

MASTER[®]
» BUILDERS
SOLUTIONS

— **MasterCem[®]**

Solutions for the Cement Industry



Solving the challenges of the future



Cement manufacturers are constantly faced with conflicting tasks.

Pressure for CO₂-reduced or CO₂ neutral production creates the need to reduce the clinker content of cement even further by increasing the use of supplementary cementitious materials beyond established levels or by finding new solutions.

On one hand, lowering the clinker factor and improving production efficiency, while also complying with ever-changing regulatory requirements.

On the other hand, maintaining product quality and performance for continued ease of use in the manufacture of concrete.





Unique Experience

Master Builders Solutions® is committed to the development and delivery of cutting-edge products for the cement and construction industry.

The MasterCem® portfolio is anchored in our rich and long-lasting experience of cementitious materials and their application in the manufacture of concrete.

In-depth knowledge of chemical and mineralogical interactions, combined with extensive grinding expertise as well as an understanding of the current and emerging needs of the cement industry underscores our ability to deliver the best fitting solution to suit your requirements.

A combination of expertise in both cement production and in admixtures to manufacture concrete and for concrete applications, we are your partner for optimizing the performance of new, sustainable cements and for their successful market introduction.



Innovative Solutions

Master Builders Solutions® has a broad portfolio of cement additives to help cement producers to master these challenges.

MasterCem® grinding aids reduce agglomeration forces, to increase grinding efficiency and mill throughput leading to lower energy costs.

Our performance enhancers go a step further by improving early and/or late strength development, setting times and workability to enable the level of supplementary cementitious materials to be pushed to the maximum.

Additionally, our series of special products provide specific properties such as air entrainment.



Helping cement producers to be more competitive



Sustainability Contribution

- Lower CO₂ emissions
- Reduced energy consumption
- Lower clinker factor
- Increased use of pozzolanic materials
- Increased use of recycling material in cement
- Conservation of natural resources



Production Efficiency

- Higher mill throughput
- Increased production capacity
- Easier material handling due to improved cement powder flowability
- Decreased pack-set in silo storage
- Longer intervals between scheduled maintenance



Product Quality

- Higher cement performance
- Increased early and late mortar strength
- Compensation of reduced clinker content
- Reduced water demand
- Optimization for concrete applications



Cost Reduction

- Lower specific grinding energy
- Greater integration of supplementary cementitious materials and mineral fillers
- Reduced need for future investment through capacity optimization



Our solutions offering

Our comprehensive range of innovative cement additives caters to the current and emerging needs of cement manufacturers. We provide tailor-made solutions which are adapted to a variety of composite cements to meet your specific requirements.

New cements according to EN 197-5 and EN 197-6 allow the use of alternative materials which include calcined clay and recycled concrete fines. To satisfy current trends, we are constantly extending our product portfolio to leverage those opportunities and meet the challenges that the use of new supplementary cementitious materials pose.

The metering of MasterCem® additives on the mill feed belt or directly into the mill is uncomplicated. Standard storage and dosing equipment is all that is needed, which minimizes costs and the need for capital investment.

Grinding Aids

- Neutralize agglomeration
- Increase grinding efficiency and mill throughput
- Reduce energy consumption and prevent pack set

Performance Enhancers

- Specially designed to improve the performance of blended cements
- Improve early and/or late strength
- Improve setting time and workability

Special Products

- Designed to meet any additional requirements or specific concrete applications





Our portfolio

Grinding Aids

- MasterCem® GA 1000 series

Performance Enhancers

- MasterCem® ES 2000 series
Early-strength Enhancer
- MasterCem® LS 3000 series
Late-strength Enhancer
- MasterCem® SW 4000 series
Strength and Workability Improver

Special Products

- MasterCem® AE 5000 series
Air Entrainers
- MasterCem® SP 6000 series
Specialty Products

Product performance depends, to a large extent, on raw materials, grinding equipment and process parameters.



Our cement additive competency centers

Extended network to serve our customers

Being present in 36 countries globally, we have concentrated our Cement Additives expertise in selected hubs in Europe and the US for fast and reliable customer service.

