretethinker.com/papers.aspx?DocID=312>

[iii] *Manufacturing Fact Sheet*, 2008 PCA Briefing Kit Publication, http://www.cement.org/Briefingkit/manu_facts.asp

[iv] *Klemm Report 2008*

About CTS Cement Manufacturing Corporation | Rapid Set®

CTS Cement Manufacturing Corporation is the largest manufacturer of specialty fast setting cement and shrinkage-compensating cement in the United States. As the leader in advanced cement technology, CTS provides innovative products to the construction industry through continual research and development. Rapid Set® is a brand of fast setting cement products well known for its versatility and high performance. It gains structural strength in one hour, has superior durability, and low shrinkage. Rapid Set® offers a full line of premium products for concrete repairs and new construction projects. For more information, visit www.ctscement.com