

# Improving the 3 pillars of suncare formulation with one ingredient

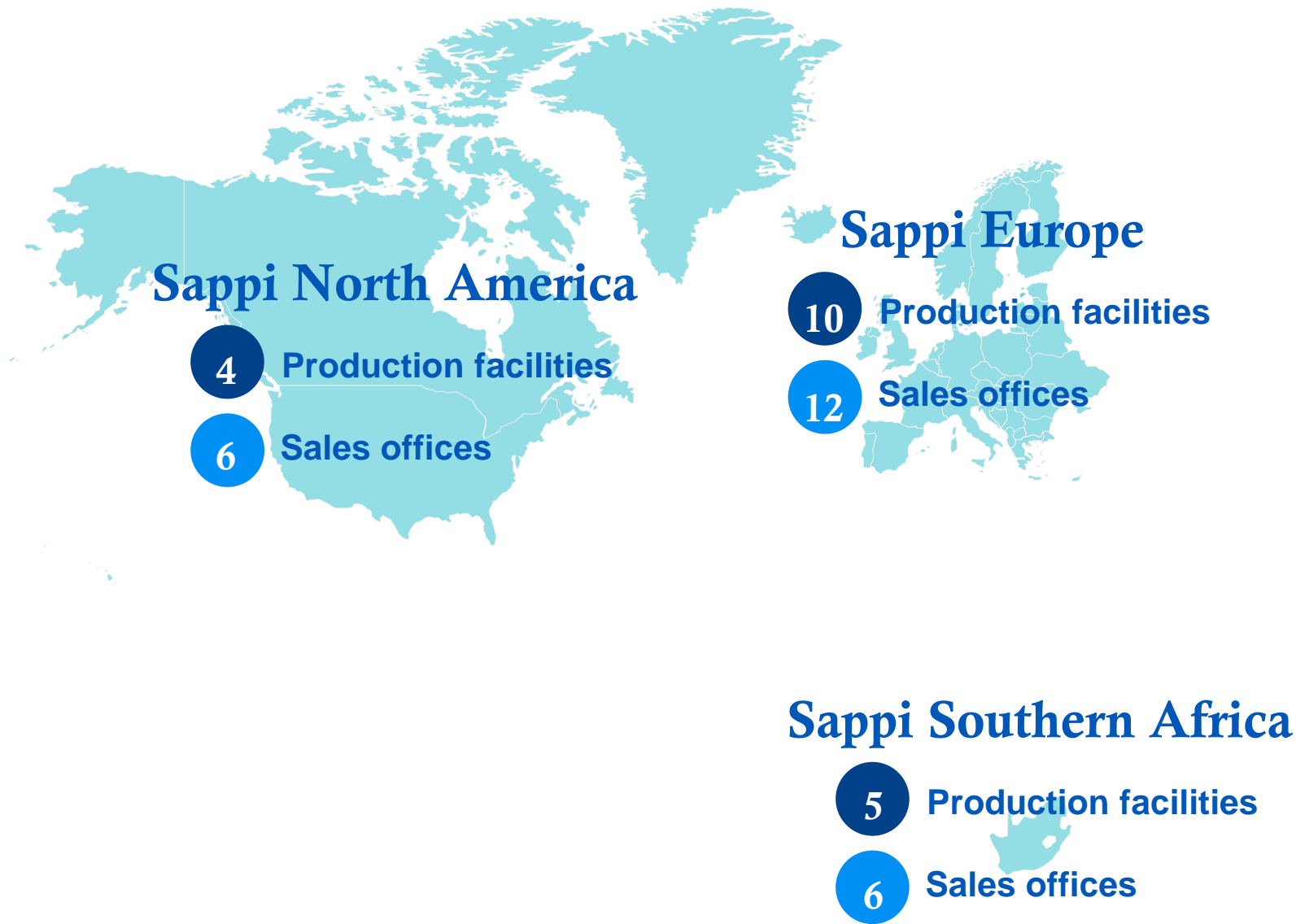
Sustainable Cellulose  
by Sappi

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Ellie Copsey / Personal Care Applications Specialist  
Sappi Biotech  
11 March 2025



# At a glance Sappi group

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**12,495**  
employees in 20 countries

customers in over  
**150** countries

## Sappi Trading

- 8 Sales offices
  - Bogotá
  - Hong Kong
  - Johannesburg
  - México City
  - Nairobi
  - São Paulo
  - Shanghai
  - Sydney



Global Sappi commitment to reduce carbon emissions by 41% per tonne by 2030



54% of Sappi global energy used is renewable clean energy; 76% from own biomass



Sappi Maastricht Mill switched to e-boiler – saving 22,000 tons of Carbon from the atmosphere



Achieved Ecovadis rating of platinum in 2024, 100/100 in environmental score!

