MASTER® BUILDERS SOLUTIONS

Precast Concrete

Admixture solutions for precast elements

Master Builders Solutions®

Our comprehensive portfolio

Concrete Admixtures for:

- Low Clinker Concrete Solutions
- Precast Concrete Solutions
- Ready-Mixed Concrete Solutions
- Below Ground Waterproofing Solutions

Underground Construction Solutions for:

- Ground Engineering
- Mining Industry
- Rock Bolting
- Sprayed Concrete
- TBM systems
- Water Management

We provide value-added technology and market leading R&D capabilities to improve the performance of construction materials and to enable the reduction of CO_2 emissions in the production of concrete admixtures, cement additives, and solutions for underground construction.

We collaborate across areas of expertise and regions and draw on the experience gained from countless construction projects worldwide, leveraging global technologies, as well as our in-depth knowledge of local building needs, to develop innovations that help make you more successful and drive sustainable construction.

Founded in 1909, Master Builders Solutions® operates 35 production sites globally, supporting you in mastering your building challenges of today and tomorrow - for a decarbonised future.

Precast Concrete Solutions

Admixture solutions for precast elements

Admixtures play a pivotal role in the world of precast concrete, offering an array of benefits that can significantly enhance the quality, efficiency, and durability of precast concrete products. These specialised admixtures are carefully selected and blended into concrete mixtures to tailor the material's properties to meet the unique demands of each project. Throughout this guide we will showcase products for:

- Wet Precast Concrete
- Semi-Dry Precast Concrete
- Formwork / Equipment & Curing
- Sustainable Solutions for Precast Concrete

Wet Precast Concrete

The wet precast method offers numerous advantages in terms of quality, efficiency, and consistency compared to traditional on-site concrete casting. Common applications of wet precast concrete include wall panels, beams, columns, slabs, architectural cladding, and various precast structural components. Admixtures are often employed to enhance the performance, workability and characteristics of wet precast concrete.

Workability Solutions

Wet Precast Concrete

Workability in precast concrete refers to the ease with which the concrete can be mixed, placed, and finished. Achieving the right workability is crucial to ensuring that the concrete can be properly shaped and compacted within the mould or formwork. Superplasticizers are high-range water-reducing admixtures that can significantly improve the workability of concrete without increasing the water content. They are particularly useful for wet precast concrete because they allow for better flow and self-compaction.

MasterGlenium ACE 466

A High-range, enhanced workability water-reducing admixture with rheology control and added retention benefits for precast concrete.

MasterGlenium ACE 474

High-range, enhanced workability water-reducing admixture with longer open life for precast concrete.

MasterGlenium ACE 499

High-range, enhanced workability water-reducing admixture with faster setting and early strength gains for precast concrete.

Accelerating Solutions

Wet Precast Concrete

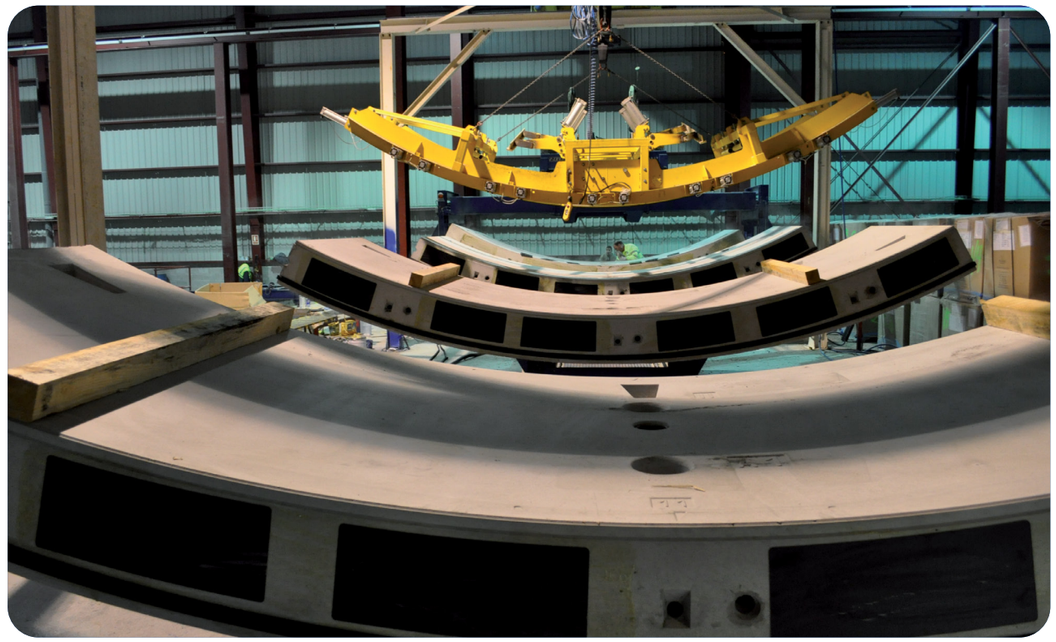
Accelerating the production and curing of precast concrete can help expedite construction projects and improve efficiency. Precast accelerating admixtures are specifically designed to speed up the curing and setting time of concrete. These admixtures can be added to the mix during batching to achieve faster strength development.

