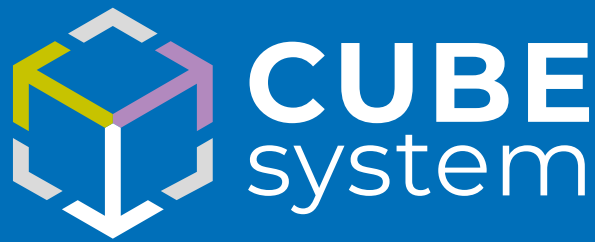


# CUBE SYSTEM

New solutions  
for low carbon concrete





## A complete portfolio of solutions as a contribution to reducing the environmental impact of the production of concrete

Concrete is far from being considered as a sustainable material, particularly due to the **massive amounts of CO<sub>2</sub>** emissions associated with the production of Portland cement.

Amongst the various levers in the hands of the cement industry to control greenhouse gas emissions, the industry has a number of **innovative technologies** that will assist in reducing its **carbon footprint**. These include **carbon capture** and **reducing clinker/cement ratio**.

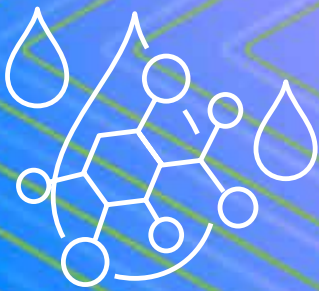
One such approach is the use of **Secondary Cementitious Materials (SCM)** (such as blast-furnace slag, fly ash and natural pozzolans) to partially replace clinker in the manufacture of cement. This is a fundamental part of the strategy enabling the entire chain to **reduce CO<sub>2</sub> emissions by 55% by 2030** and to achieve **Carbon Neutrality** by 2050.

The use of **cement with lower clinker content** and **recycled aggregates** in concrete production presents several challenges however for the concrete industry. Mixes generally will demand increased water contents to achieve and maintain optimal rheological properties and the slower development of the mechanical strength at both early and late stage.

At **Mapei** we are committed to improving the sustainability of the construction industry, whilst supporting our customers in this very dynamic environment. To this end, we have developed the **CUBE system**. An integrated approach that helps the concrete industry overcome the difficulties of reduced clinker cements and aggregates of varying quality through the various phases: production, placement and in situ. **CUBE system** actively helps the industry maintain its **high standards** whilst **reducing the climatic impact**.



