

Valida

Coatings, from
chemical to natural



sappi

From chemical to natural

Across the globe, paint and coatings manufacturers and formulators are seeking natural raw materials that can guarantee the quality and the performance of paints while meeting the new stringent VOC regulations in place to ensure a safer environment for final consumers. 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 a 100% natural, biodegradable and sustainable material. In paints and coatings applications, Valida performs as a multifunctional stabiliser with low impact on viscosity in a wide range of coating applications, 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.



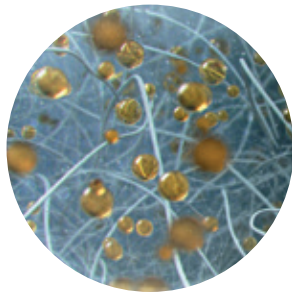
Natural, biodegradable.



WHAT IS VALIDA?

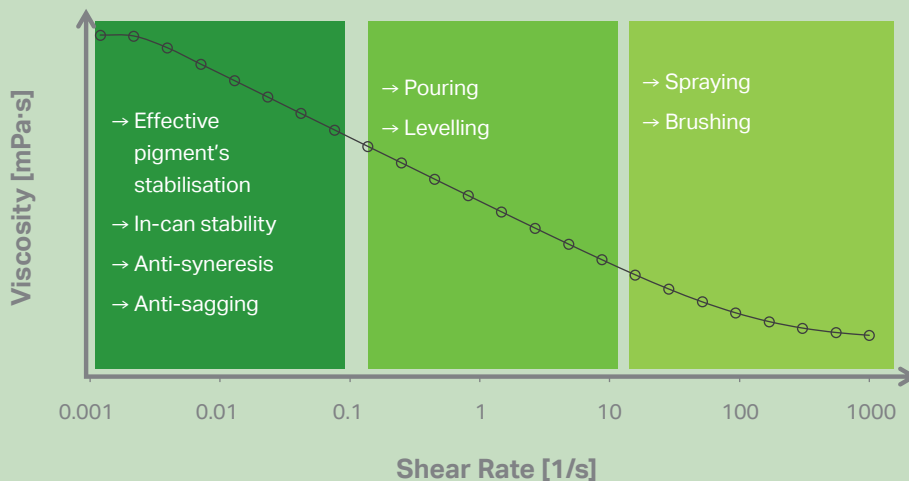
Valida contains the smallest component of cellulose – cellulose fibrils.

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.

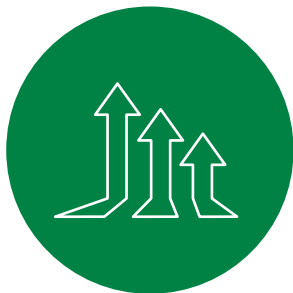


VALIDA'S RHEOLOGY PROPERTIES

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.



Valida in paints and coatings – Performance from a natural material



STABILISE FORMULATION WITHOUT THICKENING

- Anti syneresis
- Improved pigments stabilisation
- No phase separation



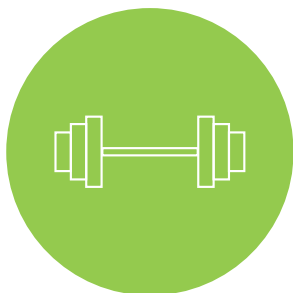
RHEOLOGY CONTROL

- High viscosity at rest
- Highly shear thinning
- Synergy with additional rheology modifiers



THIXOTROPIC RHEOLOGY

- Viscosity recovery
- Anti-sagging
- Sprayable



REINFORCING AGENT

- Mechanical strength
- Chemical resistance
- Barrier properties





Product catalogue

*More grades are available upon request.

		Valida Grade			
		S191C		S231C	
Features	1. 100% natural	✓		✓	
	2. Bio-based	✓		✓	
	3. No VOC	✓		✓	
	4. Network formation	✓		✓ ✓ *	
	5. Water retention	✓		✓ ✓ *	
	6. Highly shear thinning	✓		✓	
	7. Thixotropic	✓		✓	
	8. Film former	✓		✓	
	9. Stain resistance	✓		✓	
Applications	1. Pigments slurry	✓		✓	
	2. Waterborne decor coating	✓		✓	
	3. Waterborne wood coating			✓	
	4. Stone paint/Multicolour paint	✓			
	5. Insulation coating	✓		✓	
	6. Decorative plaster	✓		✓	
	7. Silica paint - silicate mineral paint	✓		✓	
	8. Thick coating layer			✓	
	9. Intumescent/Fire-resistant coating	✓		✓	
Stability	1. Temperature	✓		✓	
	2. Electrolytes	✓		✓	
	3. pH 1 - 13	✓		✓	
	4. Good freeze-thaw stability	✓		✓	
	5. Polar solvents	✓		✓	
	6. Polyurethane dispersions	✓		✓	
	7. Vinyl acetate emulsions	✓		✓	
	8. Acrylic emulsions	✓		✓	
	9. Epoxy emulsions	✓		✓	
Application method	1. Concentration	3%	8%	3%	8%
	2. Low shear dispersion	✓		✓	
	3. High shear dispersion		✓		✓
	4. Dosage	6 - 13%	2 - 5%	6 - 13%	2 - 5%

