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# Fibrillated cellulose in fabric care

The natural structuring agent

# Sappi

Building a thriving world

sappi

# Sappi serves the world through headquarters in four key regions:

- Europe
- North America
- Southern Africa, and
- Asia.

We are powered by the expertise of

**11,235**

people worldwide.

# Product portfolio

We are a diversified, innovative and trusted leader that unlocks the power of renewable resources for use in:

Pulp


Graphic papers

Timber products


Packaging papers

Biomaterials

Speciality papers

# Biomaterials

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Our bioproducts are sustainable alternatives extracted from wood to reduce the need for fossil-based materials used in everyday products.

**Applications:**

- Cosmetics
- Packaging
- Animal feed
- Homecare products
- Fertiliser
- Adhesives
- Sweeteners
- Dust suppression
- Paints and coatings
- Polyols
- Resins
- Concrete admixtures
- Pigments and inks
- Automotive components
- Road stabilisation

Our fibrillated cellulose, lignin, furfural and other biomaterials have a wide variety of applications and uses.

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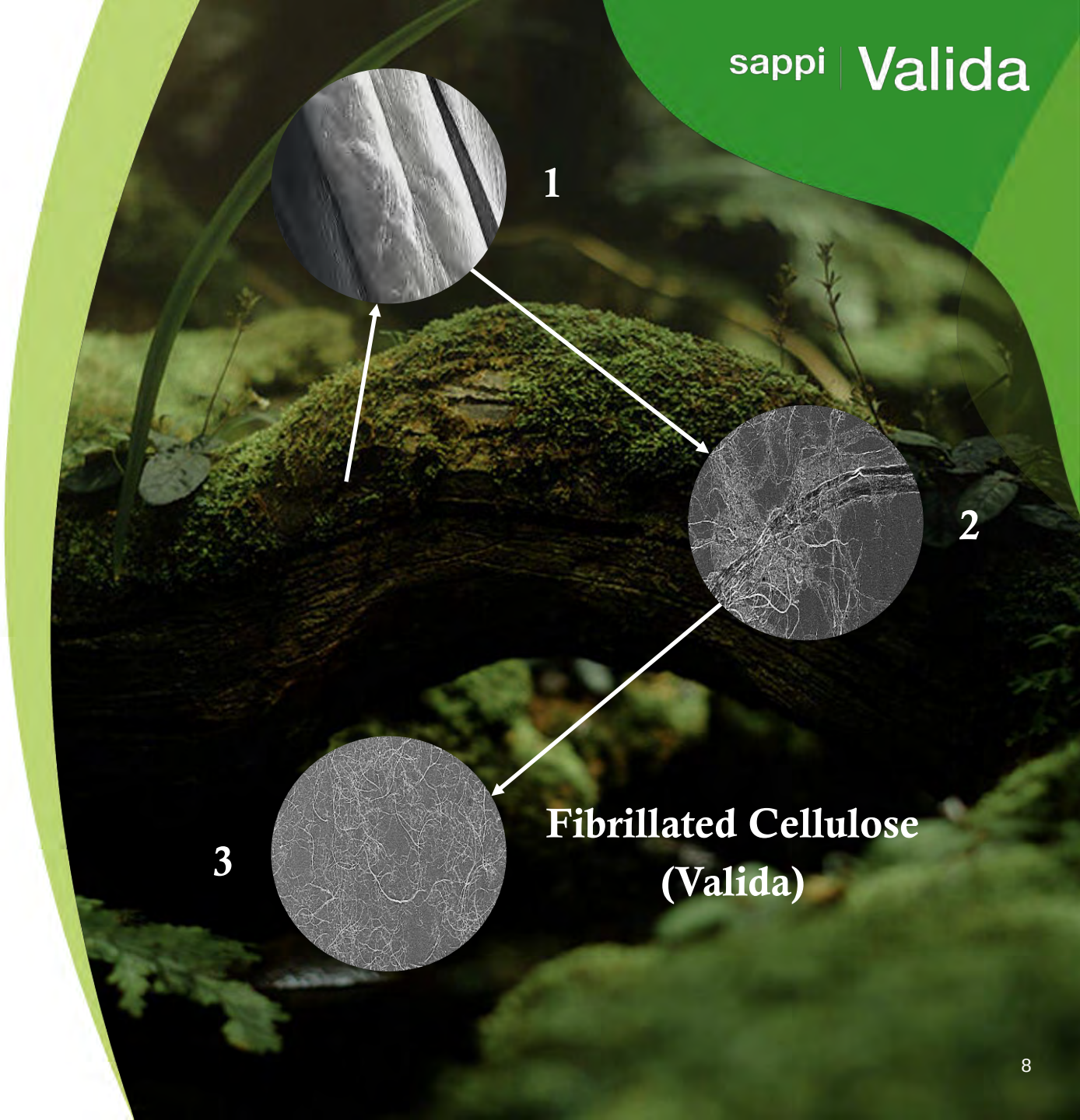
# Fibrillated cellulose in fabric care

The natural structuring agent

# How familiar are you with fibrillated cellulose products?

# Fibrillated Cellulose (Valida)

Fibrillated cellulose is natural cellulose that is mechanically processed to its smallest component, cellulose fibrils.