Master X-Seed 100

Unique hardening accelerator to enable increased productivity at all temperatures which reduces hardening times, CO2 emissions & therefore lower energy costs.

MasterSet AC 555

Set accelerating admixture for concrete, especially at low temperatures.



Advanced Rheology Solutions

Wet Precast Concrete

Achieving the desired rheology (flow and deformation behaviour) is crucial for applications such as self-compacting concrete, high-performance concrete, structural components and architectural elements. Superplasticizers and viscosity-modifying admixtures are crucial in controlling the rheology of concrete. Superplasticizers can reduce water content while maintaining workability, while viscosity modifiers can enhance or reduce the fluidity of the mix.

MasterEase 5200

High range water reducing admixture for precast concrete, with superior rheology, reduced mixing time and improved consistence retention performance.

MasterMatrix 233

High range water reducing admixture for precast concrete with unique rheology enhancing benefits.

MasterMatrix SDC 100

High-performance viscosity modifying agent (VMA) for fluid concrete to be used in conjunction with MasterGlenium ACE range (for challenging materials).

Semi-Dry Precast Concrete

Admixtures play a crucial role in the production of semi-dry precast concrete by improving its compaction, workability, durability, efflorescence and performance. Semi-dry precast concrete, falls between dry-cast and wet-cast concrete in terms of consistency and the mixes benefit from the use of various admixtures to tailor its properties. The MasterCast family of admixtures offers a wide range of concrete-enhancing products specifically formulated for the production of Semi-Dry Precast elements such as AAC, bricks, blocks, paving & roof tiles.

Compaction Solutions

Semi-Dry Precast Concrete

Semi-Dry Precast products require careful compaction to ensure proper consolidation and the removal of air voids. Effective compaction is crucial for achieving the desired strength, durability, and appearance of precast concrete elements. Semi-dry cast concrete requires a balance between workability and compaction to achieve the desired results. Careful consideration of the mix design, formwork, and compaction methods is essential to produce high-quality precast elements.

MasterCast 281

Compaction aid for concrete brick production.

MasterCast 311

Water-reducing admixture engineered for Aerated Autoclaved Concrete (AAC).

MasterCast 701

High range water reducing compaction aid designed with enhanced strength development, particularly with secondary cementitious materials.

MasterCast 735

Water reducing admixture engineered for concrete roof tile production.

MasterCast 777

Mid range water reducing admixture specially designed for use in Semi Dry Cast production process, which aids compaction.

MasterCast 864

Water inducer and finishing aid for use in Semi Dry Cast production process.