✓ ✓ * More suitable

Valida enhances quality and sustainability in waterborne interior wall paint

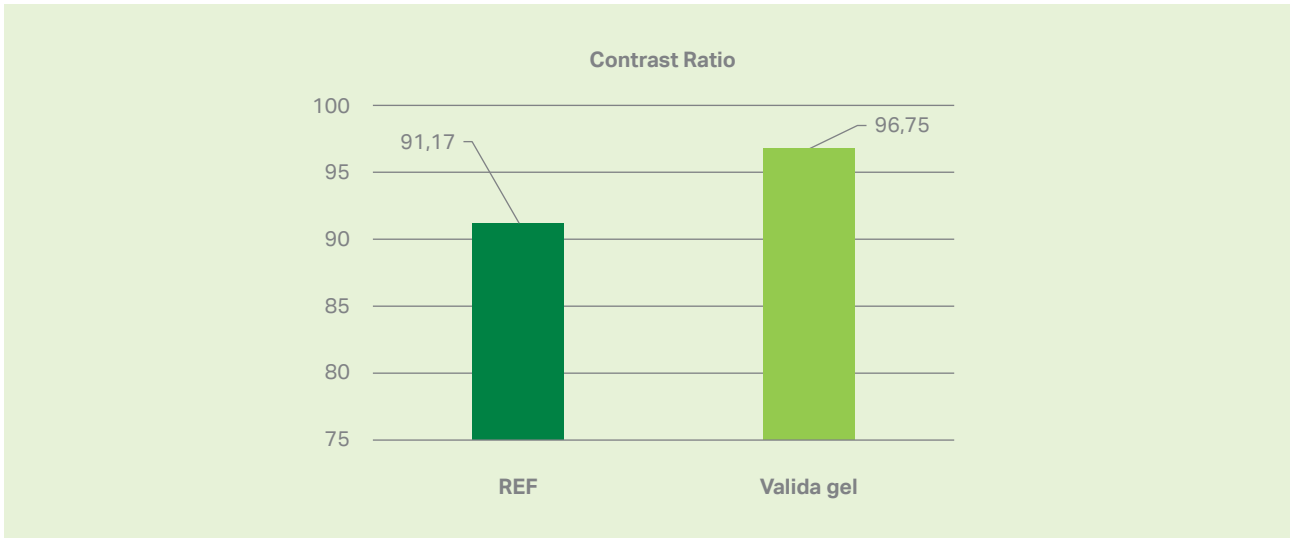


	Raw Material	Functionalities	Control		Valida gel		Valida paste	
			wt.%	gram	wt.%	gram	wt.%	gram
Grinding Stage	DI Water	Water	26.19	130.97	18.64	93.2	23.64	118.22
	Tamol 1124	Dispersing additive	0.39	1.97	0.39	1.97	0.39	1.97
	Tego Foamex 810	Defoamer	0.15	0.74	0.15	0.74	0.15	0.74
	Proxel GXL	Biocide	0.14	0.69	0.14	0.69	0.14	0.69
	AMP95	pH modifier	0.20	0.99	0.20	0.99	0.20	0.99
	Natrosol 250 HR	Cellulosic thickener	0.40	1.99	0.20	0.99	0.20	0.99
	Valida	Bio-based multifunctional additive	0.00	0.00	8	40	3.00	15.02
	Ti Pure R706	Pigment	7.40	36.99	7.40	37.02	7.40	37.02
	Omyacarb 6-FL	Extender	44.39	221.94	44.42	222.09	44.42	222.09
	Minex 3	Extender	4.93	24.66	4.94	24.68	4.94	24.68
DI Water	Water	5.20	26.01	5.20	26.02	5.20	26.02	
Let down Stage	Ucecryl B3030	Styrene acrylic binder	9.86	49.32	9.87	49.35	9.87	49.35
	Tego Foamex 810	Defoamer	0.15	0.74	0.15	0.74	0.15	0.74
	Acrysol RM 825	Associative thickener	0.60	2.99	0.30	1.48	0.30	1.48
	Total		100.00	500.00	100.00	500.00	100.00	500.00

Note. Valida gel consists of 3% cellulose and 97% water. Valida paste consists of 8% cellulose and 92% water. Valida is added in the grinding stage.