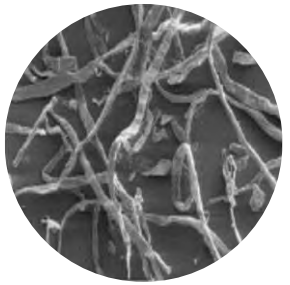
# Sustainability meets performance


‘3D Spider Web’-network fills space in formulation, structuring* ingredients in the process.

***Structuring: improving formulation stability through the physical occupation of space.**

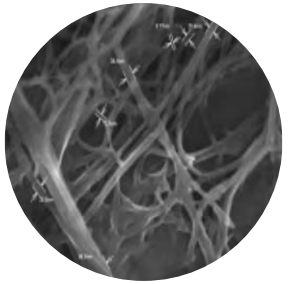
# What's the difference?

Grinding to cellulose powder



Mechanical fibrillation to
fibrillated cellulose.

No chemical treatment!



Acid treatment to micro-crystalline cellulose

# Product features

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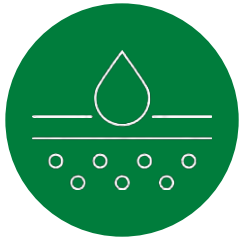
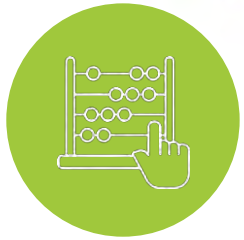


Cellulose &
Cellulose Gum

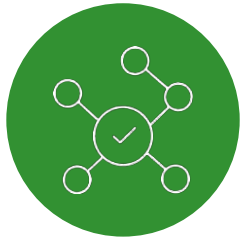
OECD 301B
readily biodegradable

Certified safe



Easy to process

Renewable source



Proven synergy with
common ingredients

Commercially proven
performance

Industrial supply
capacity

# Valida product portfolio

| Trade Name | INCI | Preservative | Fibre content (%) | pH Compatibility | Cationic Compatibility |
|---|---|---|---|---|---|
| **Valida D+** | Cellulose, Cellulose Gum | / | 95% | 3,5 – 11 | Case by case |
| **Valida CG3** | Cellulose, Cellulose Gum | 1,2-benzisothiazol-3(2H)-one; 1,2-benzisothiazolin-3-one | 3% | 3,5 – 11 | Case by case |
| **Valida S231 H3** | Cellulose | Sodium Benzoate; Citric Acid | 3% | 1 - 13 | Compatible |

# 3% fibres in water (‘Valida gel’)

# Valida free-flowing powder

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# Valida, the natural structuring agent in fabric care