*‘We grow wood-fibre responsibly.’*





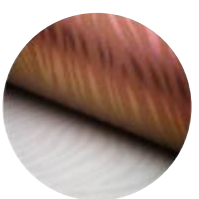
# Unlocking the power of trees

**Packaging and  
Specialty Papers**  
Product Packaging,  
Technical papers

**Graphic Papers**  
Commercial Print,  
Publishing

**Casting and Release Papers**  
Textures for materials,  
Functional films, Automotive wraps

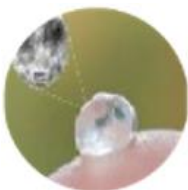
**Xylitol, Furfural, and  
Chemicals from Sugars**  
Low-calorie Sweetener,  
Toothpaste, Recyclable Plastics



CELLULOSE

HEMICELLULOSE

LIGNIN



**Verve**  
Textiles, Cellophane,  
Pharmaceuticals

**Valida Fibrillated Cellulose**  
Rheology modifier, Stabiliser,  
Foam booster, SPF booster,  
Sensory enhancer

**Chemicals from Lignin**  
Binding Agent, Dispersion  
Agent, Emulsion Stabiliser

# Fibrillated Cellulose - Valida

Cellulose is the most abundant organic polymer on Earth!



## Format

3% or 8% fibers in water, with preservative  
INCI: Cellulose and/or Cellulose Gum



## Sustainability

Natural  
Renewable & Biodegradable  
FSC, PEFC



## Certification

Meets Clean list criteria  
COSMOS, Leaping Bunny  
REACH Exempt, NMPA (China approved)  
ISO Naturality > 0,99



## Ease-of-Use

pH and electrolyte tolerant  
Cold processable  
Pre-Hydrated & Pumpable



# Valida is Fibrillated Cellulose

Mechanical processing → strong 3D network



No chemical treatment or modification of cellulose polymer

→ natural and **fully biodegradable**





**What sets Valida apart  
from other Celluloses?**



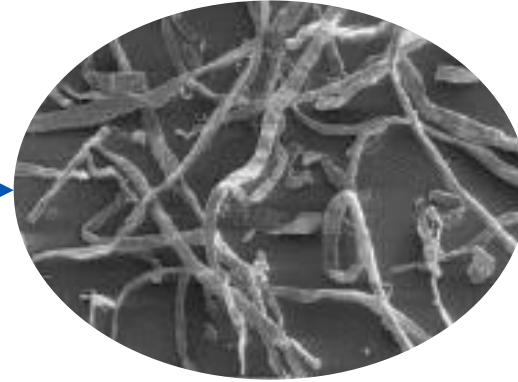
# Valida's Processing versus other Cellulose

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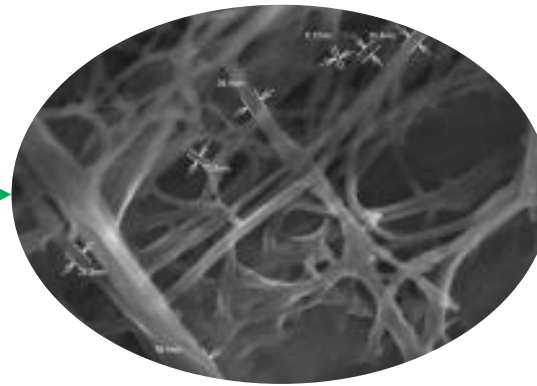


Untreated Cellulose.

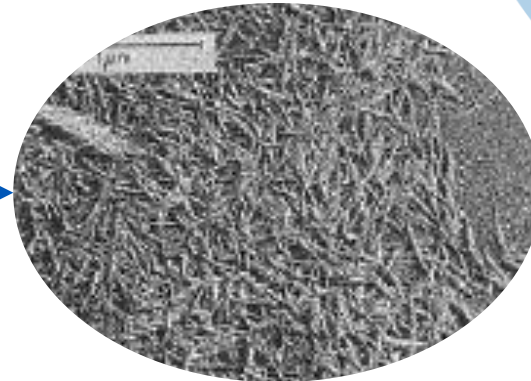
Grinding  
To Cellulose Powder.



