

Concrete Technology in Focus

Green Sense[®] Concrete

Introduction

Environmental policy and sustainability are core issues within the concrete construction industry. Producers and contractors are increasingly being expected to preserve natural resources while continuing to produce quality products, and thus are searching for construction methods, practices, and products that will promote these objectives. The shift to an environmentally conscious marketplace requires the innovative development of products, practices and procedures.

The Technology

With Green Sense Concrete, Master Builders Solutions offers a revolutionary advanced concrete mixture proportioning service that achieves new levels of performance, economics and sustainability.

Green Sense Concrete is an environmentally preferable, cost-effective concrete with optimized proportions in which supplementary cementitious materials, non-cementitious fillers, or both, are used with special MasterGlenium[®] high-range water-reducing admixtures and the innovative MasterSure[®] Z 60 workability-retaining admixture, as appropriate, to meet or exceed performance targets.

Green Sense Concrete is a novel concrete that, relative to a baseline reference mix, attains desired setting characteristics, strength, durability and, if needed, a higher slump at a reduced cost to the producer. The innovative Green Sense Concrete allows producers to increase their profitability, provide the contractor with a user-friendly mix that pumps and places efficiently, and offers the opportunity to positively influence the environment.

Green Sense Concrete Service Concept

The Green Sense Concrete mix optimization service begins with selecting the performance targets for a specific application. Master Builders Solutions then analyzes locally available raw materials,

determines the reactivity levels of cement and supplementary cementitious materials, and matches their performance to regionally formulated chemical admixtures. The combination of Master Builders Solutions' proprietary, advanced mix optimization software and proportioning expertise results in a customer and application-specific mix design that is economically and ecologically optimized. Figure 1 illustrates the Master Builders Solutions Green Sense Concrete Service Concept.

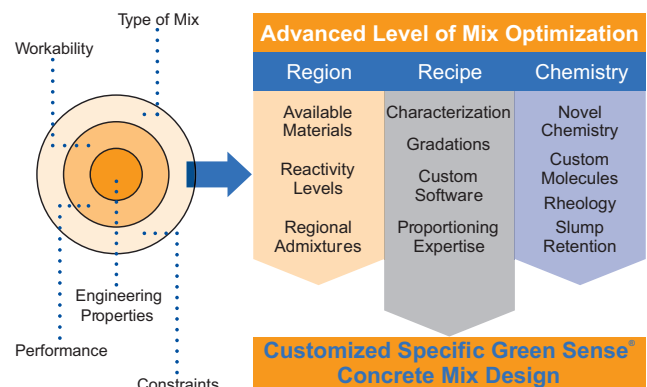


Figure 1. Green Sense Concrete Service Concept

Benefits of Green Sense Concrete

Because Green Sense Concrete is optimized for cost, aesthetics, performance and environmental impact, many tangible benefits can be realized by the entire construction team.

Producer:

- Optimized and economical concrete composition cost
- Faster truck discharge time – better fleet utilization
- Desired setting time, slump retention, and strength performance
- No water needed at jobsite – less performance issues/callbacks due to water addition – reduced claim potential

Contractor:

- Highly flowable slump concrete
- Good workability, pumpability and finishing characteristics
- Faster placement and production
- Consistent concrete performance

Owner:

- Desired aesthetics and durability performance
- Lower shrinkage and cracking potential
- Contributes towards LEED credits

Environmental Agencies/Community:

- Less cement used per unit of concrete produced and, therefore, less energy and CO₂ emission
- Less by-product materials targeted for landfill
- Lower overall environmental impact



Leadership in Innovation

For years, the Admixture Systems business has developed environmentally preferable admixture technologies to help concrete producers solve production and performance challenges. By utilizing supplementary cementitious and non-cementitious materials, combined with carefully engineered chemical admixtures, Green Sense Concrete from Master Builders Solutions capitalizes on usable by-products typically characterized as waste. The result is a concrete that has the strength, durability and operational benefits needed to keep customers satisfied, as well as the economic and environmental benefits needed to remain competitive. Green Sense Concrete is a way to lower the ecological impact of concrete without sacrificing performance.

Master Builders Solutions has combined Green Sense Concrete technology with a customized, interactive Eco-Efficiency Analysis program to quantify its ecological and economic benefits and create added value for our customers. Master Builders Solutions' Eco-Efficiency Analysis is a cradle-to-gate examination of Green Sense Concrete beginning with the extraction of raw materials through the production of concrete.

About Master Builders Solutions

Master Builders Solutions is a leading global manufacturer of concrete admixtures, as well as other sustainable solutions for the construction industry, focussed on delivering its vision: Inspiring people to build better. Master Builders Solutions provides value-added technology and market-leading R&D capabilities to improve the performance of construction materials and to enable the reduction of CO₂ emissions in the production of concrete. Founded in 1909, Master Builders Solutions has ca. 1600 employees operating 35 production sites globally, supporting their customers in mastering their building challenges of today – for a decarbonised future.

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