

# MAPEI SOLUTIONS

for the precast concrete market





TECHNOLOGICAL INNOVATION  
IN THE PRECAST CONCRETE INDUSTRY  
STARTS WITH MAPEI PRODUCTS.

TABLE OF CONTENTS

## MAPEI SOLUTIONS for the precast concrete market

Products for <b>high quality precast concrete</b> .....	2
<b>Superplasticising</b> admixtures .....	4
<b>Plasticisers</b> for semidry consistency and extruded concrete .....	8
Complementary products. <b>Form-release agents</b> .....	10
Complementary products. <b>Synthetic fibres</b> .....	11
<b>Hardening accelerators</b> for concrete .....	12
<b>Pozzolan-activity</b> mineral addition .....	14
<b>Permeability-reducing</b> admixtures .....	15
<b>Water-repelling</b> admixtures .....	16
Drying <b>shrinkage-reducing</b> admixtures .....	17
<b>Viscosity-modifying</b> admixtures .....	18
<b>Repair and restoration</b> mortars .....	20
<b>Anchoring</b> mortars .....	22
<b>Epoxy resin-based</b> adhesives .....	23
<b>Protective</b> coatings .....	24
<b>Sealant</b> products .....	25
<b>Waterproofing</b> systems .....	26
<b>Evaporation-retarding</b> admixtures .....	27
Technical Services .....	28



# Products for high quality precast concrete

Thanks to the extensive and consolidated experience, **Mapei** provides a comprehensive range of products and solutions aimed at bringing **technological innovation to the precast concrete sector**. **Mapei** proposes three distinct lines of **admixtures for concrete** specifically designed for the precast concrete industry in order to optimise the production processes and to achieve increasingly high quality levels.

## Superplasticising admixtures

### Dynamon NRG Line

***Superplasticising** admixtures and **set accelerators** specifically designed and developed for the production of prestressed, reinforced concrete structures.*

Apart from drastically reducing the amount of mixing water required, thanks to their accelerating effect, **Dynamon NRG admixtures** also enable **high initial mechanical properties** to be obtained. They may reduce curing times and, in certain cases, completely eliminate the steam curing cycle.

### Dynamon HS Line

***Superplasticising** admixtures dedicated to the production of structures in normal reinforced concrete.*

**Dynamon HS** range allows early age strength development, without affecting the workability required for finishing.

**Dynamon HS** range anticipates the demolding times, thereby increasing production cycles and reducing plant management costs. **Dynamon NRG** and **Dynamon HS** can also be used for **self-compacting concrete**, as they guarantee a high level of fluidity even in presence of high fine content.



## Plasticisers for concrete

### Vibromix Line

*Admixtures for the production of components and structures in vibro-compressed and/or extruded concrete.*

**Vibromix plasticisers** are used to optimise production processes by reducing compaction and stripping times. **Vibromix admixtures** guarantee that the components and structures produced are of a high quality and reduce problems related to efflorescence phenomenon.

### Complementary products

**Mapei** has an extensive range of **complementary products** available to meet the requirements of the precast concrete industry.

- Form-release agents.
- Synthetic fibres for various applications: structural, fireproof and crack-prevention caused by plastic shrinkage, and they are all available in various length/diameter formats.
- Water-repellent and crystallising admixtures for the production of water-repellent and waterproof concrete elements.
- Set accelerators to help mechanical properties develop more quickly after short curing cycles and to optimise thermal cycles.
- Mineral additives for the production of concrete with high performance properties (HPC) and with a higher level of durability.
- Shrinkage-reducing admixtures to reduce crack phenomenon.
- Admixtures for the production of pervious elements and structures.
- Viscosity-modifying admixtures for the production of elements and structures in self-compacting concrete.
- Sealants in various chemical compositions to form elastic joints.
- Ready-mixed, shrinkage compensating mortars for repairing and skimming elements.
- Ready-mixed, shrinkage compensating mortars to create anchor points quickly.
- Resins for structural bonds.
- Elastomeric, crack-resistant, protective coatings with high resistance to chemicals.
- Cementitious-based, polyurea-based, bituminous and PVC systems for waterproofing roof tiles and other roofing elements and features.