# Key benefits

## Ingredient structuring

Encapsulates fragrances

Ester quats – Conditioning agents

## Additive boosting

Opacifiers

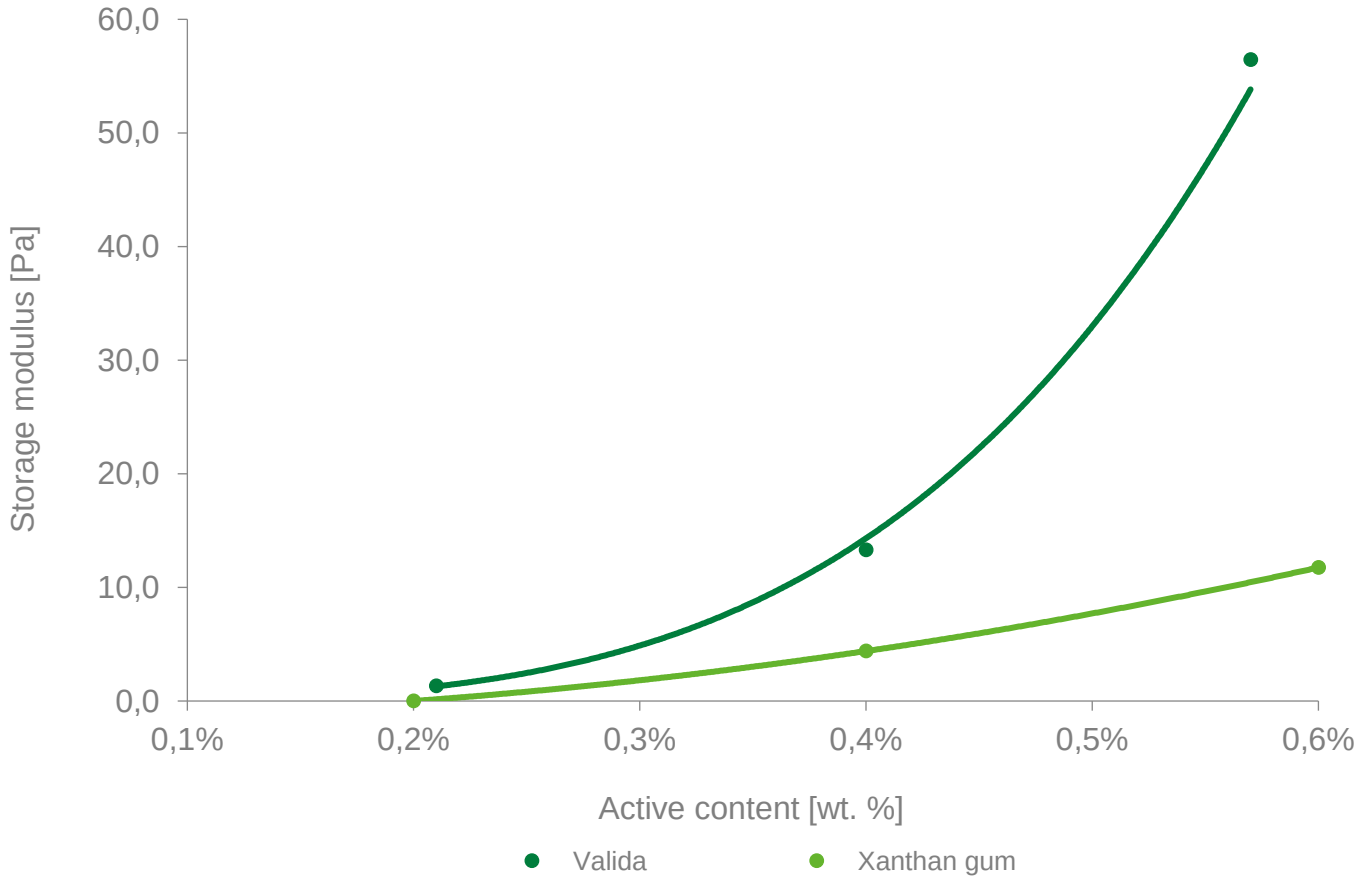
Thickeners

## Encapsulated fragrance longevity

Improved release profile