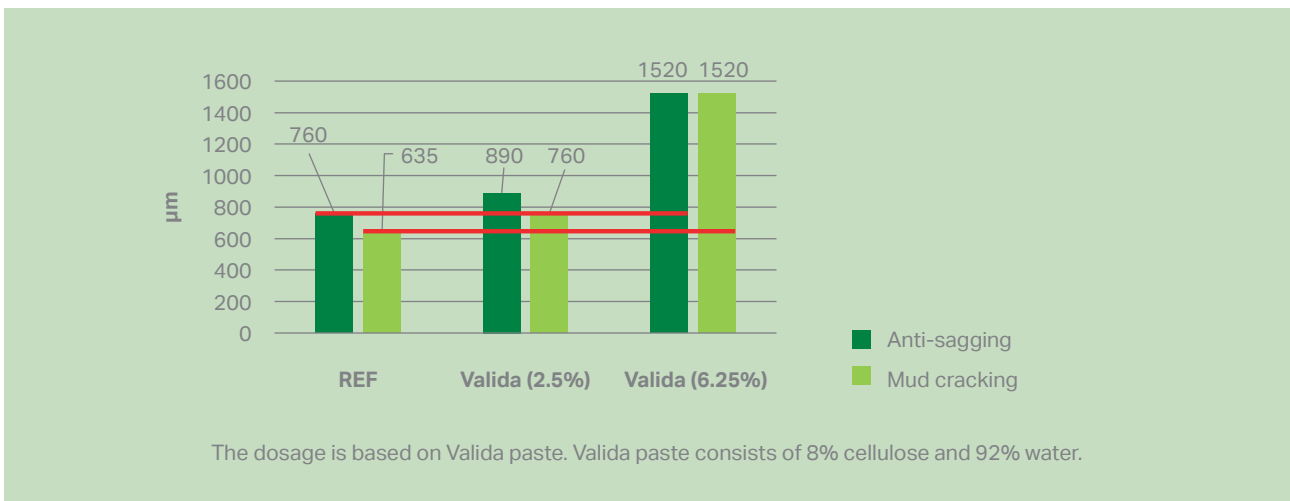
CONTRAST RATIO/HIDING POWER BOOSTER

Valida's 3D network acts as a stabiliser and spacing agent (physical spacer) for particles, improving pigments suspension resulting in an increased contrast ratio/hiding power of the paint.

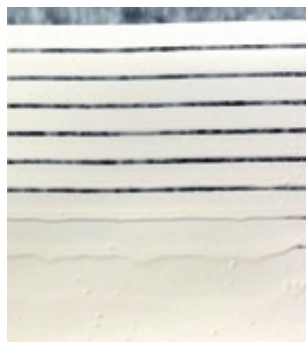


ANTI-SAGGING AND MUD CRACKING

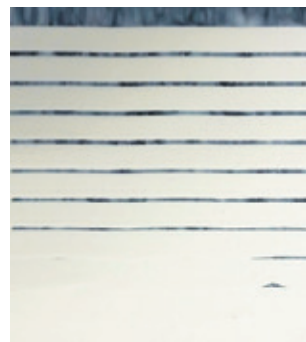
The quick recovery of viscosity of Valida improves the anti-sag performance without impacting levelling.



Control



Valida-based formulation



Note: Internal method based on ASTM D4400-99.



MUD CRACKING RESISTANCE

The 3D fibre network and the high water retention of Valida reduces or eliminates mud cracking.



Note. The dosage is based on Valida paste, Valida paste consists of 8% cellulose and 92% water.