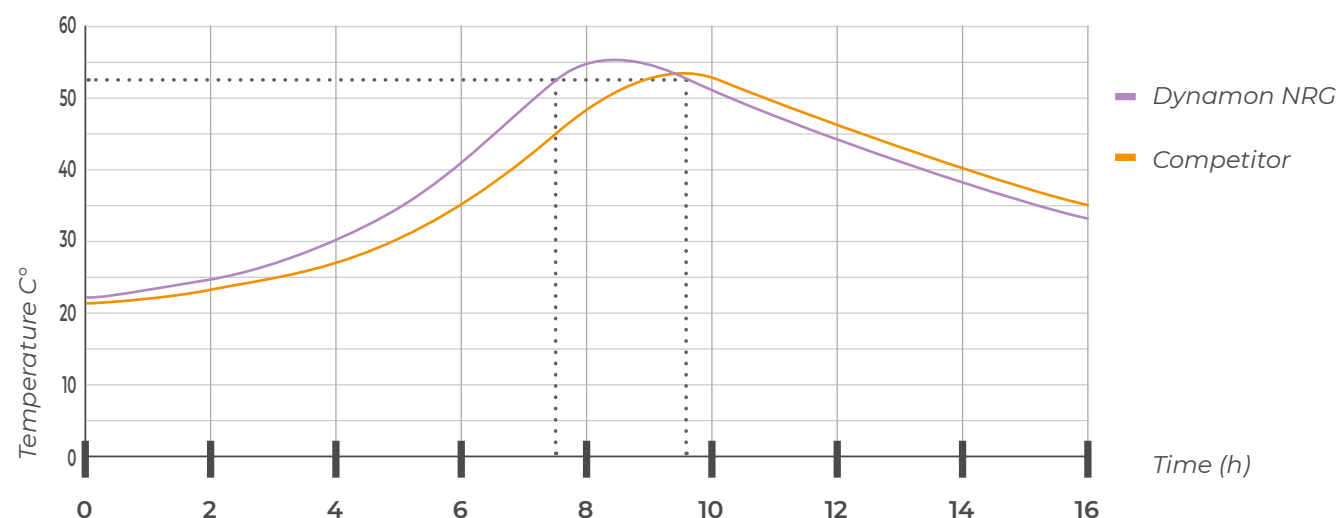


# Superplasticising admixtures

## Dynamon NRG Line

**Dynamon NRG** is a line of **polycarboxylate ether-based superplasticising admixtures** for the precast concrete industry. The **Dynamon NRG** line is ideal for the production of elements in pre-stressed, precast, reinforced concrete. Superplasticisers from the **Dynamon NRG** line are specially formulated so they do not generate any delay in the hydration process and, therefore, guarantee high mechanical properties after short curing cycles. When dosage rates have been calibrated correctly, admixtures from the **Dynamon NRG** line reduce or even completely eliminate vapour curing and, as a result, improve the durability of the structures and elements produced. The performance characteristics of admixtures from the **Dynamon NRG** make them suitable for the **production of self-compacting concrete**. This line of admixtures guarantees that concrete has a high level of slump, but without the negative effects of excessive viscosity in fresh concrete.

### Comparison of temperatures in concrete admixed with Dynamon NRG and a competitor product



The graph illustrates how admixtures from the **Dynamon NRG** line anticipate the development of temperature and, as a result, achieve better mechanical characteristics in a shorter space of time. (e.g.  $T=52^{\circ}\text{C}$ : **Dynamon NRG** 7.5 h – Similar competitor product 9.5 h)



## Dynamon NRG admixtures range

- **Dynamon NRG 1010**  
Polycarboxylate-based superplasticising accelerator for extremely quick form-stripping operations (6-8 hours) without steam-curing.
- **Dynamon NRG 1014**  
Polycarboxylate-based superplasticising accelerator for extremely quick form-stripping operations (16-18 hours) without steam-curing and viscosity-modifying agent for SCC.
- **Dynamon NRG 1037**  
Superplasticiser for precast concrete with extended maintenance of workability.
- **Dynamon NRG 1039**  
Superplasticiser for precast concrete with very high development of mechanical properties after short curing cycles.