Mechanical Fibrillation  
To Fibrillated Cellulose.  
No Chemical treatment!



Acid Treatment  
To Micro- Crystalline Cellulose.





Why Choose Valida?

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	Valida S+	Microcrystalline Cellulose	Cellulose Gum	Xanthan Gum	Carbomer
Origin	Natural	Natural	Natural	Natural	Synthetic
Charge	Non-ionic	Anionic	Anionic	Anionic	Anionic
Suspension	+++	-	-	++	+++
Stability without viscosity	+++	-	+	-	-
Thixotropic	+++	+	-	++	-
Sprayability	+++	-	-	++	-
pH tolerance	3-12	4-11	7-9	3-12	5-8
Electrolyte tolerance	+++	+	-	++	-
Skin feel	+++	+	-	-	+++



Valida in  
Hair Care

**Foam Boosting**  
**Foam Modifier (Denser, Creamier)**  
**Surfactant thickening**  
**Conditioning effect**



Valida in  
Sun Care

**Stability without Viscosity**  
**Suspension Capability**  
**SPF Boosting**  
**Sprayable**



Valida in  
Skin Care

**Emulsifier-free O/W systems**  
**Soft focus blurring effect**  
**Sensory modifier**  
**Enhanced pick up and spreadability**



# The 3 Pillars of Formulating Suncare





# Which UV filter type do you most commonly work with?

1. Chemical / organic
2. Mineral / inorganic
3. Hybrid

## 3 Pillars of Suncare Formulation



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# Improving the 3 Pillars

	SPF Efficacy	Stability	Sensory
Strategies			
Emulsion type	W/O		O/W
Reducing emulsifier level	-	-	+
Increase UV Filter Level	+	-	-
Ensuring sufficient oil level	+	+ / -	-
Addition of a thickener	+	+	-
Addition of fatty alcohols	+	+	-
Using SPF Boosters	+	+	+





# Which suncare pillar is the most challenging for you?

1. Stability
2. SPF efficacy
3. Sensory
4. Other – type into the Q&A!

# Benefits of Valida in Suncare



# Stability

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## Stability without viscosity

Particle Suspension  
Emulsion stabilisation



## Rheology

Thixotropic  
Sprayable



## Robust

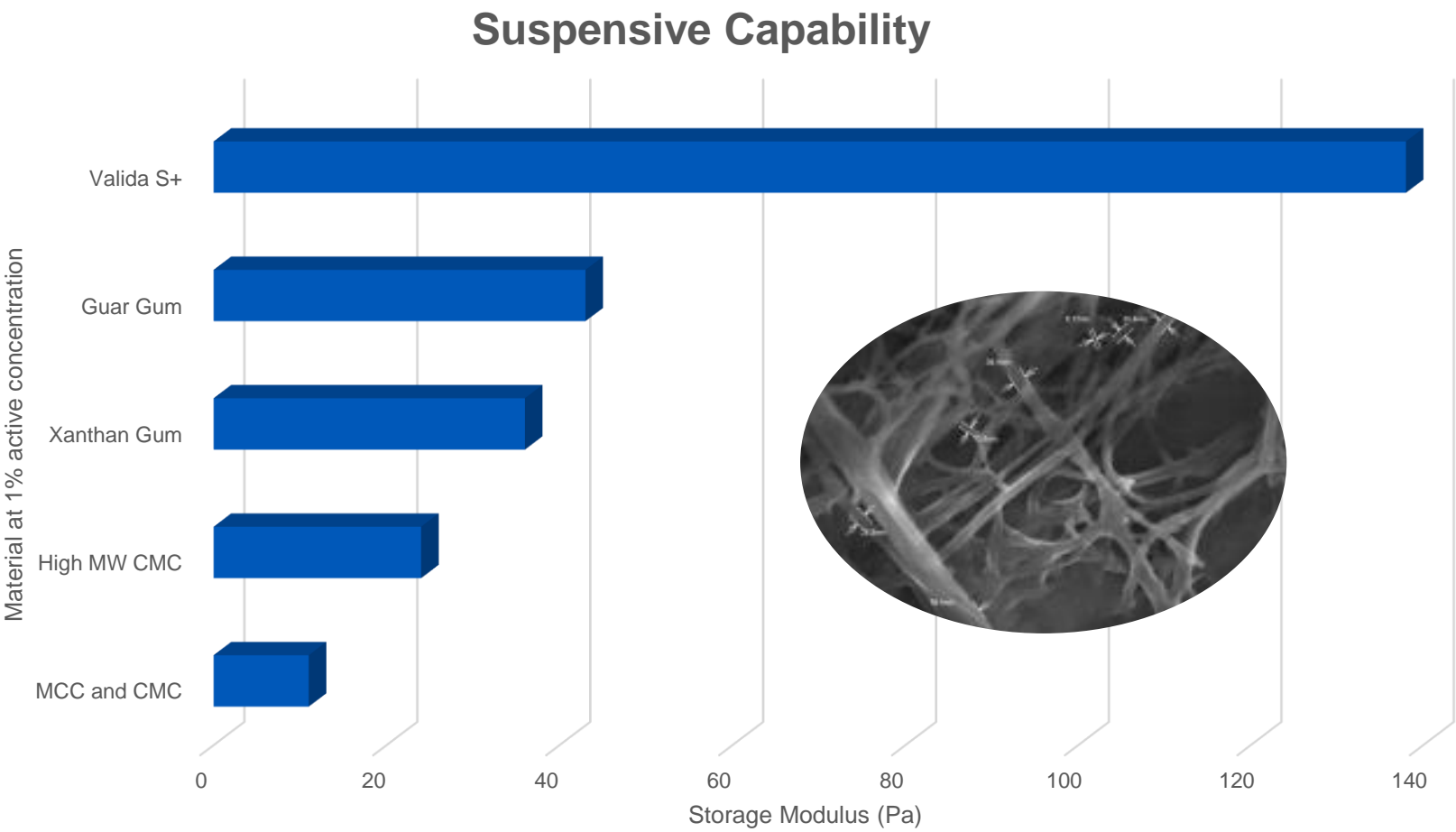
pH tolerant  
Electrolyte tolerant  
Non-ionic  
High compatibility