Water Resistance / Efflorescence Solutions

Semi-Dry Precast Concrete

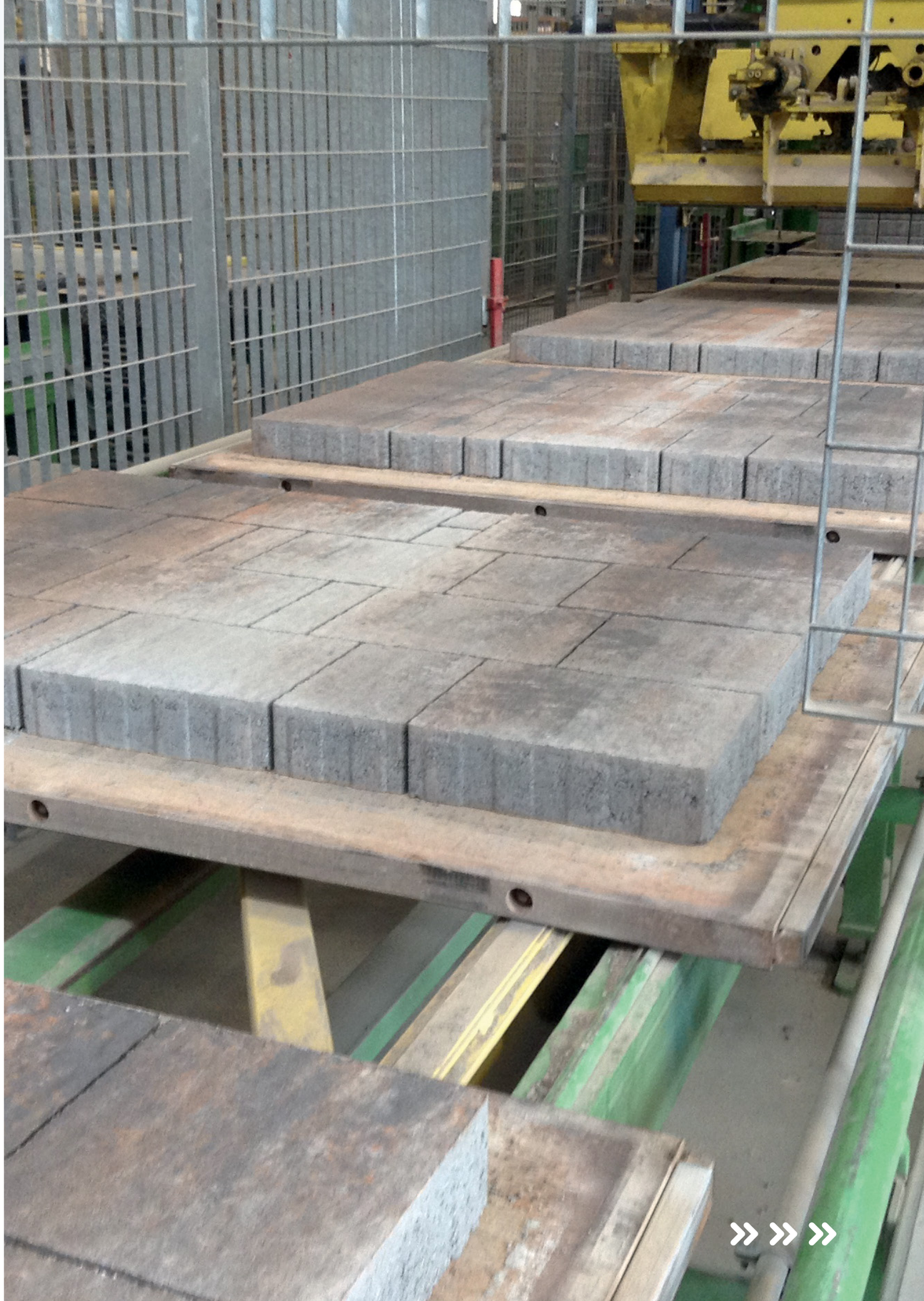
Efflorescence is a common issue in concrete, it appears as a white, chalky, or powdery deposit on the surface of the concrete and is caused by the migration of soluble salts to the surface. MasterPel is a specially blended admixture used to produce water-resistant and efflorescence-controlled concrete mortar. Concrete treated with MasterPel provides outstanding resistance to water migration, excellent efflorescence control, enhanced mix flowability and optimised pigment dispersion.

MasterPel 790

Integral & surface applied water resisting admixture which reduces efflorescence for Precast concrete (with beading effect).

MasterPel 793

Integral Water resisting admixture which reduces efflorescence for Precast concrete.



Formwork/Equipment & Curing

In precast concrete construction, formwork equipment and curing methods play crucial roles in achieving high-quality and durable concrete elements. Formwork is used to shape the concrete into the desired configuration, and proper curing ensures optimal strength development and durability.