With our extensive expertise and proximity to core industry markets, Master Builders Solutions® can provide excellent on-site support during all phases of the cement additives implementation and for further use in concrete applications.

With mills from 1 kg to 10 kg batch size, heated and unheated, we can simulate key elements of the grinding process.

Advanced analytical measurements allow quick analysis of the cement properties which, combined with the mineralogical and concrete application expertise allows the development of best-fitting solutions to meet your needs.



Location of European cement additives competency centers

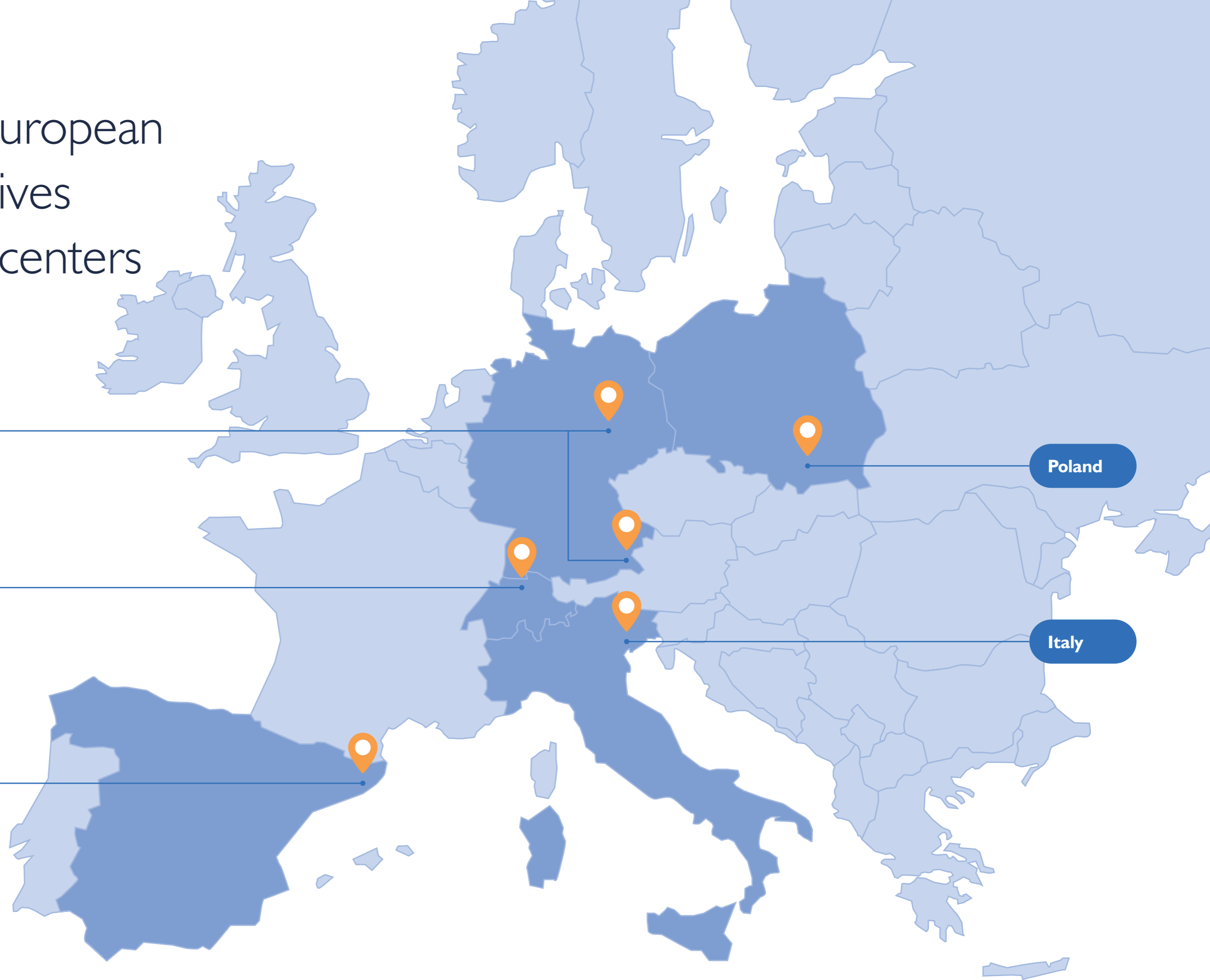
Germany

Switzerland

Spain

Poland

Italy



Supporting you in the implementation of our solutions

Our six-step program provides a thorough assessment of the cement producer's needs and technical constraints. During the program we can conduct laboratory grinding trials and comprehensive industrial evaluations to identify the best cement additives for our customer needs. Finally, we optimize the added value of our solutions to your production process.