# Superplasticising admixtures

## Dynamon HS Line

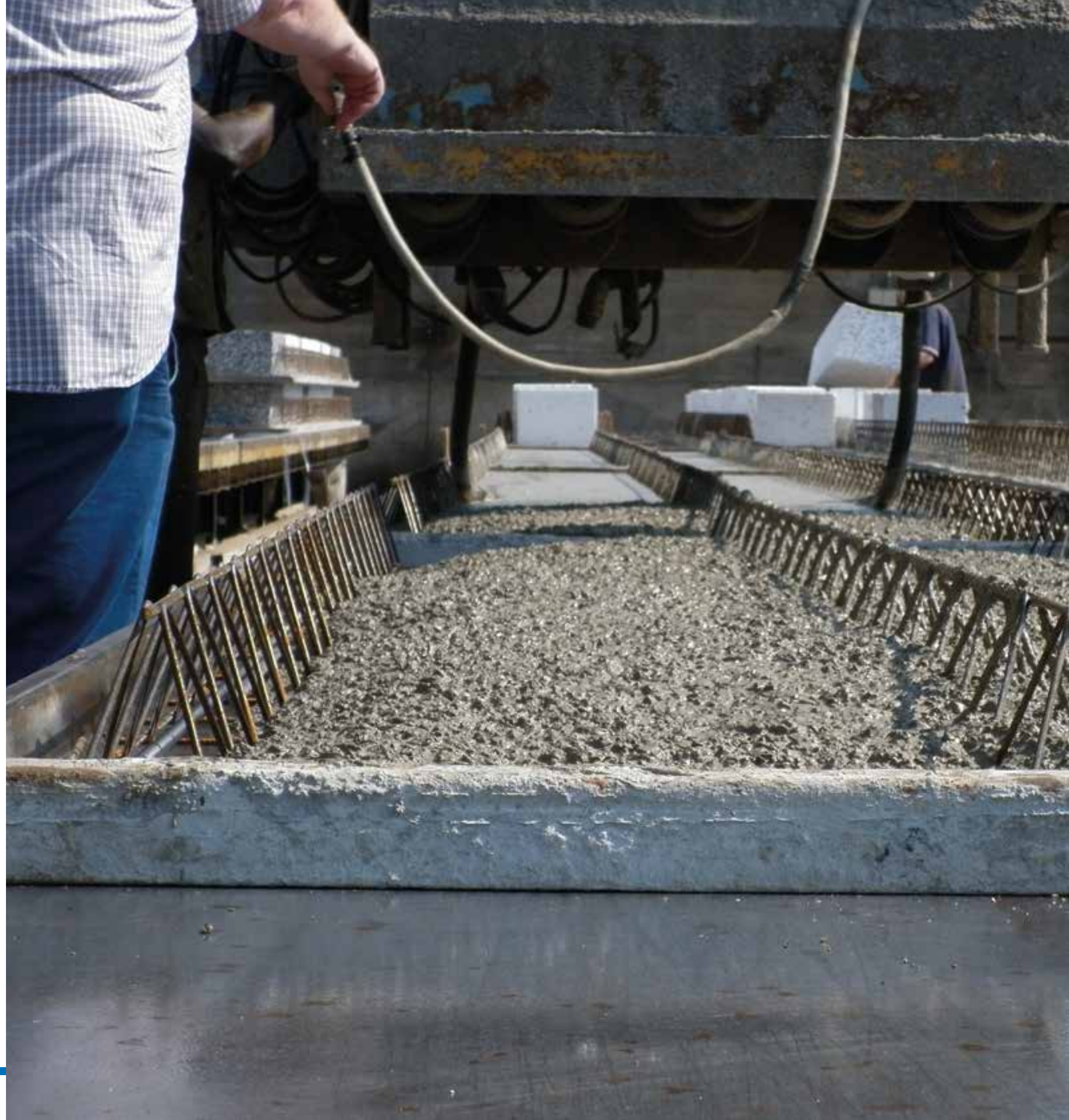
**Dynamon HS** is a line of **polycarboxylate ether-based superplasticising** admixtures.

