

MASTER[®]
» BUILDERS
SOLUTIONS

— MasterCem[®]
Solutions for the
cement industry





Master Builders Solutions

The Master Builders Solutions brand brings expertise to create chemical solutions for new construction, maintenance, repair and renovation of structures. Master Builders Solutions is built on the experience gained from more than a century in the construction industry.

The know-how and experience of a global community of construction experts form the core of Master Builders Solutions. We combine the right elements from our portfolio to solve your specific construction challenges. We collaborate across areas of expertise and regions and

draw on the experience gained from countless construction projects worldwide. We leverage 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.

The comprehensive portfolio under the Master Builders Solutions brand encompasses concrete admixtures, cement additives, chemical solutions for underground construction, fiber reinforcement solutions, waterproofing solutions, sealants, concrete repair & protection solutions, performance grouts, performance flooring solutions.

MasterCem®

Industry challenges

Cement manufacturers operate in one of the world's toughest industries. A vast number of new challenges are emerging, pushing plant and human resources to the limits. Mill operators are faced with the sometimes conflicting tasks of lowering the clinker factor, increasing production efficiency, improving performance, and cutting carbon dioxide emissions – all while complying with ever-changing regulatory requirements.



Innovative solutions

Master Builders Solutions grinding aids and performance enhancers help cement producers master these challenges. MasterCem grinding aids reduce agglomeration forces, increasing grinding and separation efficiency. Our performance enhancers go one step further, improving cement properties such as early and late strength, setting time and workability. In addition to our standard products, we offer customized solutions for a wide variety of composite cements.

Unparalleled expertise

Master Builders Solutions is committed to developing cutting-edge products for the cement industry – today and in the future. The MasterCem portfolio is rooted in our rich tradition and experience in cementitious materials. We possess extensive grinding expertise, and in-depth knowledge of chemical and mineralogical interactions. More importantly, we understand the cement industry's current and emerging imperatives.

Comprehensive range of innovative products

Meeting the needs of cement producers



Our comprehensive and innovative range of grinding aids and performance enhancers are targeted to cement manufacturers' current and emerging needs. To meet your specific requirements, Master Builders Solutions offers tailor-made solutions adapted to a variety of composite cements based on granulated blast furnace slag, fly ash, limestone, natural pozzolan and other supplementary cementitious materials (SCMs).

MasterCem liquid cement additives are easy to meter onto the mill feed belt or directly into the mill. Only standard storage and dosage equipment is needed – minimizing expense and capital investment.

Grinding aids

MasterCem grinding aids neutralize agglomeration and creates a dispersion effect that improves cement fineness. They increase grinding and separator efficiency, reduce energy consumption, prevent pack set, and increase mill throughput.

Performance enhancers

In addition to acting as grinding aids, MasterCem performance enhancers improve strength, setting time, and workability. Our product line includes early and late age strength enhancers, strength and workability improvers, and air-entraining agents.

MasterCem Series

Grinding aids

MasterCem GA 1000
Grinding aids

Performance enhancers

MasterCem ES 2000
Early-strength enhancers

MasterCem LS 3000
Late-strength enhancers

MasterCem SW 4000
Strength and workability improvers

MasterCem AE 5000
Air-entraining agents

MasterCem SP 6000
Specialty products

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



Benefits

Greater efficiency, smaller ecological footprint,
higher performance



Cost reduction

- Lower grinding energy
- Greater integration of supplementary cementitious materials (SCMs) and mineral fillers
- Increased capacity lowers need for future expansion

Production efficiency

- Higher mill throughput
- Easier material handling due to greater cement fluidity
- Decreased pack set
- Increased efficiency of grinding media and separators
- Reduced plant downtime
Longer intervals between scheduled maintenance

Contributes to sustainable development

- Reduced energy consumption
- Lower CO₂ emissions
- Lower clinker factor
- Conservation of natural resources
- Extended quarry lifespan

Product quality

- Greater early and late-age compressive strength
- Higher cement performance
- Compensation for dilution of clinker with less reactive SCMs and mineral fillers



Our offer

Helping cement producers be more competitive



Innovative products

Our comprehensive portfolio is the result of continuous assessments of evolving market requirements and intense R&D work in our laboratories around the world by a dedicated group of scientists focused on meeting the industry's current and emerging challenges.

Grinding process expertise

Mastering the grinding process is essential for creating state-of-the-art cement additives. Thanks to our in-depth understanding of industry processes, we can assist cement manufacturers on-site during all phases of cement additive implementation.

