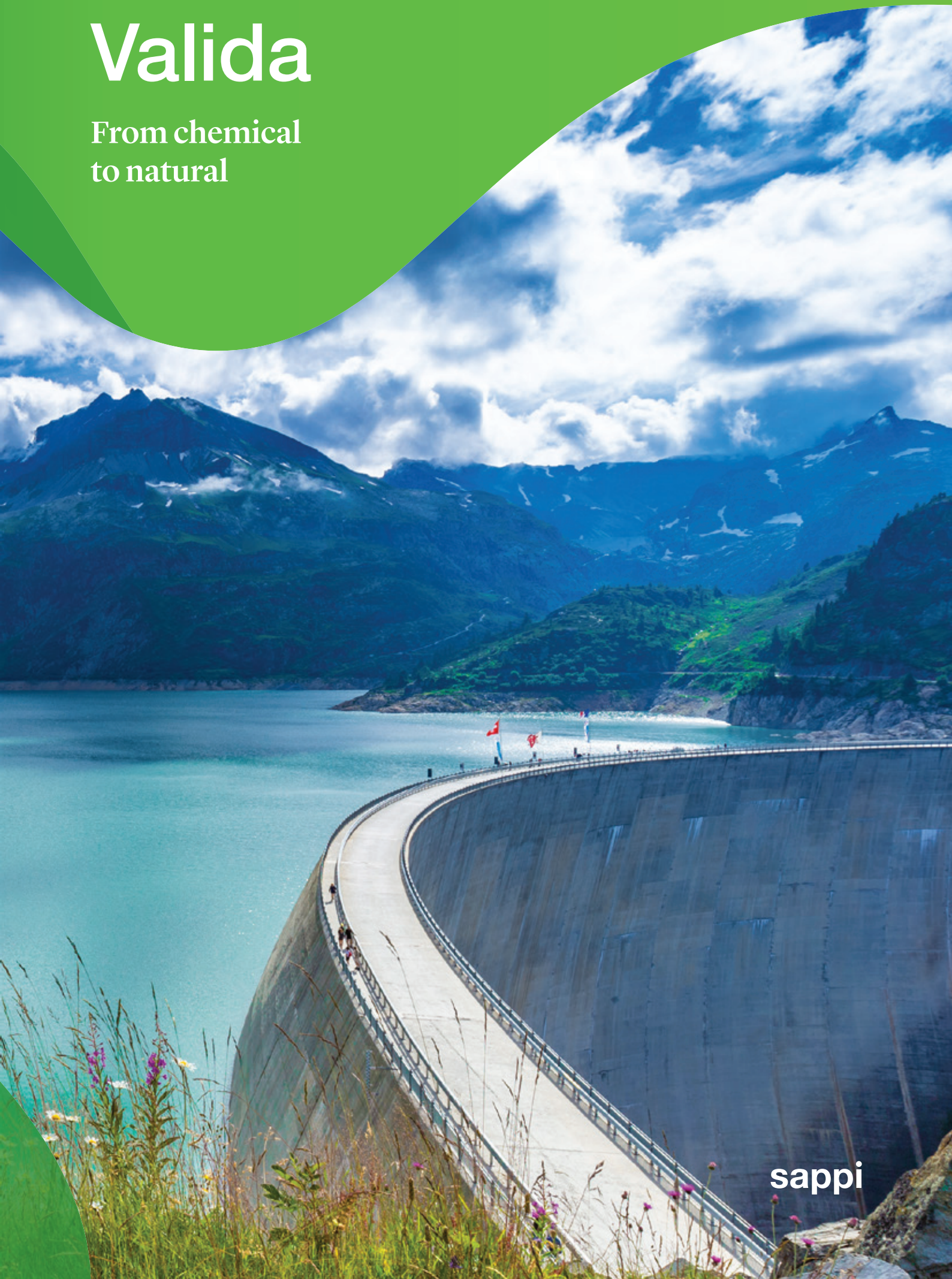


# Valida

From chemical  
to natural



sappi

# From chemical to natural

Across the globe, concrete and concrete admixtures manufacturers, and formulators are seeking natural raw materials that can guarantee the quality and the performance of concrete while improving workability and reducing the carbon footprint. Although the demand is clear, companies still struggle to find a suitable replacement that provides improved rheology modification, stability and other benefits associated with artificial compounds.