The **Dynamon HS** line is recommended for the production of elements in normal reinforced concrete. They help improve surface-finishing operations and guarantee extended workability.

Superplasticisers from the **Dynamon HS** line are recommended for the production of **self-compacting concrete**.

## Dynamon HS admixture range

- **Dynamon HS 2010**  
Superplasticiser for pre-cast concrete with good maintenance of workability and excellent **surface finish**.
- **Dynamon HS 2020**  
Superplasticiser for precast concrete with high development of mechanical properties after **short curing cycles**.
- **Dynamon HS 2030**  
Superplasticiser for precast concrete with **extended maintenance of workability**.
- **Dynamon HS 2040**  
Superplasticiser for precast concrete with **high development of mechanical properties after short curing cycles**.
- **Dynamon HS 2050**  
Super-plasticiser and set-accelerator for precast concrete with **high initial mechanical strength**.







# Plasticisers for semidry consistency and extruded concrete

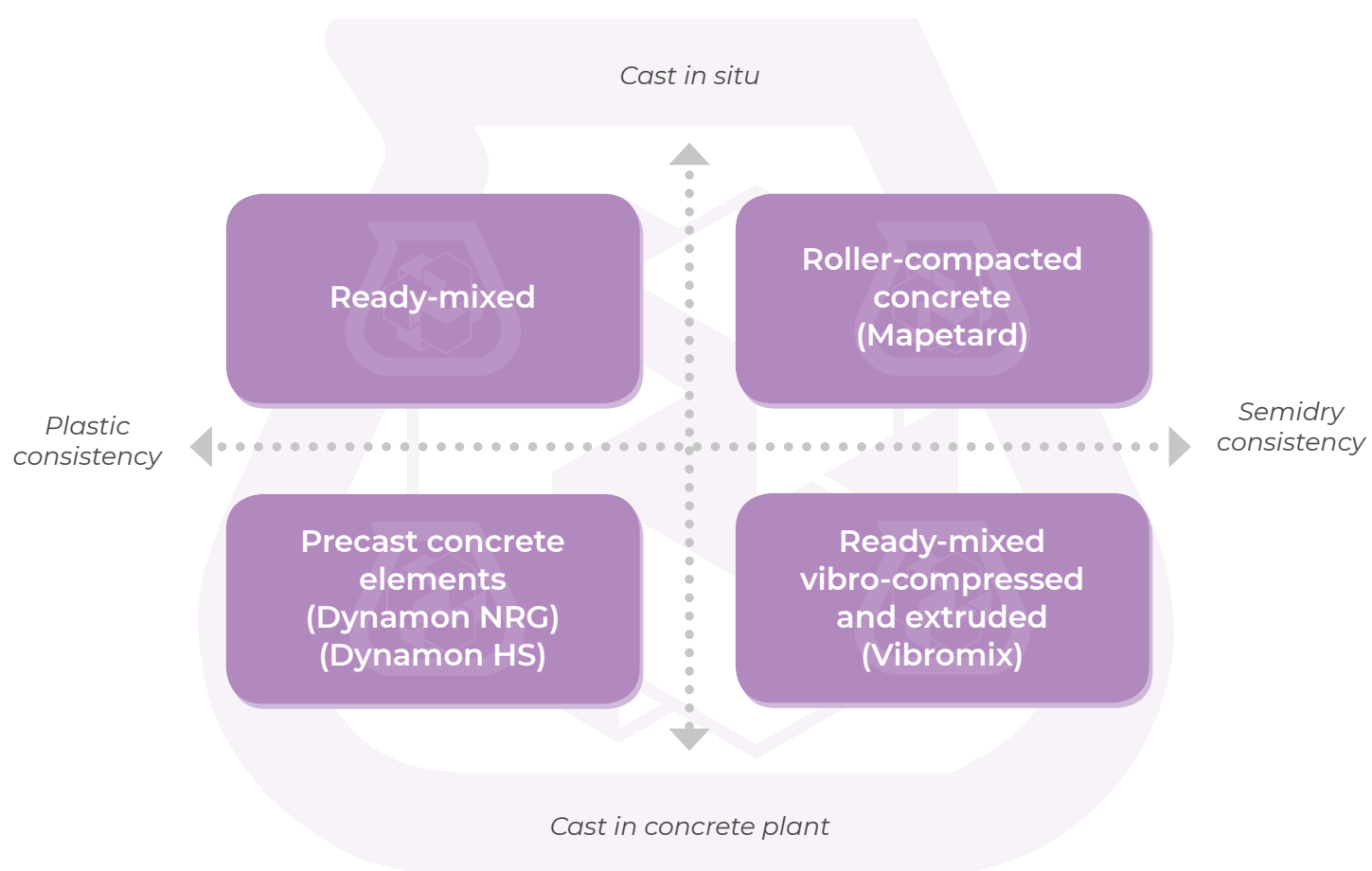
## Vibromix Line

**Vibromix** is the line of **Mapei admixtures** specifically designed to optimise the manufacturing of semidry concrete elements.

**Vibromix admixtures** improves the mixing process, the mixtures workability, and shortens the filling time.

**Vibromix** accelerators guarantee a faster hardening in cold weather and **Vibromix** water-repellents reduce the efflorescence phenomenon.

## Field of application



Each type of concrete described in the blocks has specific technical characteristics that must be accentuated by using the most appropriate admixture line.



## Vibromix range of admixtures

- **Vibromix C1**  
Plasticising and **hardening accelerator** for extruded concrete.
- **Vibromix L1**  
**Water-reducing** agent for screed mortar consistency concrete.
- **Vibromix L4**  
**Plasticising and set accelerator** for screed mortar consistency concrete.
- **Vibromix S**  