Equipment & Formwork Solutions

Formwork/Equipment & Curing

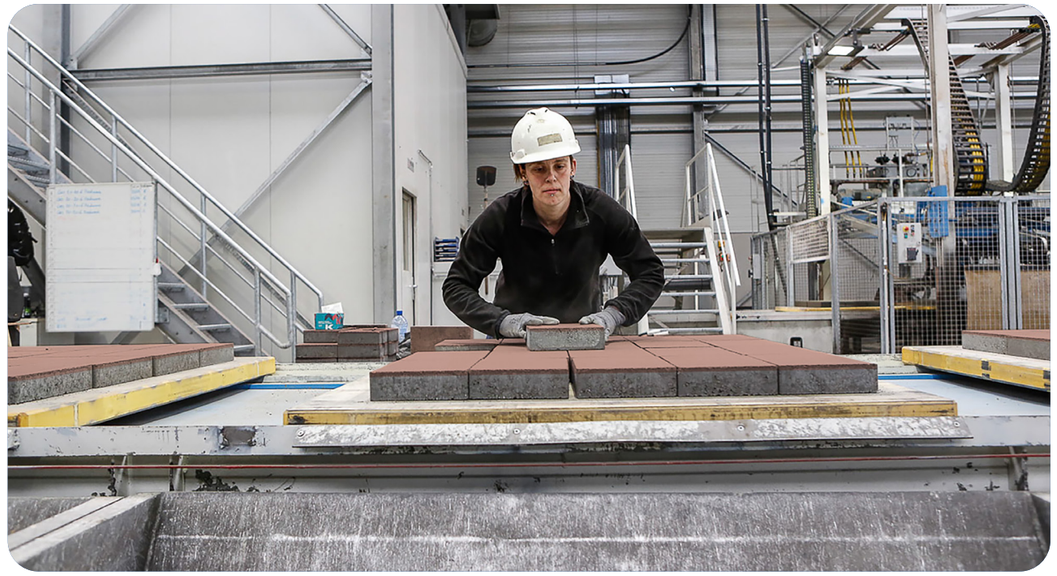
Semi-Dry Precast products require careful compaction to ensure proper consolidation and the removal of air voids. Effective compaction is crucial for achieving the desired strength, durability, and appearance of precast concrete elements. Semi-dry cast concrete requires a balance between workability and compaction to achieve the desired results. Careful consideration of the mix design, formwork, and compaction methods is essential to produce high-quality precast elements.

MasterFinish MPT 299

Solvent free protective agent for machinery and equipment.

MasterFinish RL 2II

Water emulsion form release agent for elements where excellent surface finish is important.



Curing Solutions

Formwork / Equipment & Curing

Precast curing compounds are materials used in the precast concrete industry to control the moisture content and temperatures during the curing process of concrete elements. The MasterKure products form a protective film over fresh concrete to retain moisture and maximise the hydration potential of the cement, resulting in optimum strength development and durability.

MasterKure 207WB

Solvent-free curing compound based on aqueous wax emulsion.

Sustainable Solutions

Sustainability in the precast concrete industry is essential for reducing environmental impact and promoting responsible construction practices. Several sustainable solutions can be applied to precast concrete production and use. These solutions aim to reduce energy consumption, minimised waste, reduce water consumption reduction of CO_2 emissions and enhancement of the long-term performance of precast elements. Admixtures not only help reduce the environmental impact of precast concrete production but also contribute to the overall sustainability and performance of precast elements.

MasterCO$_2$re

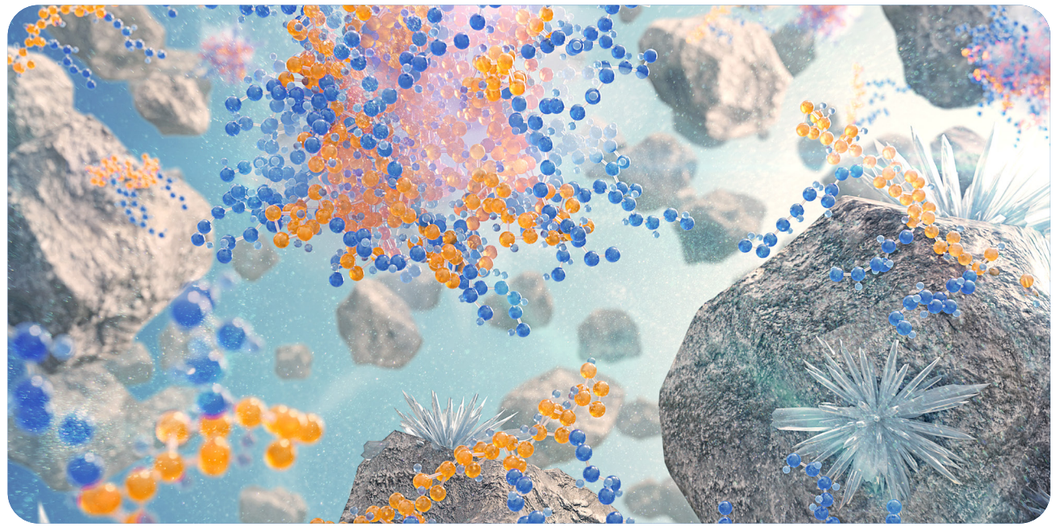
Sustainable Solutions

MasterCO$_2$re™ successfully counteracts the potential of high-water absorption and undesirable interactions with admixtures caused by the variation in chemical and mineralogical composition of binders. Finally, MasterCO$_2$re™ allows you to significantly reduce the clinker content in your concrete mix while maintaining the water-to-cement ratio to achieve the required compressive strengths.