**That's where Sappi Valida comes in.** Valida is fibrillated cellulose, 100% natural, biodegradable and sustainable material. In concrete and concrete admixtures application, Valida performs as a multifunctional stabiliser reducing segregation and bleeding, Valida contributes to keep the rheology of the formulation under control, improving the viscosity while facilitating the workability and pumpability of the formulation, as well as supporting a more sustainable lifecycle.



*Cellulose is the most abundant organic polymer on the planet.*



# The power of cellulose. Enhanced by Sappi.

Sappi is a global diversified woodfibre group focused on dissolving pulp, paper-based solutions and high quality functional biomaterials.

Manufacturing operations can be found on 3 continents with sales in over 150 countries. We are using our global leadership position and significant investment in Research and Development in coated graphics papers, speciality packaging grades, dissolving pulp and biorefinery processes, to respond to the growing global demand for high quality functional biomaterials.

## **CELLULOSE IS THE SOURCE OF OUR INSPIRATION**

As we focus on creating value for our shareholders from relevant, sustainable woodfibre products, we take cognisance of our impact on the planet and our stakeholders to ensure that all benefit in the long term. Our commitment to sustainability is based on being a trusted, transparent and innovative partner in building a bio-based circular economy. Sustainability is entrenched in the way we manage our daily business activities, mitigate risk, leverage opportunities and plan for the future. We hold ourselves accountable for global sustainability and best practice standards by transparently measuring, monitoring and communicating our economic, social and environmental performance. We further use innovative technology to contribute to a thriving world through reliable and relevant solutions by extracting more value from each tree.



# Sustainability and collaboration

At Sappi, we believe building a thriving, sustainable world is a moral and business imperative, affecting each and every decision we make.

We are known for our challenge-driven innovation in natural solutions and are continuously looking for strategic partnerships in the quest for a sustainable future.

Minimise energy  
consumption.



Maximise  
bio-based circular  
economy.



Adherence to the  
highest quality  
standards.



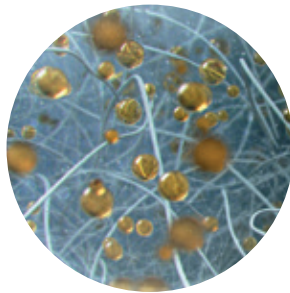
Natural,  
biodegradable.



## WHAT IS VALIDA?

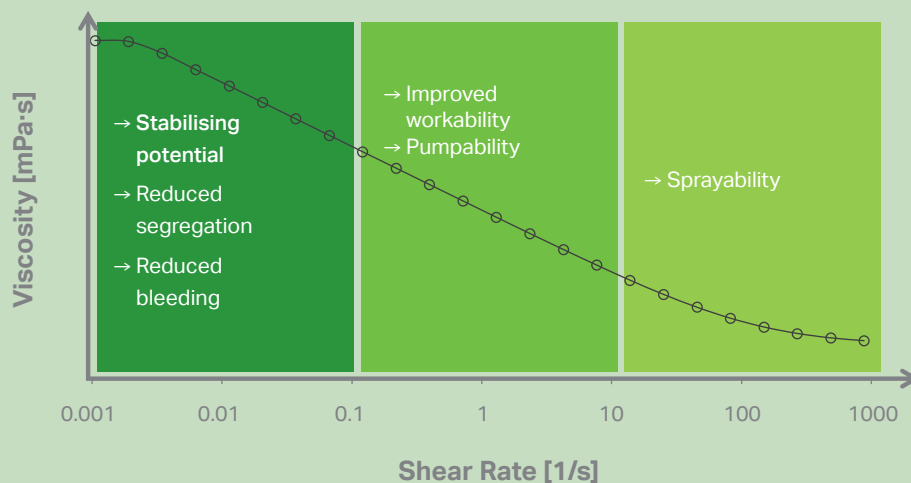
Valida contains the smallest component of cellulose – cellulose fibrils.

Dispersed in water, cellulose fibrils form an extensive network through hydrogen bonding and mechanical entanglement. The formed network stabilises particles in suspension and oil-in-water emulsions without an emulsifier.



## VALIDA'S RHEOLOGY PROFILE

Valida has a high viscosity at rest and is extremely shear thinning. Valida is also thixotropic; when the shear is removed, viscosity is quickly restored. The shear thinning profile improves the pumpability and workability of concrete mixtures.