**Highly effective water-repellent** to control efflorescence phenomenon in elements and structures in screed mortar consistency concrete.





## Complementary products

### Form-release agents

Form-release agents are chemical products applied on the surface of formwork to make stripping operations easier. Mapei offers a **complete line of form-release agents** suitable for an extensive range technical and environmental requirements and recently developed a family of **vegetable oils and emulsion-based form-release agents** which, apart from offering excellent performance characteristics in terms of ease of application and surface finish of elements and structures, they are also non-toxic for users and are easy to dispose of. The **Mapei line of form-release agents** follow the **Assiad** classification system according to the chemical nature of the oils used and are grouped according to their area of use.

### Form-release agents range

- **Mapeform 1200**  
A mix of mineral oils for **vibro-compressed concrete demolding**.
- **Mapeform 1400**  
A mix of mineral oils used **for formwork still hot** from the steam curing operations.
- **Mapeform 1500**  
Pure **synthesised oil with low viscosity** for a wide range of uses.
- **Mapeform Eco 31**  
Vegetable **oil-based** form-release solution in water emulsion for **fair-faced concrete**.
- **Mapeform W 60**  
Wax-based form-release agent for **fair-faced**.
- **Mapeform Eco Oil**  
**Pure vegetable, highly bio-degradable** form-release agent suitable for steam-curing.
- **Mapeform Eco Oil LV**  
**Pure vegetable, low viscosity** form-release agent suitable for steam-curing.

*Mapeform Eco Oil LV, Mapeform Eco Oil and Mapeform Eco 31 form-release agents are vegetable oil-based and respect the hygiene, volatile components and biodegradability criteria of the ASSIAD form-release classification table.*



## Complementary products

### Synthetic fibres

**Structural polymer fibres** are synthetic fibres available in various lengths and diameters that, when added to concrete, provide **additional three-dimensional strengthening or replace traditional lightweight reinforcement**, thereby improving its energy-absorbing capacity. Synthetic fibres help to improve the toughness index of concrete and to obtain a higher level of post-cracking mechanical strength. **Microfibers**, on the other hand, are used for non-structural applications, such as to **reduce micro-cracking** caused by plastic shrinkage or to reduce concrete's resistance to fire by adding a higher dose of fibres.