Long-lasting freshness

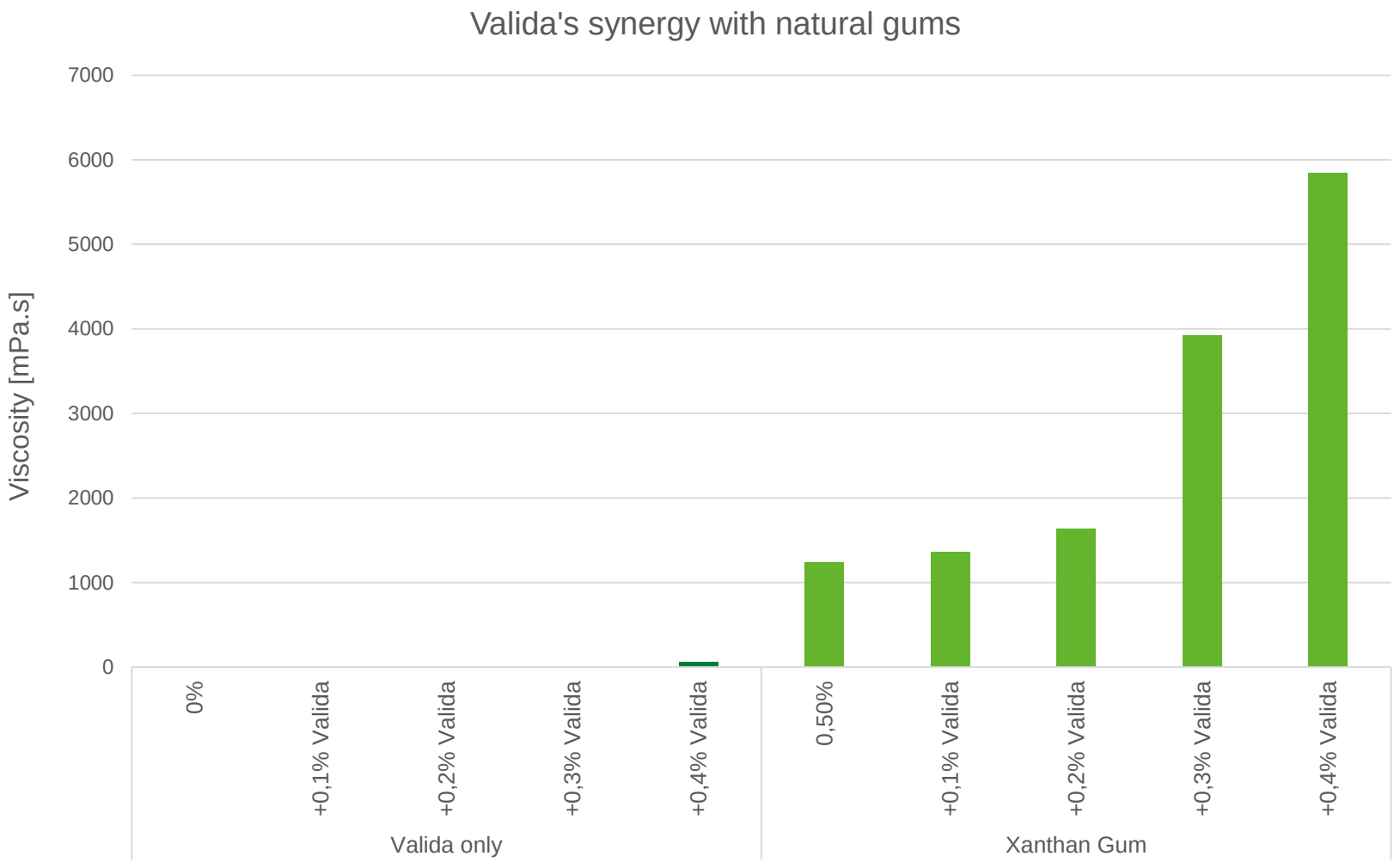
# Key benefit – Ingredient structuring




**Valida has a significantly higher structuring capability than natural gums.**

Valida is opaque and structures ingredients while maintaining the pour point.