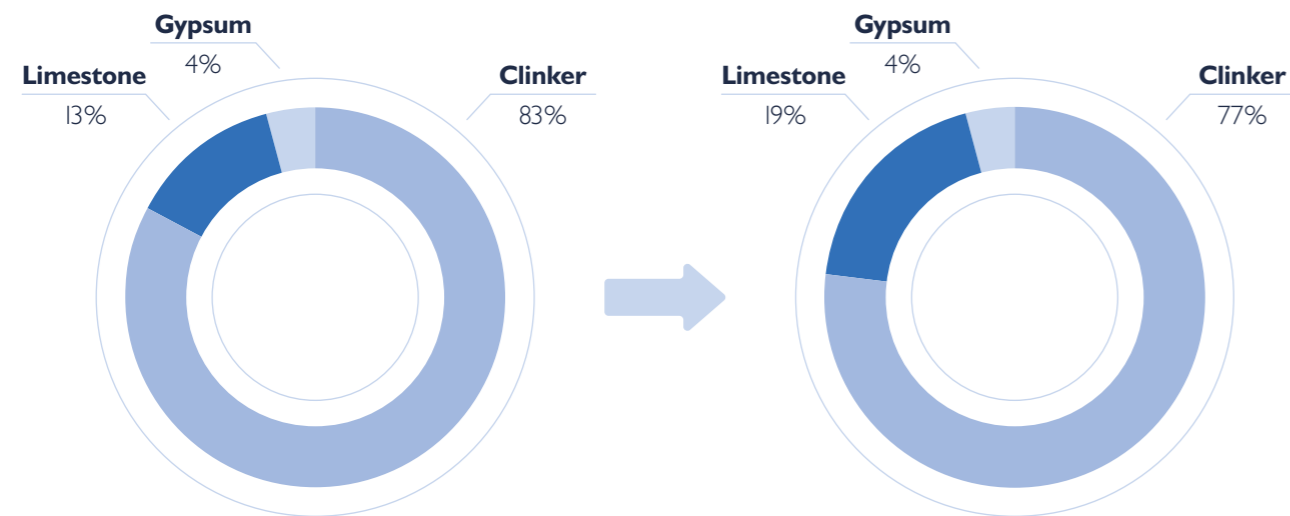
Experts from Master Builders Solutions® also provide practical advice to plant engineers on appropriate storage of our cement additive solutions as well as the most precise and reliable dosage equipment.



Solving current challenges

Limestone is abundantly available but does not have pozzolanic reactivity and acts as an inert filler only. Increasing limestone content in cement is generally associated with inferior strength development. The MasterCem® ES/LS series of products is the solution of choice to improve both early and late strength development according to your needs.