# What are you currently using to stabilise your SPF formulation?

1. Cellulose
2. Gums e.g. Xanthan, guar
3. Clays e.g. Bentonite, silicates
4. High emulsifier level
5. Other – type into Q+A!

# Valida's Suspensive Capabilities



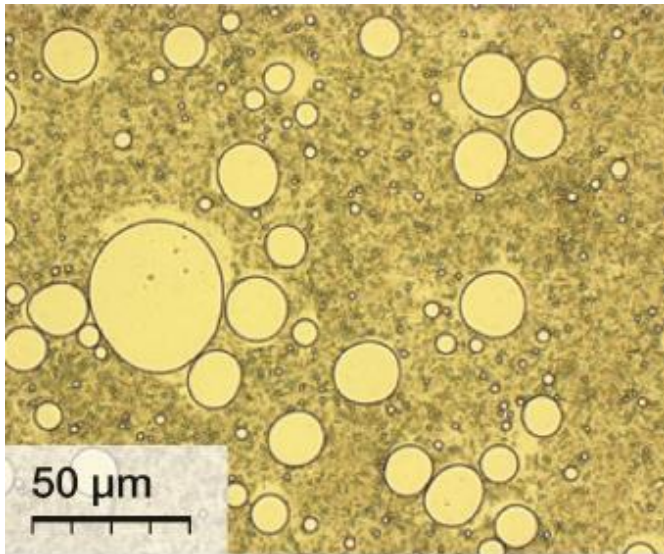
**Compared to other Celluloses on the market,  
Valida provides superior suspensive capabilities.**

Valida S+ = fibrillated cellulose (INCI: Cellulose)  
CMC = Carboxymethyl Cellulose (INCI: Cellulose Gum)  
MCC = Microcrystalline Cellulose