### Synthetic fibres range



- **Mapefibre ST30**  
30 mm polymer fibres to structurally strengthen precast concrete elements.  
Length/diam. ratio = 37.5.



- **Mapefibre ST42**  
42 mm polymer fibres to structurally strengthen precast concrete elements.  
Length/diam. ratio = 52.5.



- **Mapefibre IT 25**  
25 mm polymer fibres to structurally strengthen precast concrete elements.  
Length/diam. ratio = 28.



- **Mapefibre NS12**  
Anti-shrinkage polypropylene fibres to reduce cracking caused by plastic shrinkage. Length 12 mm.
- **Mapefibre NS18**  
Anti-shrinkage polypropylene fibres to reduce cracking caused by plastic shrinkage. Length 18 mm.



## Hardening accelerators for concrete

Mapei hardening accelerators are designed to **speed up the hydration rate of cement** increasing its early age strength. Thanks to the rapid development of mechanical strength, hardening accelerators enable **thermal curing cycles to be optimised** and **reduce form-stripping times** at low temperatures.

### Hardening accelerators range

- **Dynamon HAA**  
**Chloride-free hardening accelerator** for reinforced concrete with high initial mechanical strength.
- **Mapefast CF/L**  
**Chloride-free hardening accelerator** for reinforced concrete.
- **Mapefast Ultra**  
**Chloride-free hardening accelerator** for reinforced concrete with high initial mechanical strength, even at low temperatures.







## Pozzolan-activity mineral additions

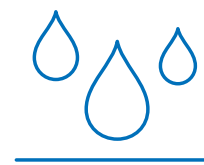
Mapei has a complete line of **powdered mineral admixtures** that **improve the mechanical properties of concrete**. Mineral additions the **reological and mechanical properties of concrete**. Furthermore, they extend the service life of concrete structures.

### Mineral addition range

- **Mapeplast SF**  
Powdered Pozzolan-activity component. **Densified silica fume** addition.
- **Mapeplast PZ300**  
Mineral addition made of a blend of hydraulic and **pozzolanic components**.



Mapeplast SF and Mapeplast PZ300



## Permeability-reducing admixtures

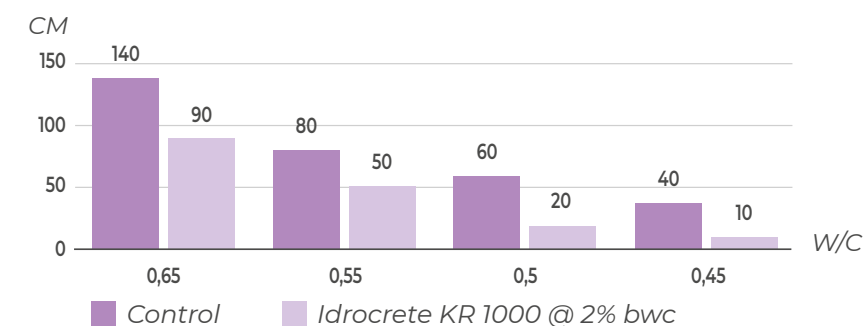
Crystallising agents are **permeability-reducing admixtures**. By reacting with the water in concrete, they activate a secondary crystallisation process that progressively reduces micro-cracking and capillary porosity in the concrete.



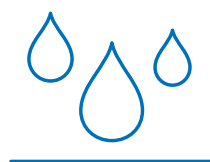
### Crystallising admixtures

- **Idrocrete KR 1000**  
Powdered crystallising admixture for the production of **watertight concrete**.

Effect of Idrocrete KR 1000 on the maximum penetration depth of water in concrete







## Water-repelling admixtures

For the production of concrete blocks and self-locking blocks, **Mapei** has created a specific line of products to reduce water absorption and efflorescence phenomenon. Mapei mass water-repelling admixtures guarantee **uniform colour and resistance to rain water**.

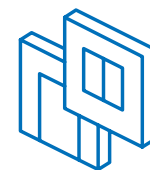
### Mass water-repelling admixture range

- **Idrocrete DM**

Water-repelling admixture for concrete and mortar with low water absorption and no efflorescence.