# Valida in concrete



## VISCOSITY MODIFYING ADMIXTURES

- Slump flow reduction
- Improved pumpability
- Improved workability
- Highly shear thinning and thixotropic



## REINFORCEMENT

- Early-stage strength improvement
- Increase strength without additional cement



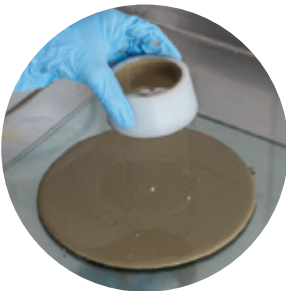
## SHRINKAGE REDUCTION

- Crack reduction
- Increased air content benefits the freeze-thaw behaviour



## ROBUST MATERIAL

- pH stability (1-13)
- Less sensitive to variations



## SUSPENSION STABILISER

- Reduce bleeding and segregation
- Stop phase separation





# Product catalogue

		Valida L, 3%	Valida S171C, 3%
Applications	1. Ordinary concrete	✓	
	2. Ultra-high performance concrete	✓	
	3. Smart dynamic concrete	✓	✓
	4. Self-compacting concrete	✓	✓
	5. Lightweight/Insulating concrete		✓
	6. Concrete admixtures	✓	
	7. Other	✓	✓
Application method	1. Concentration	3%	3%
	2. Low shear dispersion	✓	✓
	3. Dosage*	0.3%-0.5% on cement *can vary upon application	

Valida 3% consists of: 3% active fibres suspended in water

## DISPERSION GUIDANCE

A good dispersion of Valida is critical to utilise its full benefits. We recommend introducing Valida with water, HRWR and/or other VMAs and start mixing before adding the cementitious binder and the aggregates.

## VALIDA PACKAGING

Valida,3% standard packaging size is 1000 kg.

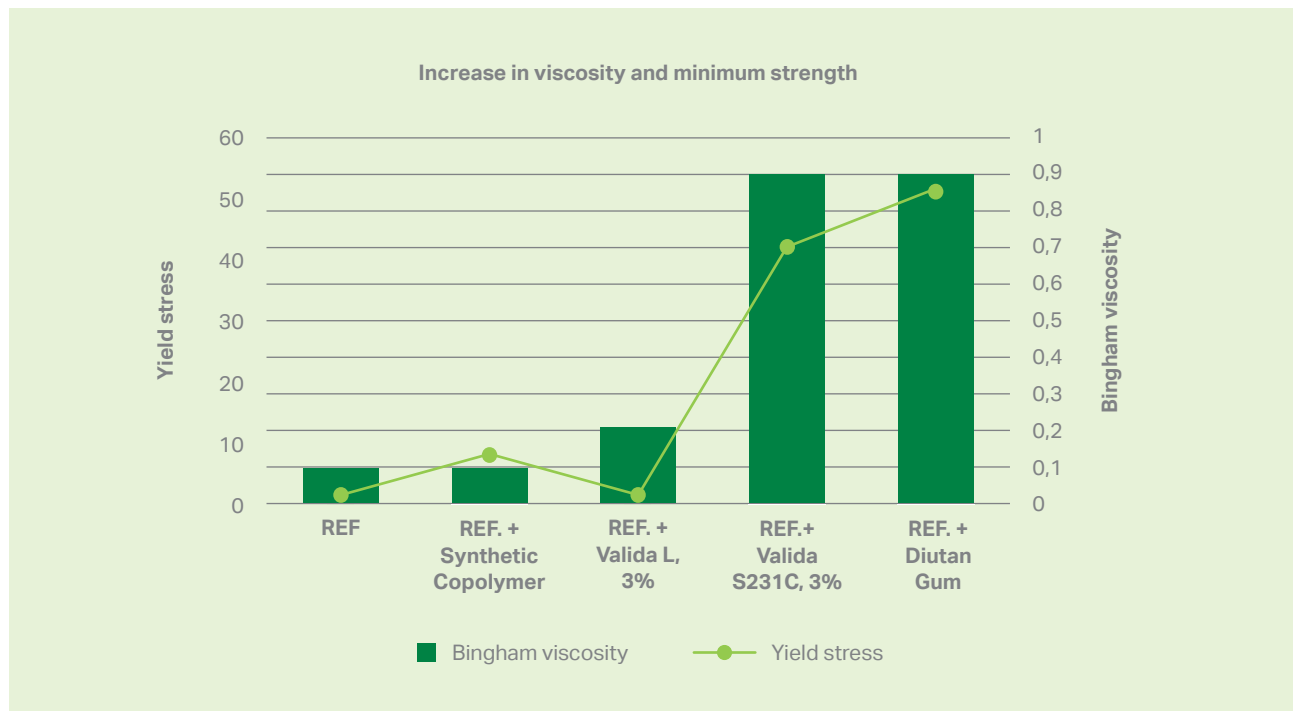
\*Alternative packaging sizes are available.