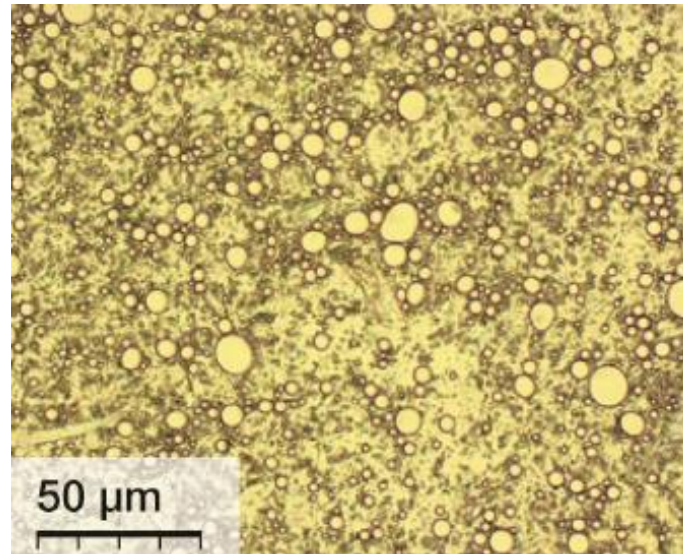
# Valida's Emulsion Stabilisation

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**5% o/w emulsion  
No Valida fibers,  
No Emulsifiers**



**5% o/w emulsion  
0,4% Valida fibers,  
No Emulsifiers**



**Valida S+ and S+ CS3 has a HLB of 4  
Works alone if HLB matched,  
or combined with xanthan gum for stabilising emulsifier-free systems independent of HLB**





### **Thixotropic Rheology**

Improved pick-up  
Enhanced spreadability  
Reduced drag  
Stability without Viscosity