Increasing Limestone content with MasterCem® ES/LS series *

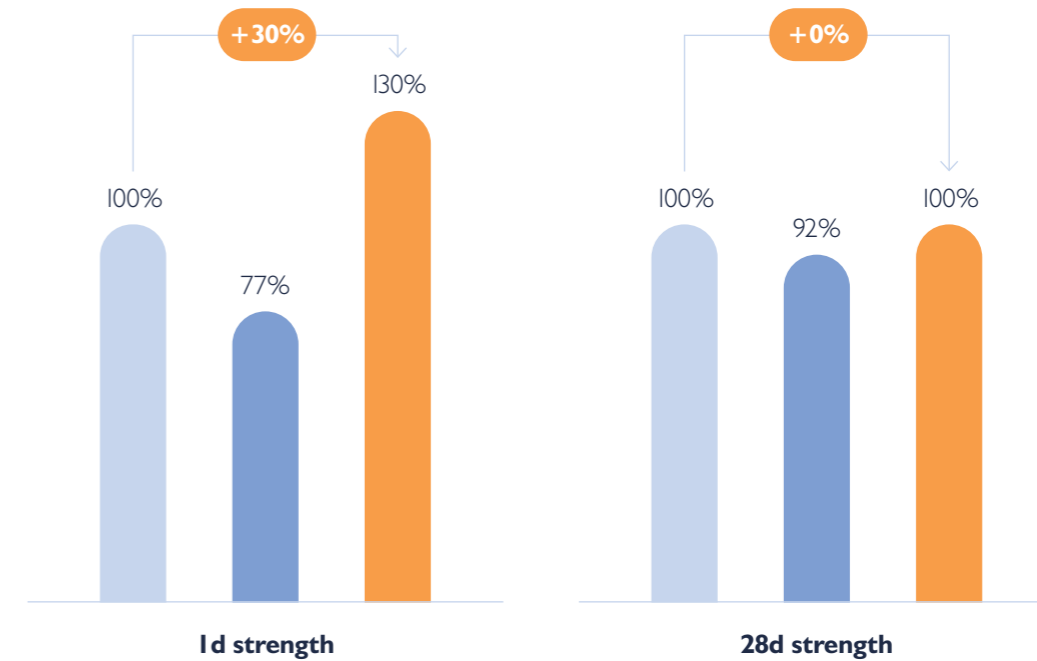


Benefits *

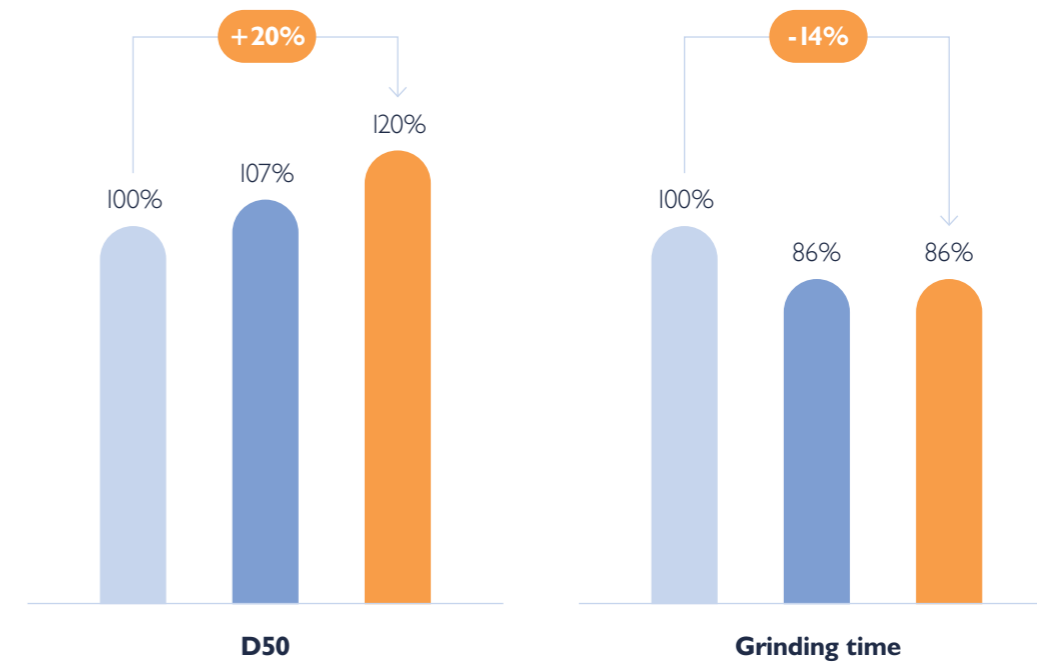
- Saving of 6% related CO₂ emissions and costs (~ 460 T€ / year per 100 kton related CO₂ emissions; 80€ / ton CO₂ aver. 2023)
- Significantly improved fineness with a lower grinding time effort and higher throughput
- Maintaining 28-day strengths while strongly improving early strength development