## APPLICATION EXAMPLES:

Valida improves viscosity in Self-compacting concrete with limited impact on yield stress.



\*Note: Yield stress and viscosity vary based on dosage; the yield stress can be seen as a finite stress that is needed before the fluid flows.

Valida increases the viscosity while having lower impact on yield stress compared to incumbent materials.

## APPLICATION EXAMPLES: VALIDA IN SMART DYNAMIC CONCRETE

Smart Dynamic Concrete (SDC) shows self-compacting properties at lower amounts of cementitious material without undesirable effects.

## STABILITY: SEGREGATION AND BLEEDING

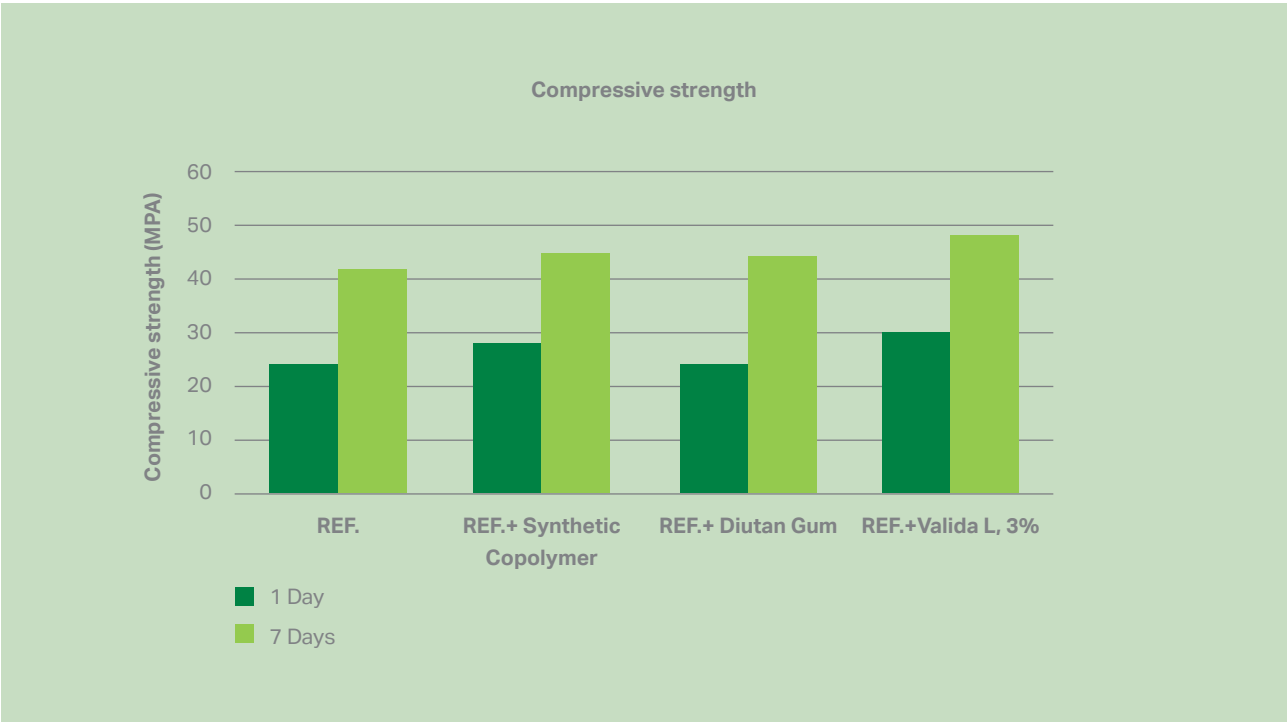
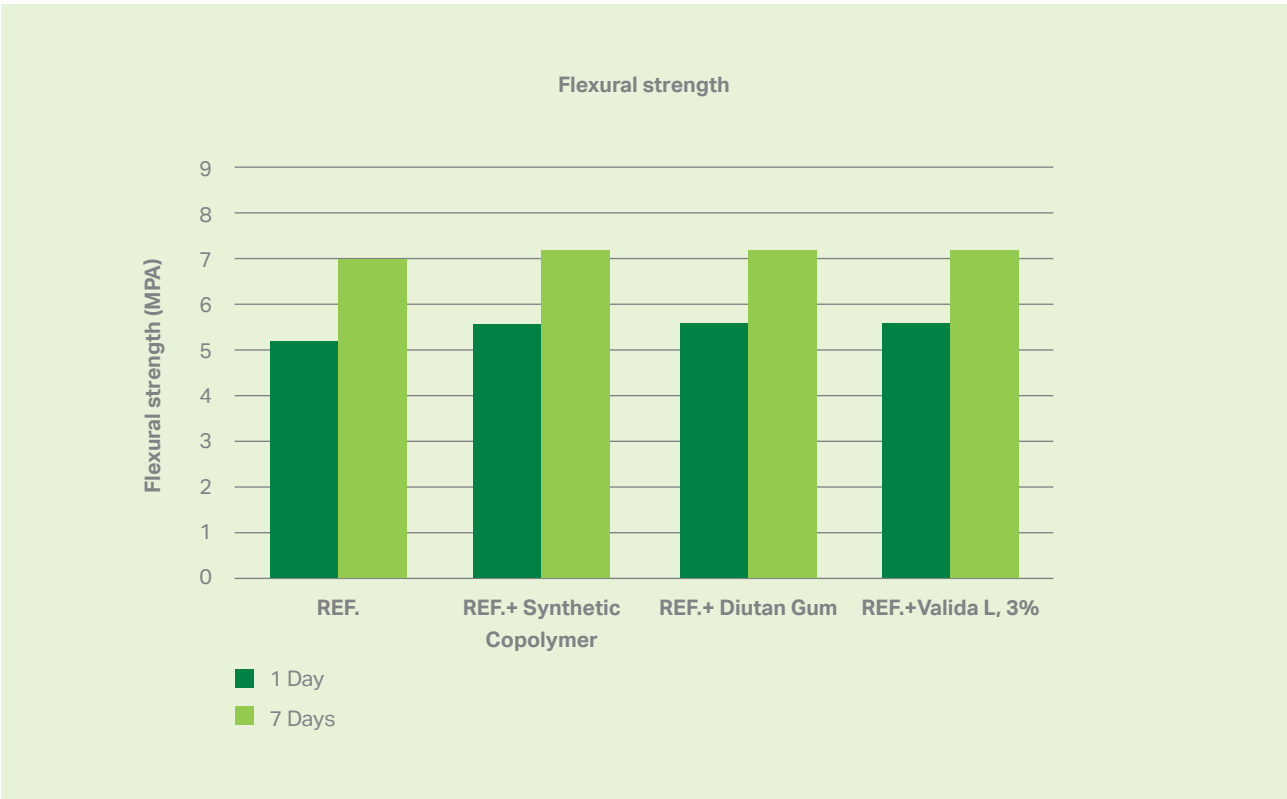
Valida improves aggregate stability, reduces slump flow, segregation and bleeding phenomena.

Valida can replace incumbent synthetic viscosity modifier additives at similar solid content dosage, also improving the sustainability of the concrete.



# VALIDA AS AN EARLY-STAGE STRENGTH ENHANCER

Valida reinforces concrete and significantly improves compressive and flexural strength.