- **Idrocrete S**

Water-repelling admixture for concrete and mortar with low water absorption and no efflorescence.



## Drying shrinkage-reducing admixtures

**Mapei** shrinkage-reducing admixtures lower the effect of the drying shrinkage of concrete by acting on the surface tension of water in the capillary pores of the concrete and therefore reducing the pressure generated inside the pores.

### Shrinkage-reducing admixture range

- **Mapecure SRA**

Admixture for cementitious mortar and concrete to reduce drying shrinkage and the formation of micro-cracks.

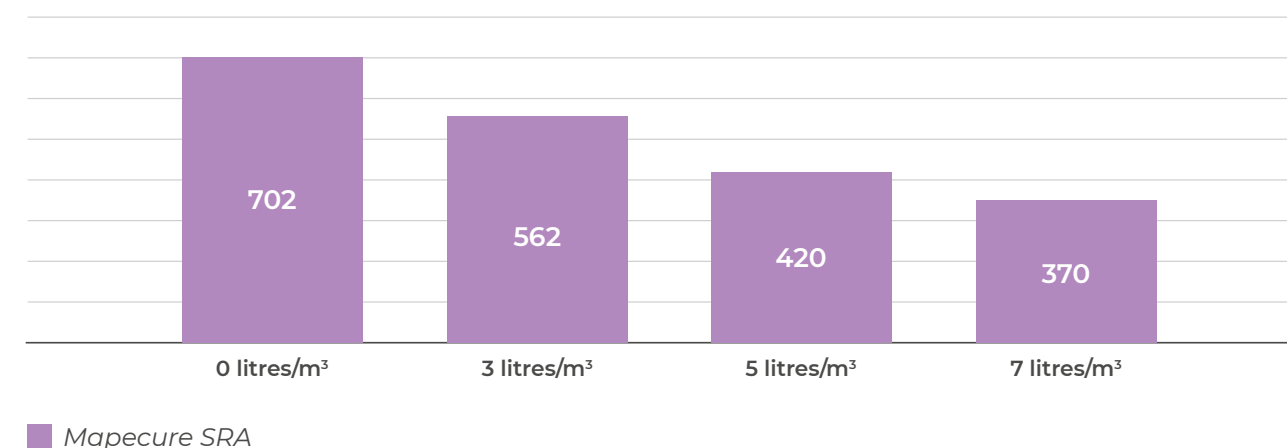
- **Mapecure SRA 25**

Drying shrinkage reducing liquid admixture.

- **Mapecure SRA 20**

Drying shrinkage reducing liquid admixture with a slight plasticising effect.

*Concrete shrinkage by using different dosages of SRA admixtures (Water/cement ratio 0.55)*







## Viscosity-modifying admixtures

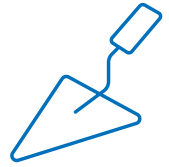
Mapei viscosity-modifying admixtures are designed to control surface bleeding and segregation in self-compacting concrete mixes.

### Viscosity-modifying admixture range

- **Viscostar 3K**  
Multi-functional viscosity-modifying admixture for the production of **self-compacting concrete with no fillers**.
- **Viscofluid SCC/10**  
Viscosity-modifying admixture for the production of **self-compacting concrete**.







## Repair and restoration mortars

Mortars for concrete repair and restoration are ready-mixed, ready-to-use cementitious products used to eliminate imperfections on the surface of concrete after stripping the formwork.

Coarse-textured repair mortars are used to repair larger production defects. Both types of mortar have shrinkage-compensating properties.

### Mortars for concrete repair and restoration

- **Planitop Smooth & Repair**

Rapid-setting, shrinkage-compensating, fibre-reinforced, thixotropic cementitious mortar applied in a single layer from 3 to 40 mm thick to repair and smooth concrete.

- **Mapegrout Thixotropic**

Shrinkage-compensating fibre-reinforced mortar for repairing concrete.

- **Mapegrout Fast-Set**

Fibre-reinforced, rapid-setting and hardening, shrinkage-compensating mortar for repairing concrete.