I need sustainable concrete performance!

MasterCO$_2$re: Intelligent cluster system for low-clinker concrete production

- Superb workability retension
- Excellent strength properties
- Advanced rheology
- Unmatched robustness



Master X-Seed

Sustainable Solutions

fdu Betonwerke, one of the largest manufacturer of precast concrete elements in Germany relies on Master X-Seed, the unique hardening accelerator to halve hardening times, to lower energy costs and to reduce CO_2 emissions. Using the revolutionary admixture Master X-Seed, fdu Betonwerke achieved significant Quantified Sustainable Benefits, in many of its plants, including:

I want to increase output!
Master X-Seed: Fast, flexible and cost-efficient production.

50%

FASTER CONCRETE HARDENING

Master X-Seed boosts the hardening process. This leads to shortened demolding times. Output of existing plant facilities can significantly be increased.

*

LOWER ENERGY COSTS

High early strength is achieved at low ambient and heat curing temperatures reducing the need for energy intensive supplementary heating of molds.

*

15%

10%

REDUCED CO_2 FOOTPRINT

A reduction of the CO_2 footprint through binder optimization.

*

MasterEase

Sustainable Solutions

A groundbreaking new plasticizer, MasterEase substantially improves the rheology properties of concrete. The novel technology enables resource-saving concrete optimization and concrete surfaces of outstanding quality – properties that are of enormous benefit to Eder Group, particularly in the production of complex precast elements.

I need a low-viscosity concrete with good flowability!
MasterEase: The plasticizer for efficient precast-element production.

100%

INCREASED PRODUCTIVITY

Improving concrete early strength, MasterEase doubles profitability.

*

LESS WASTAGE

MasterEase enables a consistently uniform quality, sharp edges and void-free surfaces even in complex precast elements.

*

50%

20%

LESS ENERGY CONSUMPTION

Improving the rheology properties of concrete, MasterEase reduces abrasion as well as wear and tear during mixing, making the process more energy efficient.

Project Reference

Concrete admixtures from Master Builders Solutions were used for the pre-fabricated concrete components of the nine kilometres of grandstands. This project called for a self-compacting concrete with high segregation resistance and appearance also played a vital role in constructing the grandstands, requiring uniform colouring and surfaces free from air inclusions and pores.

Allianz Stadium, Vienna

Project Reference

For the reasons stated to the left, the experts from Applications Technology optimized the concrete formulation with MasterGlenium ACE.

This concrete admixture promotes the fine dispersion of the cement and is, therefore, suitable for the production of self-compacting concrete.

The appearance goals were met using MasterFinish, a product that functions as a "de-aerator" during concrete mixing and placing, preventing air bubbles on the shuttered surfaces. Consequently, it enabled the creation of exposed surfaces without pores.

For more information on this project please click below to view the YouTube video of this project.

Master Builders Solutions® for the Construction Industry

MasterAir
Complete solutions for air entrained concrete

MasterCast®
Solutions for the manufactured concrete product industry

MasterCem®
Solutions for cement manufacture

MasterCO$_2$re™
Solutions for low-clinker concrete

MasterEase®
Low viscosity for high performance concrete

MasterFinish®
Solutions for formwork treatment and surface improvement

MasterFiber®
Comprehensive solutions for fiber reinforced concrete

MasterGlenium®
Solutions for high performance concrete

MasterKure®
Solutions for concrete curing

MasterLife®
Solutions for enhanced durability

MasterMatrix®
Advanced rheology control for concrete

MasterPel®
Solutions for hydrophobization, anti-efflorescence and surface protection

MasterPolyheed®
Solutions for mid-range concrete

MasterPozzolith®
Solutions for water-reduced concrete

MasterRheobuild®
Solutions for high strength concrete

MasterRoc®
Solutions for underground construction and surface improvement

MasterSet®
Solutions for set control

MasterSphere®
Solutions for guaranteed freeze-thaw resistance

MasterSuna®
Solutions for sand and gravel in concrete

MasterSure®
Solutions for extraordinary workability retention

Master X-Seed®
Advanced accelerator solutions for concrete

Unveil the Power of MasterCO$_2$re™: Intelligent Cluster System for Low-clinker Concrete Production

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