* Performance benefits and savings are depending on various parameters and may vary depending on multiple conditions and prerequisites

Strength Development



Grindability



● CEM with 13% Limestone ● CEM with 19% Limestone ● CEM with 19% Limestone & MasterCem®

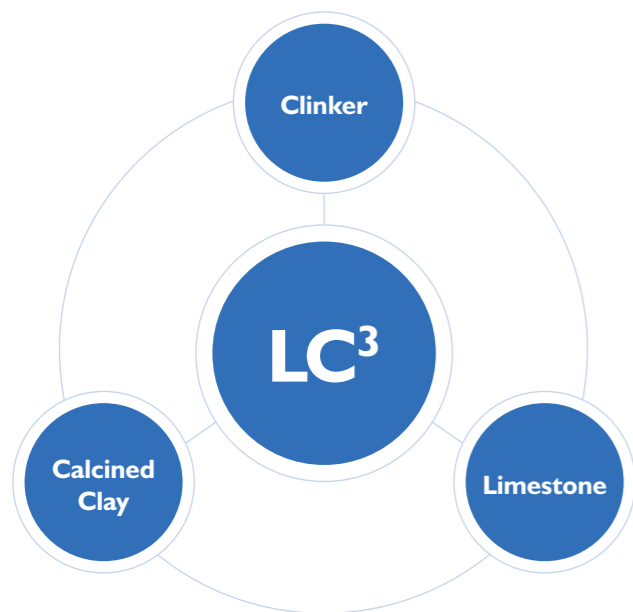


Prepared to solve the challenges of the future

Good quality supplementary cementitious materials will become scarcer in future. Over the years, changes to the EN 197 have partially addressed this by including cement types with new SCM combinations such as CEM II/C-M or with the use of recycled concrete fines.

With our unique combination of know-how and experience in both concrete and cement, our R&D efforts are focused on continual improvement of our MasterCem® portfolio to enable you to further maximize SCMs content and future concrete performance.

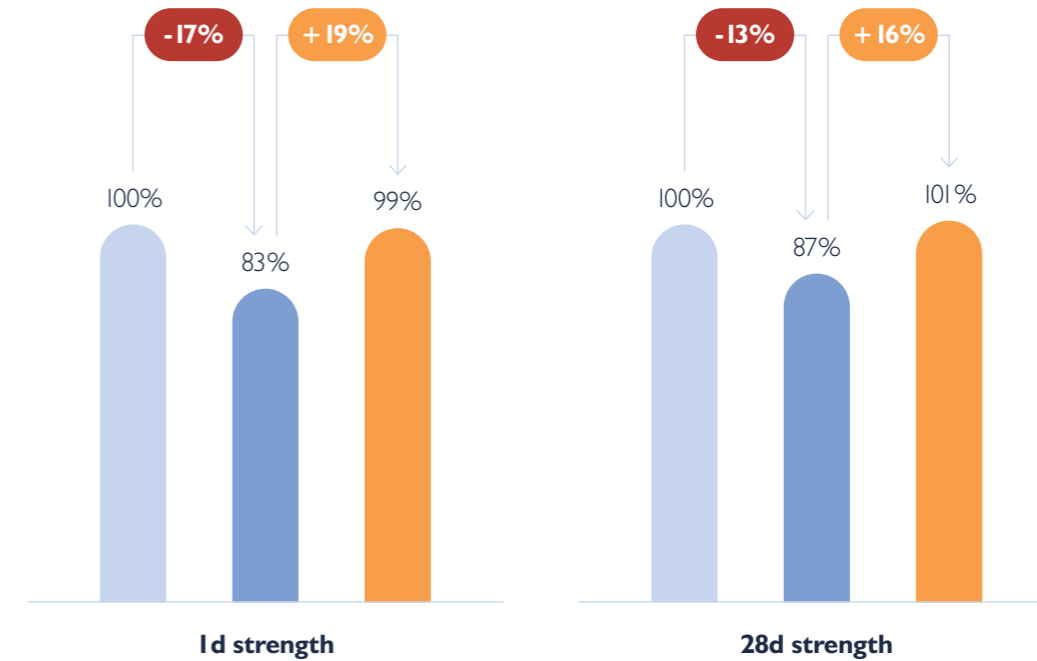
Example of an LC³ cement improvement with MasterCem® SW series *