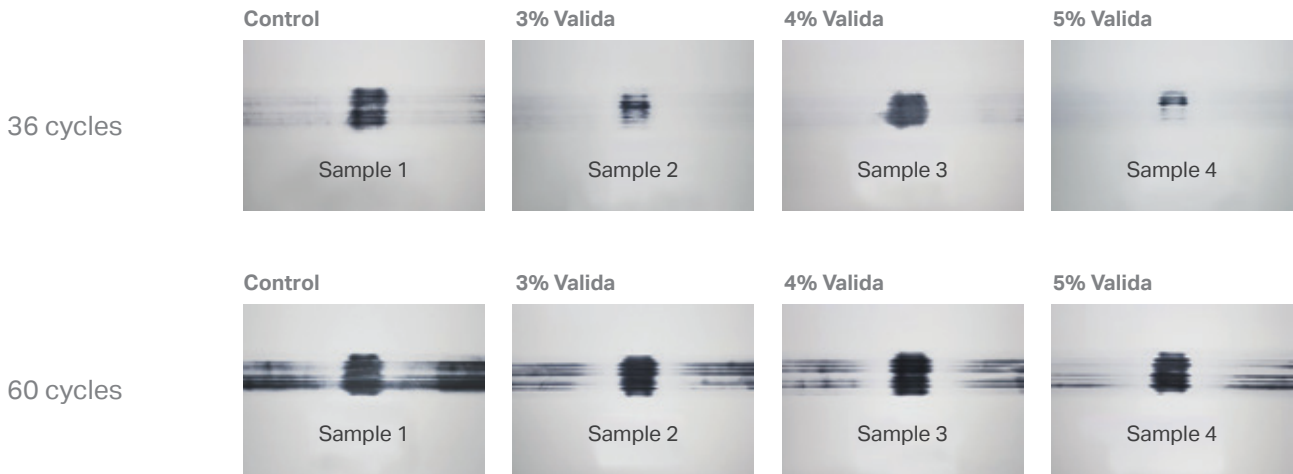
IN-CAN STABILITY



Stability test: 6 months under 40 °C. The dosage is based on Valida paste. Valida paste consists of 8% cellulose and 92% water.

WET SCRUB RESISTANCE

Valida based formulations show increased wet scrub resistance compared to the control.



Note. The dosage is based on Valida paste. Valida paste consists of 8% cellulose and 92% water.

STAIN RESISTANCE

Fourteen common household chemicals were tested and the Valida formulated paint showed improved overall resistance, especially towards vinegar, acid solution, ketchup and coffee. Test standards: ASTM DR1308.

Households chemicals	Control	Valida formulation
Vinegar	○	●
Acid solution, 30 wt.% HNO ₃ in water	○	●
Ketchup	○	●
Coffee	○	●

● Positive ○ Negative

EXAMPLE ON COFFEE STAIN RESISTANCE



Valida in a waterborne exterior wall paint

In exterior waterborne paints, Valida can replace a synthetic additive such as HEUR (Hydrophobically modified Urethane), while optimizing anti-sagging and leveling, enhancing dry coverage ratio, improving in-can stability as well as dry scratch resistance.

VALIDA CONTROLS RHEOLOGY

System	Brookfield (cP)	Stormer (KU)	ICI Cone and Plate (Poise)
	Low Shear Viscosity	Medium Shear Viscosity	High Shear Viscosity
Control formula with HEC (Hydroxyethyl cellulose) and HEUR	4,435 cP@ 20 rpm, spindle 03	93	0.725
Valida as the replacement for HEUR*	3,790 cP @ 20 rpm, Spindle 03	88.9	0.648

* The dosage of Valida paste is 6.25%. The detailed formulation is available upon request.

PHYSICAL PROPERTIES

Formulations were applied onto a primed dry wall using a block applicator to achieve 2 mils dry film thickness. Anti-sag index: based on ASTM D4400-99.

System	Gloss (60°/85°)	Sag resistance	Dry to touch (Min)	Dirt pickup using carbon oil slurry
Control	3.1/5.1	24 no drip	13	CTR
Valida as a replacement for HEUR	3.0/4.2	24 no drip	13	Comparable to CTR



Valida in waterborne primer coating

In primer coating formulations, Valida allows the paint to achieve increased mechanical strength without sacrificing the flexibility of the coating.

Tests	ASTM Standard	Control	1.25% Valida*	2.5% Valida*	4% Valida*
Dry film thickness (mils)	ASTM D7091	2.6	2.7	2.6	2.7
Crosshatch adhesion	ASTM D3359 (5B = no adhesion lost)	5B	5B	5B	5B
MEK double-rubs (chemical resistance)	ASTM D5402	60	55	75	80
Pencil hardness ¹ (Scratch hardness)	ASTM D3363	B	H	H	H
Reverse impact (Lb.inch)	ASTM D4226	30	30	30	40
Mandrel bend – flexibility (mm) ²	ASTM D522	7	7	5	3
T-Bend test ³	ASTM D4145	6T, no crack	5T, no crack	5T, no crack	5T, no crack

¹ Pencil hardness 2H>H>F>HB>B>2B>3B.