### **Visible benefits**

Soft focus effect  
Reduces greasiness and shine



### **Sensorial experience**

Reduces tackiness  
Reduces pilling  
Reduces soaping

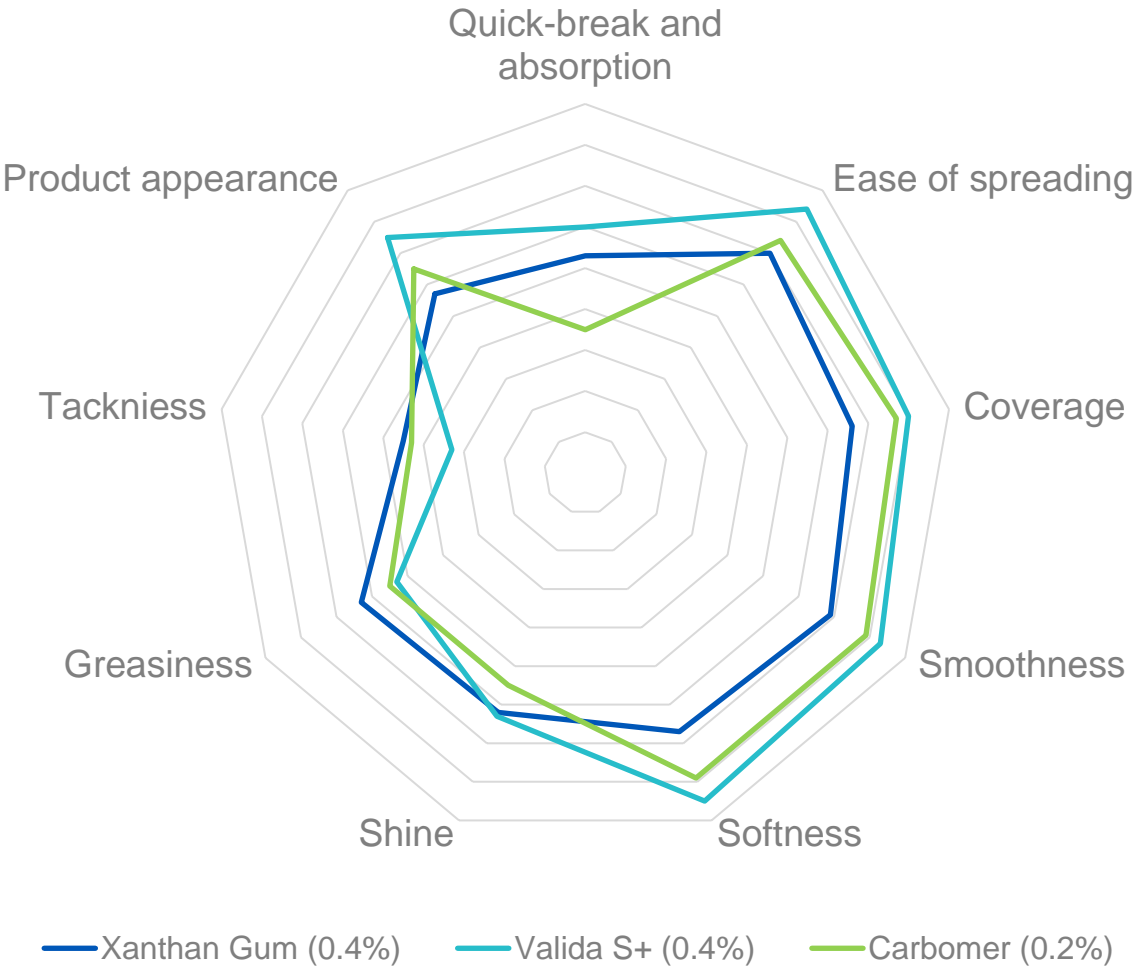


Sensory

# What are you currently using to improve the sensory of your SPF formulation?

1. Silicones
2. Sensory powders  
e.g. Boron Nitride, Silica
3. Emollient selection and loading
4. Rheology modifiers
5. Other – type into Q+A!

# Valida's Sensorial Profile





# Valida's Soft Focus Effect

Before



After



**0,4% Active Fiber Content of Valida S+ shows immediate wrinkle blurring and softening effect!**



**On request.**

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SPF  
Value



### SPF Boosting

Up to ~25% boost in SPF  
Up to ~25% boost in UVAPF  
No change to ratio



### Performance

Even distribution of UV filters  
Uniform film formation  
Improves spreadability  
Rapid recovery of film



### Sensorial improvements

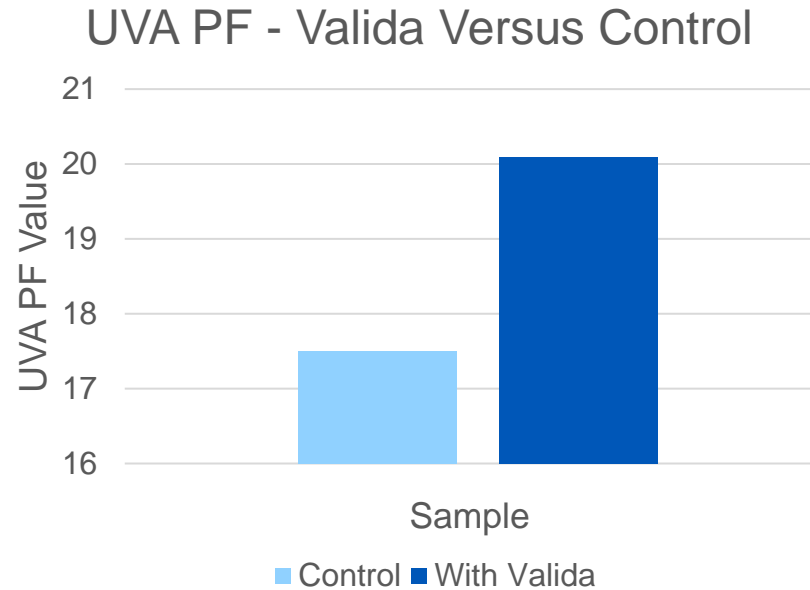
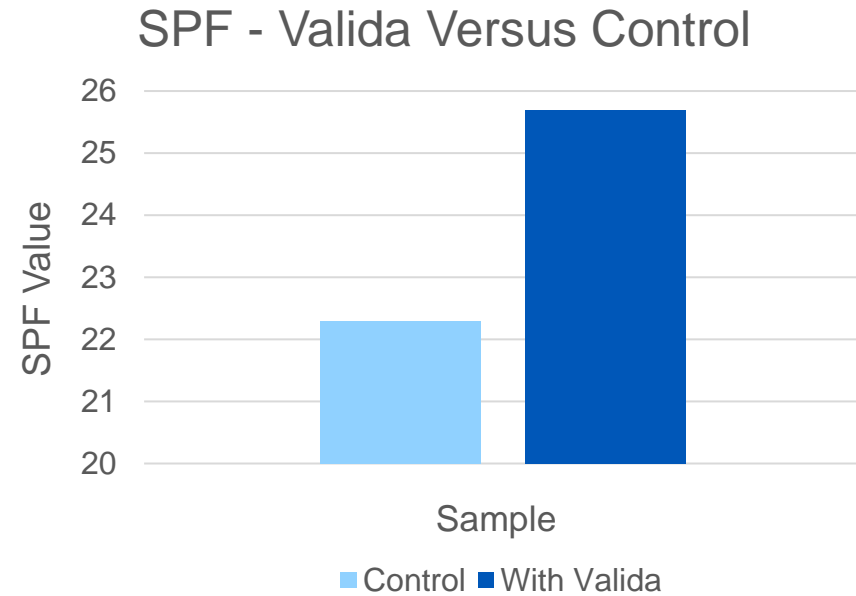
Allows for reduced filter level,  
further improving sensory  
and reducing whitening