**CO<sub>2</sub> Reduction**



**Robustness**



**Strength  
Enhancement**



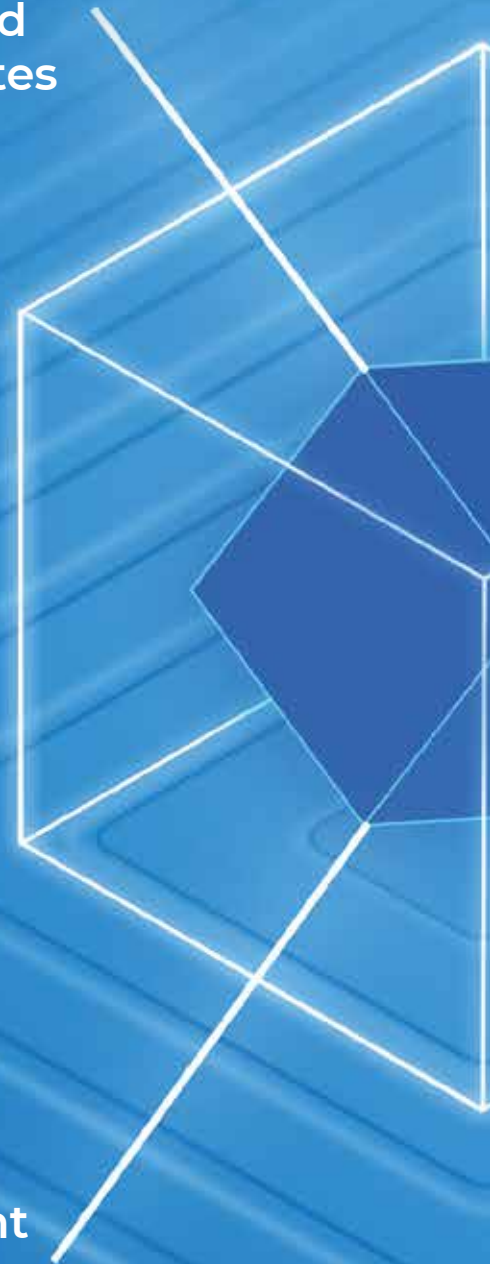
# CUBE system

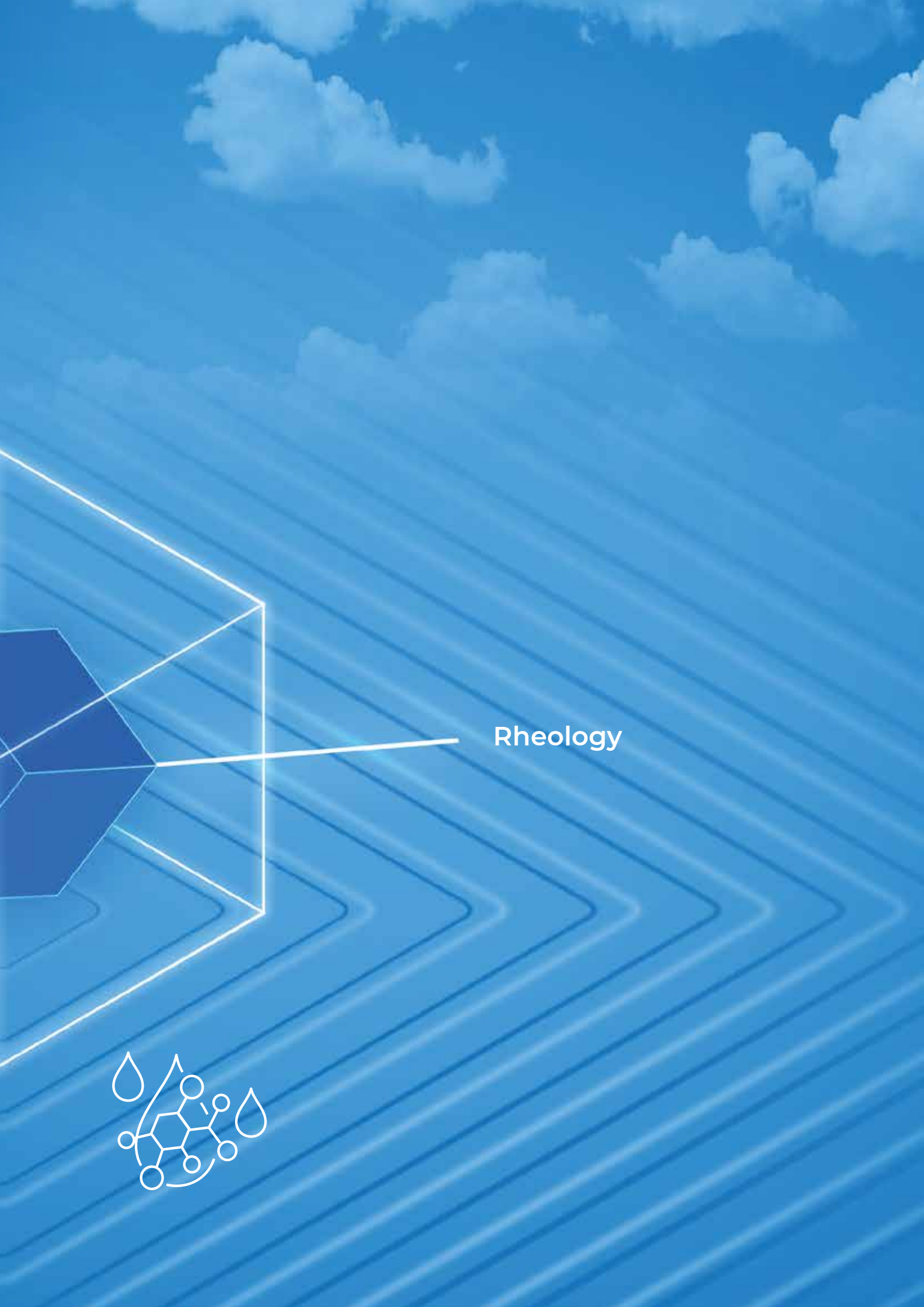
## Robustness

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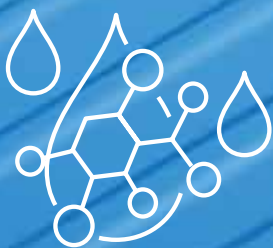
Recycled  
Aggregates

Cement  
Blends





Rheology



# CUBE system

## Strength Enhancement

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Secondary  
Nucleation (SN)

Alkaline  
Activation  
(AA)

Augmented  
Pozzolanic Reaction  
(APO)







# Property technologies

Thanks to the use of property technology based on **nano-compounds of silicate hydrates**, our patent pending system, **CUBE system** represents the fundamental cornerstones of the next generation of admixtures for the new cements with reduced clinker content

## Secondary nucleation (SN)

The addition of **nano-composite silicate hydrates** produces hydration reactions more rapidly and diffusely in the cement paste.

## Augmented pozzolanic reaction (APO)

The combination of **nano-compounds of silicate hydrates** with retarding accelerators produces a more **powerful pozzolanic reaction**, thereby enabling faster development of mechanical strength after both short and long curing cycles.

## Alkaline activation (AA)

The new **hybrid cements** have a **smaller carbon footprint** and combine the properties of Portland cement with the properties of alkaline activation materials. Development of the mechanical strength of hybrid cements is promoted by the alkaline activation of their components.

### PRODUCT RANGE

<b>MAPECUBE 1</b>	Strength enhancer after short curing cycles
<b>MAPECUBE 2</b>	Strength enhancer specific for cements with limestone
<b>MAPECUBE 4</b>	Strength enhancer specific for cements with fly ash or slag
<b>MAPECUBE 60</b>	Strength enhancer for all cements and SCM
<b>MAPECUBE 60 W</b>	Strength enhancer for all cements and SCM

# EVERYTHING'S OK WITH MAPEI

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