Chemical-mineralogical competence

We are experts in cement chemistry, mineralogy, and complex cement hydration mechanisms. Our scientists analyze raw materials and cements in Master Builders Solutions' laboratories to formulate cutting-edge cement additives and ensure material compatibility.

Our service offer to you

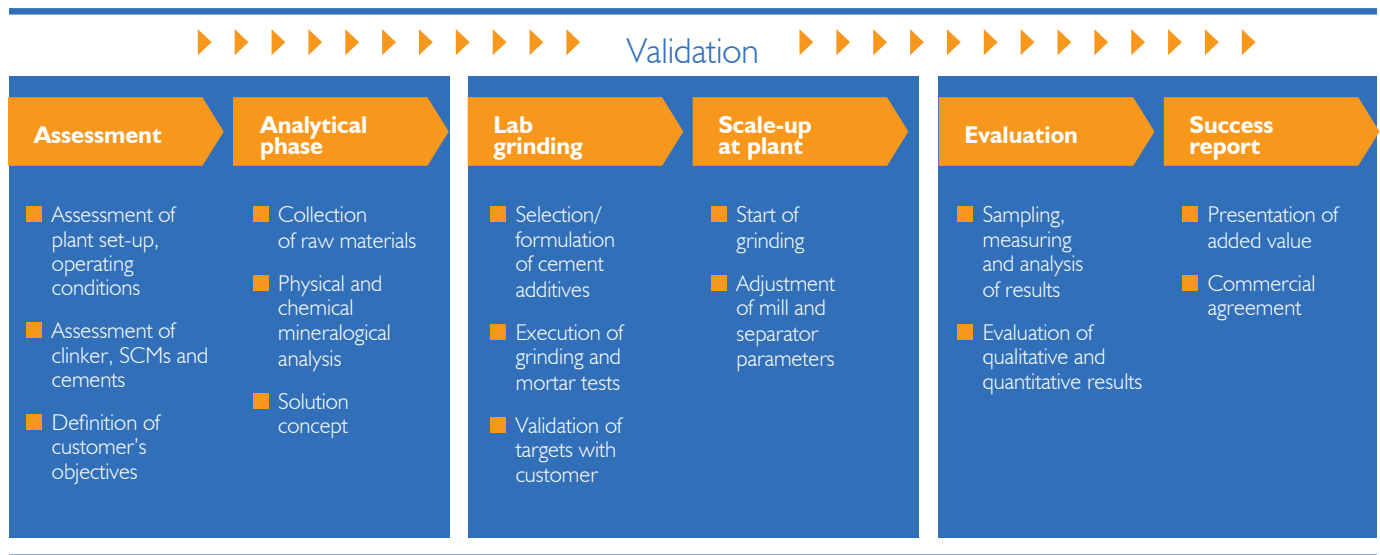
Supporting you in the implementation of cement additives from Master Builders Solutions



Due to our extensive expertise and close proximity to core industry markets, Master Builders Solutions can provide excellent onsite support during all phases of the cement additives implementation process. Our six-step program starts with a thorough assessment of the cement producer's needs and technical constraints. During the next steps, we conduct laboratory grinding tests and comprehensive industrial evaluations to identify the best cement additives for your needs. Finally, we analyze how our products add value to your manufacturing process.



Experts from Master Builders Solutions team can also provide practical advice to cement plant engineers on appropriate storage of and the most precise and reliable dosage equipment for cement additives.





Pilot mill

A unique facility for industrial-scale testing

Our pilot mill, located in the Master Builders Solutions development center in Treviso, Italy, simulates actual production conditions, allowing us to create new cement recipes and develop tailor made MasterCem additives. The facility is ideal for testing specific cement formulations, and is a valuable resource for research.

Technical data

- 1:10 scale grinding plant
- Closed-circuit, two-chamber ball mill
- First-generation dynamic separator
- Reproduction of real mill temperature
- Airflow rate regulation
- Performance control via noise measurement
- Programmable Logic Controller



The pilot mill is a key asset of our development center. It enables our researchers to develop innovative technologies and products, and to conduct thorough testing and evaluations prior to market release, reassuring our customers that our additives have proven their performance under industrial conditions.