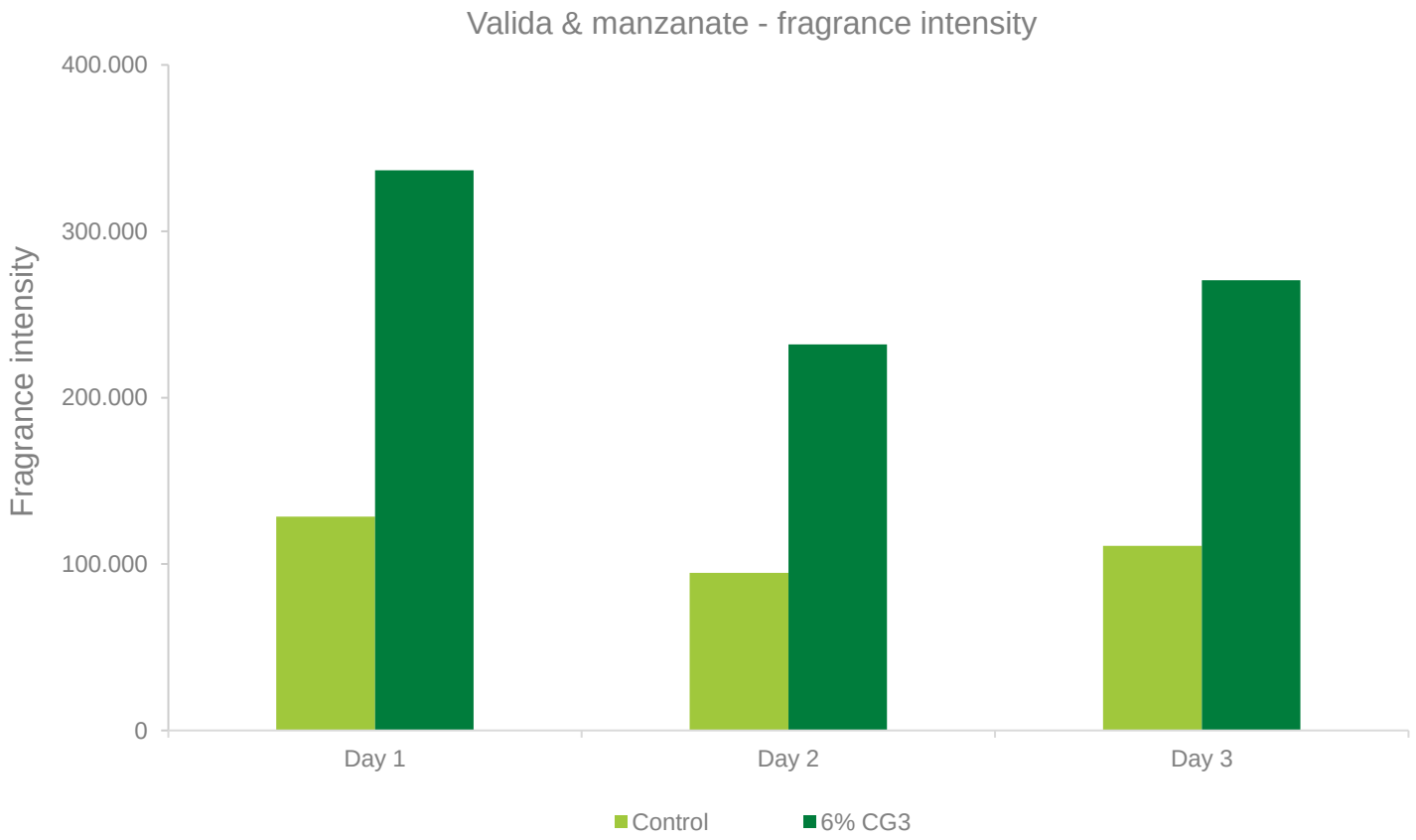
# Key benefit – Additive boosting




**Valida does not build viscosity by itself, but boosts the viscosity of thickeners.**

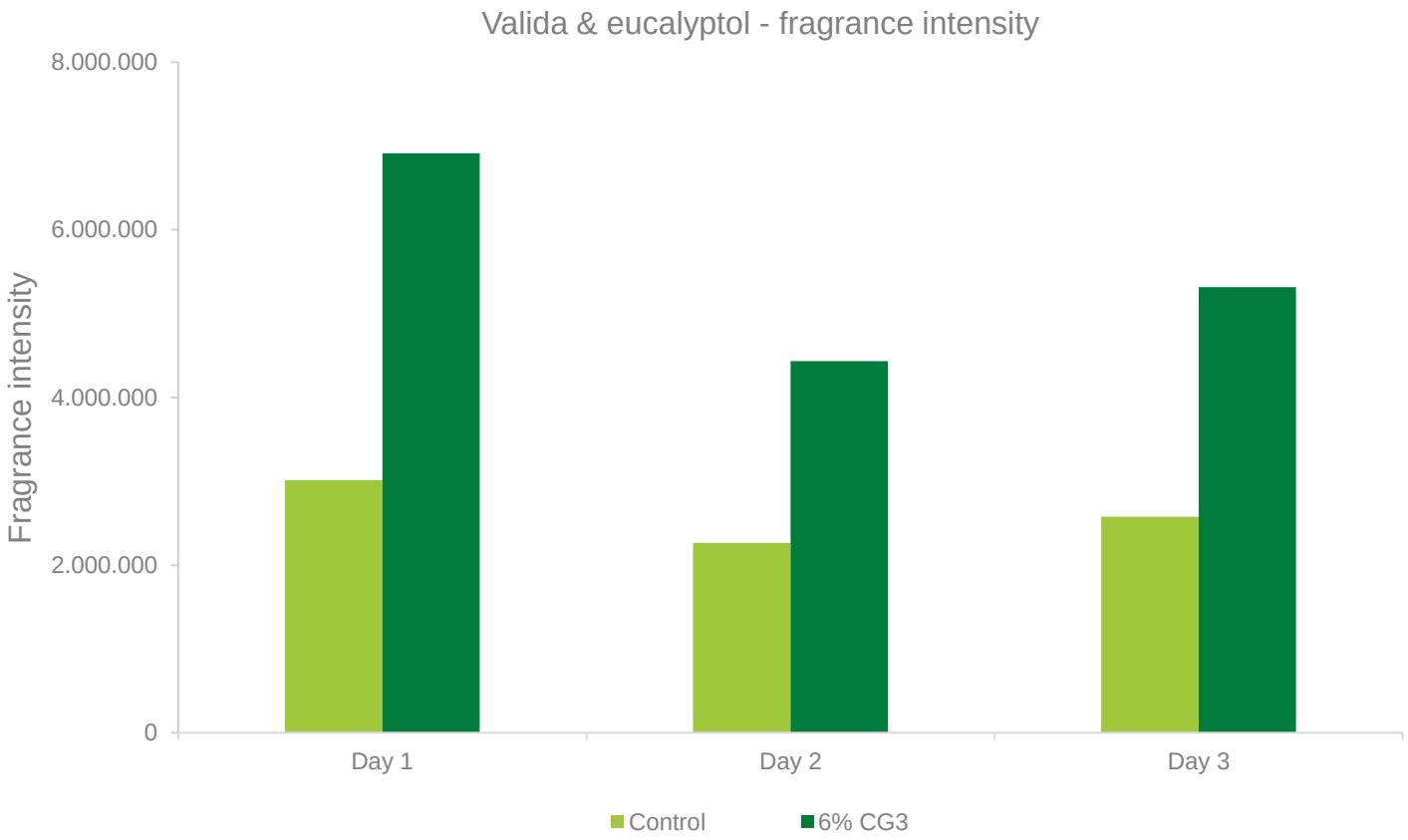
# Do you use encapsulated fragrances in your products?