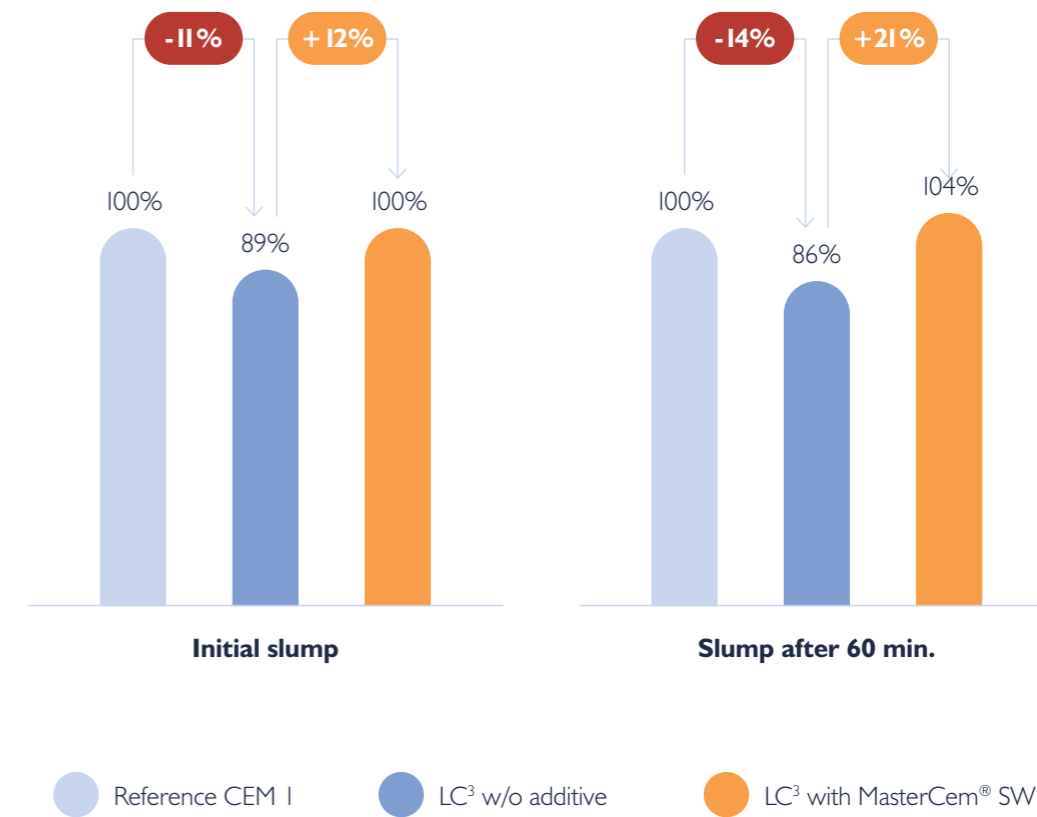
Regaining original strength and improving workability of cement for future concrete applications.

* Performance benefits and savings are depending on various parameters and may vary depending on multiple conditions and prerequisites

Strength Development



Concrete Slump



Master Builders Solutions®

Inspiring people to build better

As Master Builders Solutions®, we are a leading global manufacturer of concrete admixtures and cement additives.

We inspire people to build better in over 36 countries globally. We provide 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 cement and concrete.

We support our customers in mastering their building challenges of today – for a decarbonised future.

The Master Builders Solutions® brand consolidates all our experience and expertise to create and deliver fit-to-purpose solutions for your cement production and construction requirements.



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

MasterCO₂re™

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

Quantified sustainable benefits. Advanced chemistry by Master Builders Solutions®.

Let the numbers do the talking: We have portrayed some of our most eco-efficient product solutions for concrete and precast production, construction, civil engineering, and flooring.

sustainability.master-builders-solutions.com



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