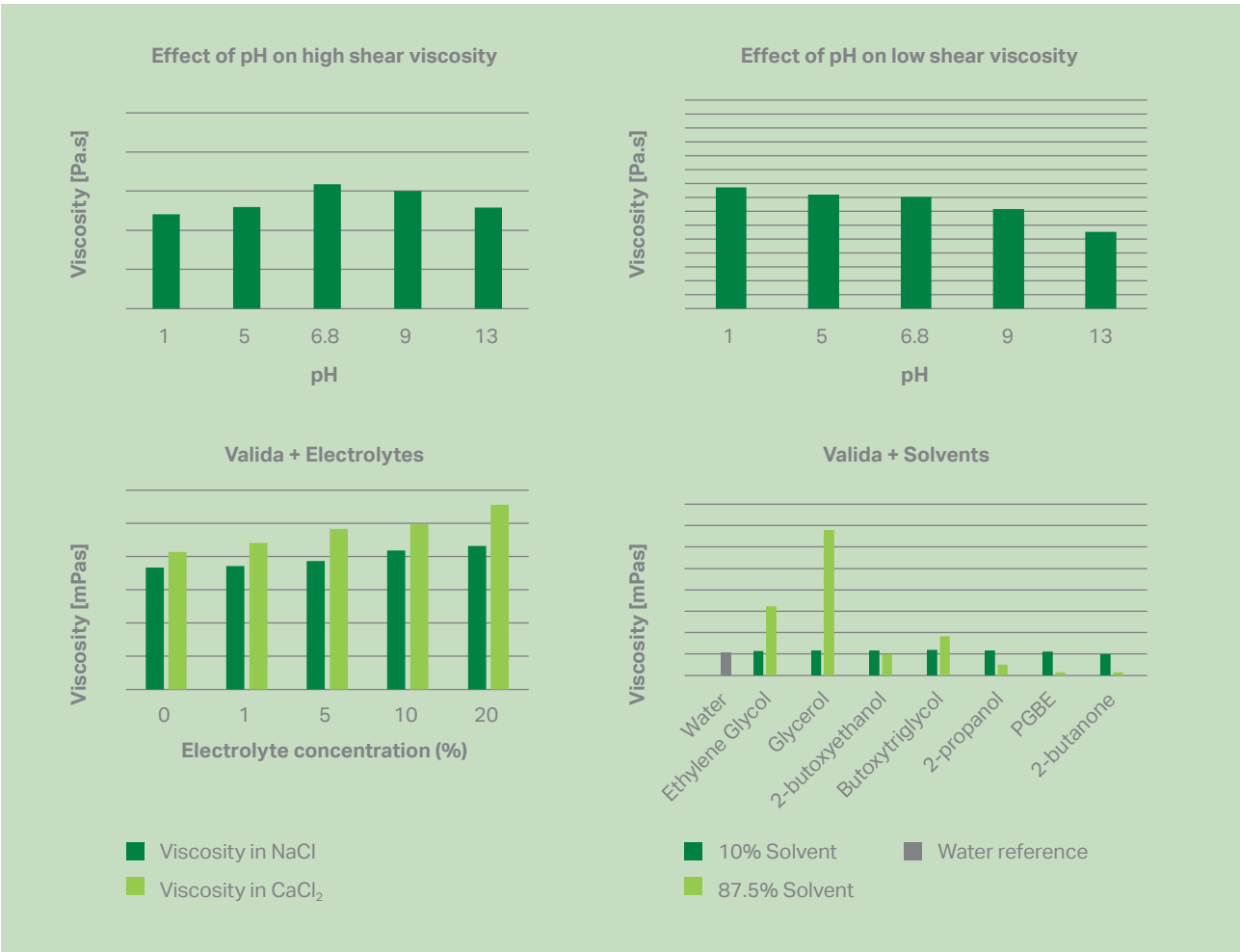






# VALIDA'S ROBUST PERFORMANCE

Valida delivers robust performance in high electrolyte concentrations, pH and (largely) polar solvents.









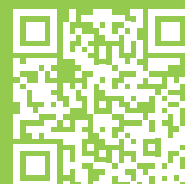
## Working together for sustainable impact

We believe the best ideas and innovations spring from diverse partnerships, so we invite you to help us accelerate meaningful change. We are committed to investing resources to develop applications which progress the commercial realisation of the unique benefits that Valida has to offer.

### CONTACT DETAILS TO REQUEST A SAMPLE

Sappi Biotech  
*sappi.com/valida*  
*valida@sappi.com*





*For further product details please scan the QR code.*

# Sappi unlocks the power of trees to make every day more sustainable

Sappi is a leading global provider of powerful everyday materials made from woodfibre-based renewable resources. As a diversified, innovative and trusted leader focused on sustainable processes and products, we are building a more circular economy by making what we should, not just what we can.

Our raw material offerings (such as dissolving pulp, wood pulp and biomaterials) and end-use products (packaging and speciality papers, graphic papers, casting and release papers and forestry products) are manufactured from sustainably-sourced production facilities powered with bio-energy. Together with our partners, Sappi will continue to build a thriving world by acting boldly in support of the planet, people and prosperity.