# Key benefit – Encapsulated fragrance longevity



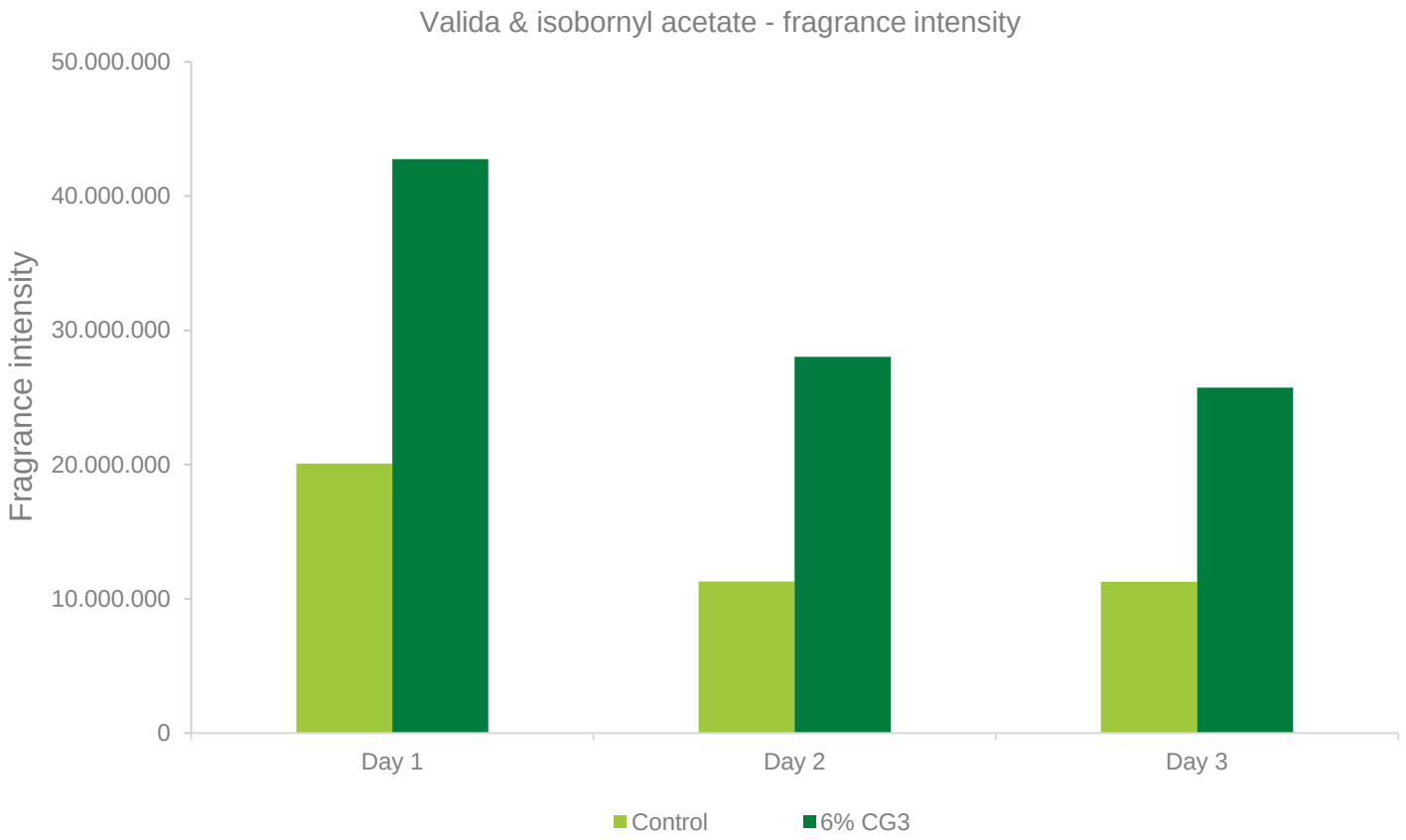

**At recommended dosage, Valida enhances the fragrance intensity of encapsulated fragrances, post-deposition on fabric.**

# Key benefit – Encapsulated fragrance longevity




**At recommended dosage, Valida enhances the fragrance intensity of encapsulated fragrances, post-deposition on fabric.**

# Key benefit – Encapsulated fragrance longevity




**At recommended dosage, Valida enhances the fragrance intensity of encapsulated fragrances, post-deposition on fabric.**

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# Other applications

# Laundry detergent sheets

## Leave no trace

Natural binder – alternative to PVOH

OECD 301B readily biodegradable

## Boost your clean

Higher cleaning ingredient binding power results in better clean

# Easy to spray with excellent vertical cling

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# Eliminate ‘shake before use’ on probiotic cleaner labels.

# Valida in personal care

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## Hair

Foam boosting
Natural formulation structuring
Suspend emulsions & actives

## Sun

SPF boosting
Improved skin feel and spreading
Sprayable if desired

## Skin

Improved sensory
Structures emulsions and actives
Reduced soaping

# Guidelines and formulations

# Formulation guidelines

## 1. Order of addition

Add & disperse Valida according to guidelines before adding other ingredients.

## 2. Avoid foaming

Valida structures foam, causing the formula to float.