## Anchoring mortars

**Mapei** anchoring mortars are ready-mixed, expansive mortars with a plastic or super-plastic consistency specifically designed for anchoring connecting elements between different structures.

### Anchoring mortars range

- **Mapefill**  
Plastic expansive anchoring mortar.
- **Mapefill R**  
Rapid-hardening, fluid expansive mortar for quickly anchoring objects in place.



## Epoxy resin-based adhesives

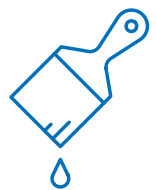
**Resin-based adhesives** guarantee a sound **structural bond between precast elements** used to form structures. Their most frequent areas of use are for second pours, to monolithically fill cracks and to form bonds between ashlar stones in bridges and viaducts.

### Resin-based adhesives range

- **Adesilex PG1**  
Two-component, rapid-setting thixotropic adhesive for structural bonds.
- **Adesilex PG4**  
Two-component, thixotropic epoxy adhesive with modified rheology for bonding strips of PVC and to form structural bonds.







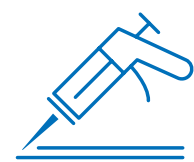
## Protective coatings

The application of elastomeric coatings on the surface of concrete **protects them against carbonation and cracking phenomenon**. They guarantee excellent resistance to ageing, freezing weather and de-icing salts and protect concrete against ingress of aggressive agents in the atmosphere (CO<sub>2</sub> - SO<sub>2</sub>), thereby reducing the risk of deterioration.

### Protective coatings range

- **Elastocolor Paint**

Elastomeric, anti-crack, permanently elastic, protective paint with high resistance to chemicals.



## Sealant products

**Polyurethane resin-based** sealants form a **strong bond with concrete** and with the surface of all materials used in the building industry. They are also highly flexible which makes them suitable for joints with movements.

### Sealants range

- **Mapeflex PB25**

**Two-component, thixotropic, polyurethane sealant** with a low modulus of elasticity and good resistance to hydrocarbons for movements up to 25%.

- **Mapeflex PU30**

**Two-component, high-strength, thixotropic epoxy-polyurethane sealant** with high chemical resistance for movements up to 10%.

- **Mapeflex PU40**

**Polyurethane, paintable sealant** with a low modulus of elasticity for movements up to 25%.







## Waterproofing systems

Mapei has a wide choice of **waterproofing systems** for the surface of concrete, including polymer-modified cementitious systems, polyurea-based systems and synthetic membranes.

### Waterproofing range



- **Mapelastic Smart**  
**Two-component, high-elasticity cementitious, waterproofing mortar** (with crack-bridging capacity > 2 mm) applied by trowel or with a roller.



- **Purtop 600**  
**Two-component, solvent-free, hybrid polyurethane membrane** applied by spray with a high-pressure, bi-mixer type pump, to form waterproof coatings on flat roofs (not suitable for vehicle traffic).



- **Mapeplan TM**  
**Synthetic waterproofing membrane** in flexible TPO/FPO polyolefin reinforced with polyester mesh, made from high quality raw materials and produced using the multi-extrusion coating process. **Mapeplan TM complies with EN 13956 standards.**



## Evaporation-retarding admixtures

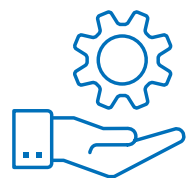
Mapei **evaporation-retarding agents** are liquid admixtures applied on the surface of fresh, placed to extend the time available to carry out finishing operations and improve the final finish of concrete.

### Evaporation-retarding admixtures range

- **Mapecrete Film**  
Evaporation retarding agent and surface finishing aid for concrete panels.







## Technical Services

**Mapei** offers an extensive range of high quality products specifically designed for the precast concrete market and a network of **local specialised technical support teams**. Thanks to the mobile laboratories, **Mapei** is able to provide support for the customers by designing concrete mixes and to control the production process. The Technical Services Department carries out **tests on raw materials** (cement, aggregates, admixtures, etc.) and on concrete mixes to measure its mechanical characteristics at both fresh and hardened states.





# EVERYTHING'S OK WITH MAPEI

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