Benefit from our expertise

We understand the challenges that our customers face –and have the resources to provide leading-edge solutions

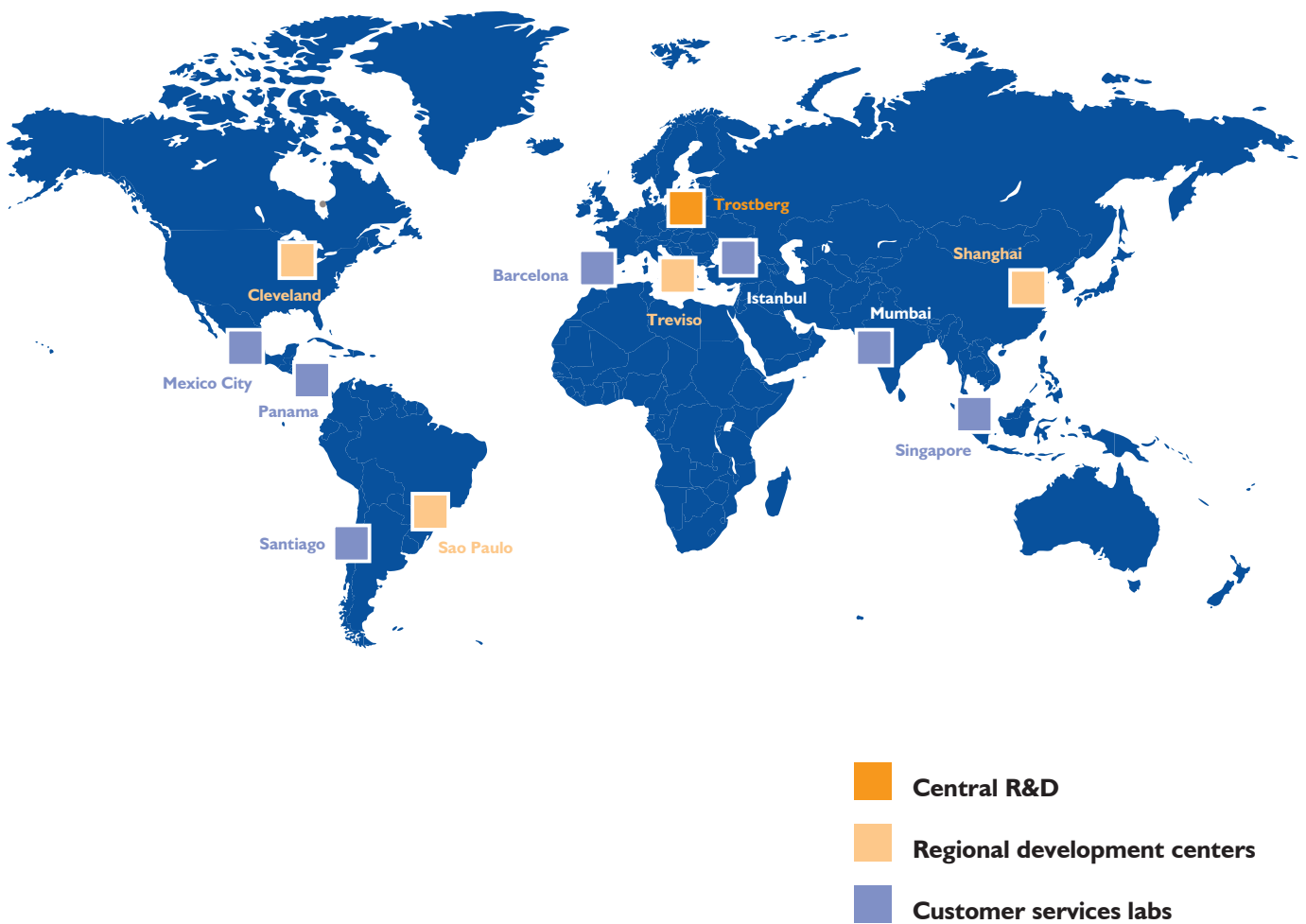


As a leader in concrete technology, Master Builders Solutions has a keen understanding of the industry as a whole, and of the challenges that cement manufacturers are facing. Our customers can draw on our global network of chemists, physicists, civil engineers, mineralogists and geochemists – experts who know what cement producers require to become more competitive. We have the resources to carry out a variety of chemical and mineralogical analyses, as well as analysis of cement-concrete interactions. Additionally, due to the extensive number of Master Builders Solutions sites around the world, we are able to provide excellent local support.

Equipment and cement analytics expertise

- Cement grinding
- Physical cement characterization
- Qualitative and quantitative mineralogic characterization
- Elemental composition in solid state and pore solution
- Thermal analysis and calorimetry
- Optical and electron microscopy
- Mechanical testing of concrete and mortar

Master Builders Solutions global network of central R&D facilities, regional development centers and customer service labs



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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