## 3. Dosage

**0.18%** ‘Active fibers’ = **6%** ‘As supplied’.

# Formulation: Liquid laundry detergent
## Soap, alcohol ethoxylate, LABS & SLES-based

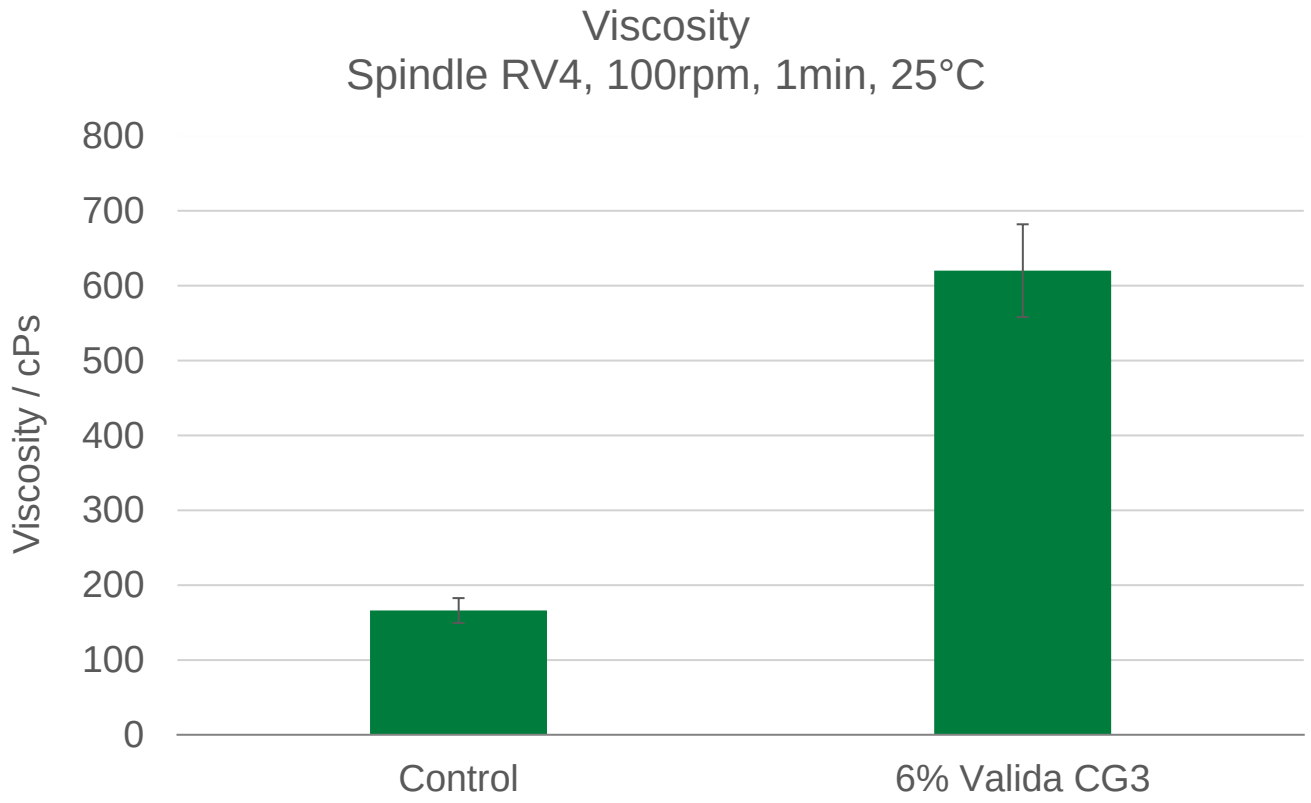
| Trade Name | Chemistry | Function | Control % w/w | Valida CG3 % w/w |
|---|---|---|---|---|
| Deionized Water | Aqua | Carrier | 57.95 | 51.95 |
| **Valida CG3** | Aqua, Cellulose, Cellulose Gum | Structurant | - | 6.00 (0.18% fibers) |
| NaOH 40% Solution | Aqua, Sodium Hydroxide | Neutraliser | 3.75 | 3.75 |
| Lauric Acid | Lauric Acid | Soap, Anti-foam | 5.00 | 5.00 |
| Nansa SS 55 | Linear alkyl benzene sulfonate, Sodium salt | Surfactant | 9.50 | 9.50 |
| Centradet N237/9 | C12-13 alcohol ethoxylate, 7EO | Surfactant | 11.00 | 11.00 |
| Propylene Glycol | Propylene Glycol | | 5.00 | 5.00 |
| Sodium Laureth Sulfate (70%) | Sodium Laureth Sulfate | Surfactant | 7.00 | 7.00 |
| Fragrance | Fragrance | Fragrance | QS | QS |
| Euxyl PE9010 | Phenoxyethanol, Ethylhexylglycerin | Preservative | 0.80 | 0.80 |

**Method:**

1. Add Valida CG3 to water and stir with dispersing blade for 30min at 1,000rpm
2. Heat water phase to 50-60 C.
3. Whilst stirring slowly, add NaOH followed by lauric acid and stir for 1 hour, maintaining temp. at 50-60C, to allow for saponification.
4. Add Nansa SS 55 and mix until homogenous, followed by alcohol ethoxylate.
5. Adjust pH to 8.5 – 9.0 with 50% citric acid solution.
6. Add propylene glycol and SLES and mix until uniform (at least 30 min).
7. Cool batch to room temperature.
8. Once cooled, add fragrance and preservative and balance water if required.