² The lower the number the better the flexibility.

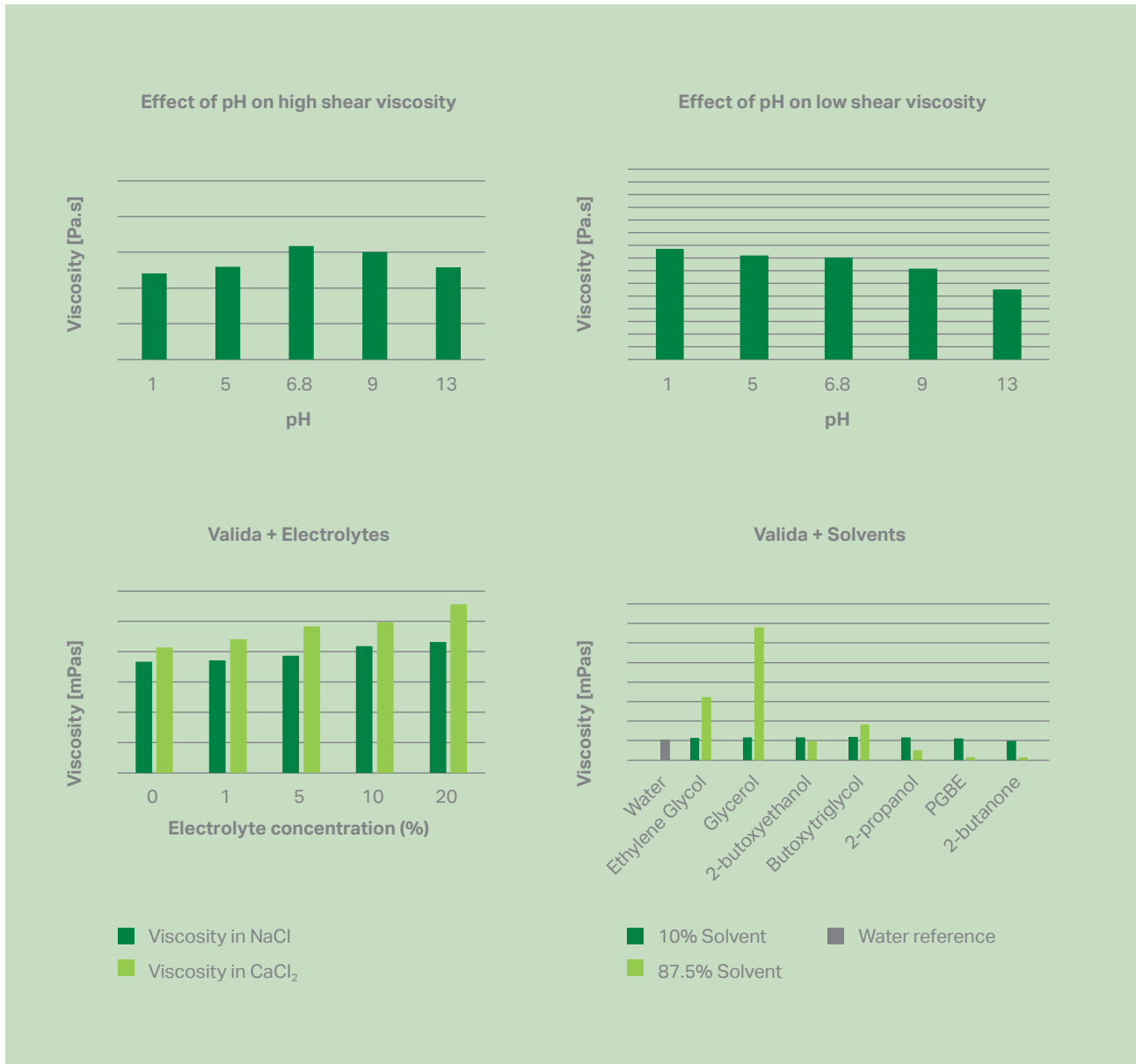
³ The lower the T-Bend rating the greater the flexibility.

* The dosage is based on Valida paste. Valida paste consists 8% cellulose and 92% water.



VALIDA DELIVERS ROBUST PERFORMANCE

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





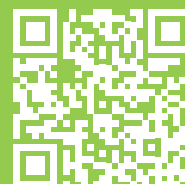


Working together for sustainable impact

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.