# Viscosity: Liquid laundry detergent

## Soap, alcohol ethoxylate, LABS & SLES-based




**Valida's structuring properties improved the formulation's viscosity by 373%.**

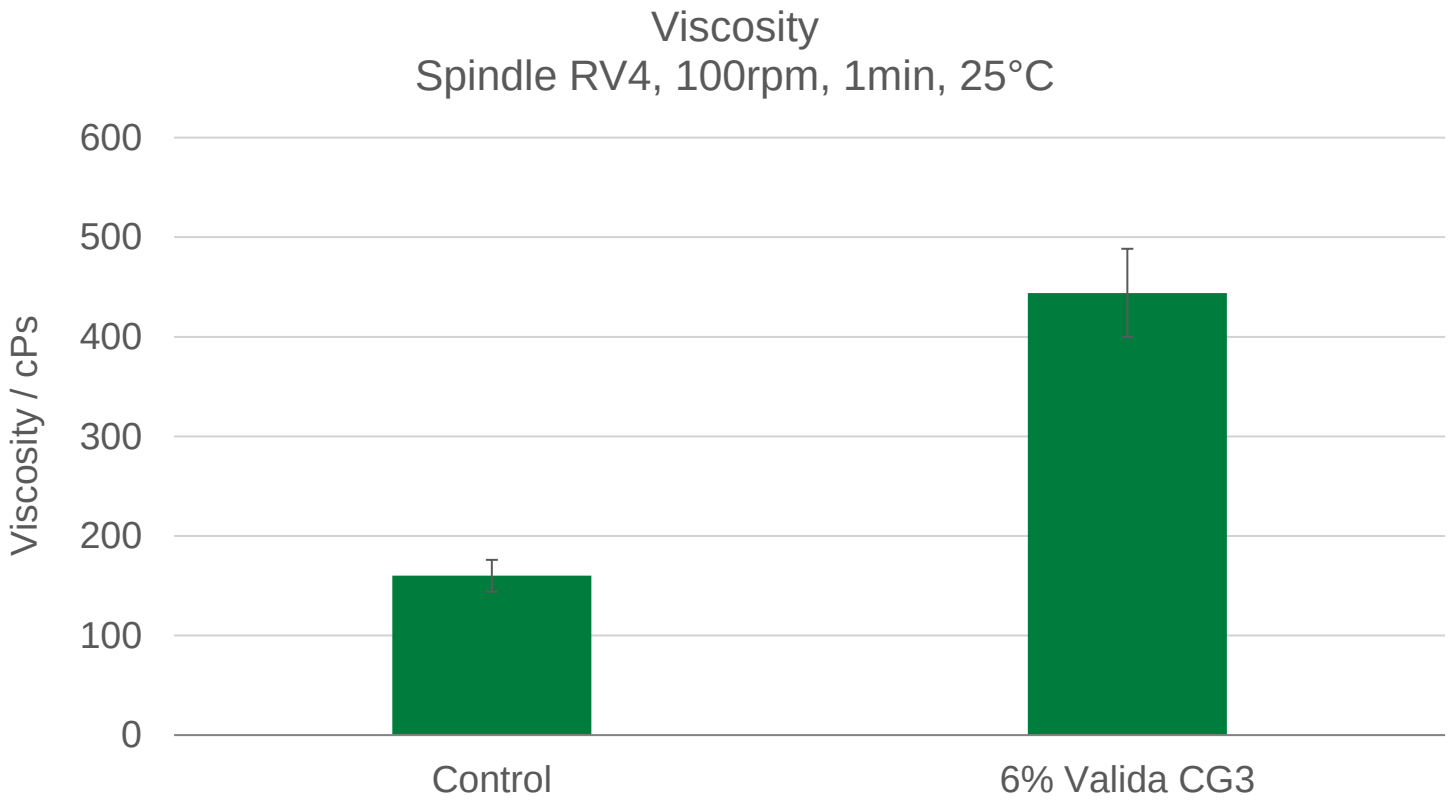
# Formulation: Liquid laundry detergent
## Alcohol ethoxylate & APG-based

| Trade Name | Chemistry | Function | Control % w/w | Valida CG3 % w/w |
|---|---|---|---|---|
| Deionized Water | Aqua | Carrier | 65.70 | 59.70 |
| Valida CG3 | Aqua, Cellulose, Cellulose Gum | Structurant | - | 6.00 (0.18% fibers) |
| Propylene Glycol | Propylene Glycol | | 4.00 | 4.00 |
| Sodium Citrate | Sodium Citrate | Chelating Agent | 3.00 | 3.00 |
| ECO Brij L6L | Ethoxylated fatty lauryl alcohol | Surfactant | 20.00 | 20.00 |
| Natrasense AG-810 | Alkyl Polyglucoside | Surfactant | 6.00 | 6.00 |
| Folco Smartcaps Bio Deterga | | Encapsulated Fragrance | 0.50 | 0.50 |
| Euxyl PE9010 | Phenoxyethanol, Ethylhexylglycerin | Preservative | 0.80 | 0.80 |

**Method:**

1. Add Valida CG3 to water and stir with dispersing blade for 30min at 1,000rpm.
2. Add remaining ingredients in order with overhead stirring, dissolving each before adding the next ingredient.
3. Adjust pH to 6.5-7.0 with NaOH (<7 required for encapsulated fragrance).

# Viscosity: Liquid laundry detergent
## Alcohol Ethoxylate & APG-based




**Valida's structuring properties improved the formulation's viscosity by 277%.**

# Structuring encapsulated fragrance:
## Liquid laundry detergent alcohol ethoxylate & APG-based

### Negative control

Fragrance encapsulates have fully sedimented

Image taken after 12 weeks at room temperature.

### 6% Valida CG3 (as supplied)

Fragrance encapsulates remain structured in formula

Image taken after 12 weeks at room temperature

# Valida in fabric care

Valida CG3 structures formulations, boosts the efficiency of additives and enhances the release profile of encapsulated fragrance top notes for longer-lasting fabric freshness.

# Valida lab services

Scan the QR code to request expert lab support in your formulation journey with Valida.

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# Thank you

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