# What are you currently using to boost your SPF value?

1. SPF boosters
2. Film-formers
3. Waxes
4. Antioxidants
5. Other – type into Q+A!



# SPF and UVAPF Boosting



**Up to 25% boost in SPF and UVAPF  
at 0.4% Active Fiber Content of Valida**

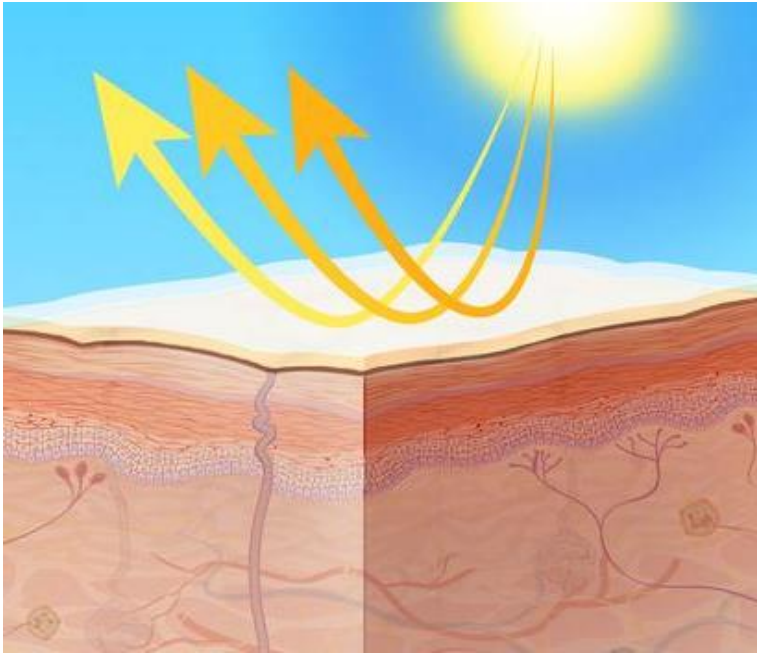


**On request.**



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# Rheology to support SPF Efficacy



**Good spreadability**

**Thixotropic (fast recovery)**

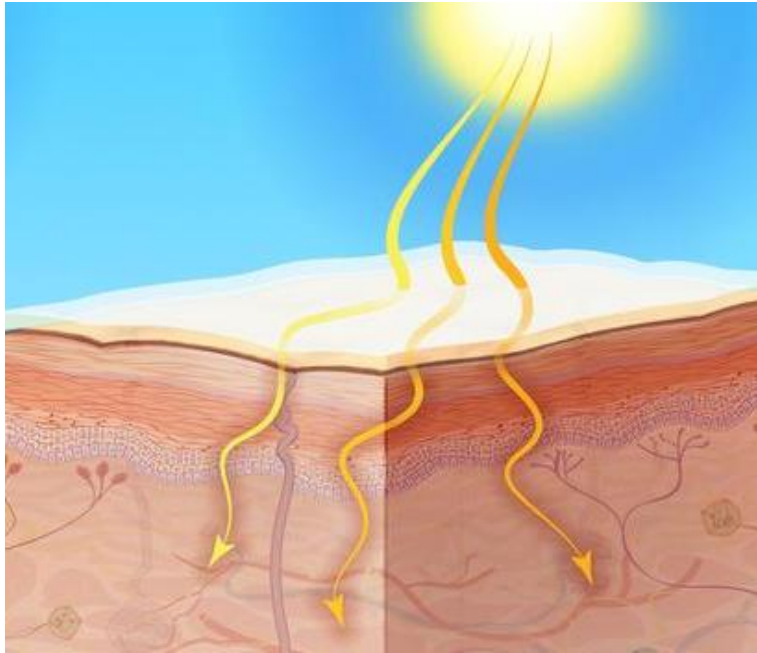
**Even distribution of actives**



**GOOD FILM FORMATION**



**HIGH SPF**



**Poor spreadability**

**Slow recovery**

**Uneven distribution of actives**



**POOR FILM FORMATION**



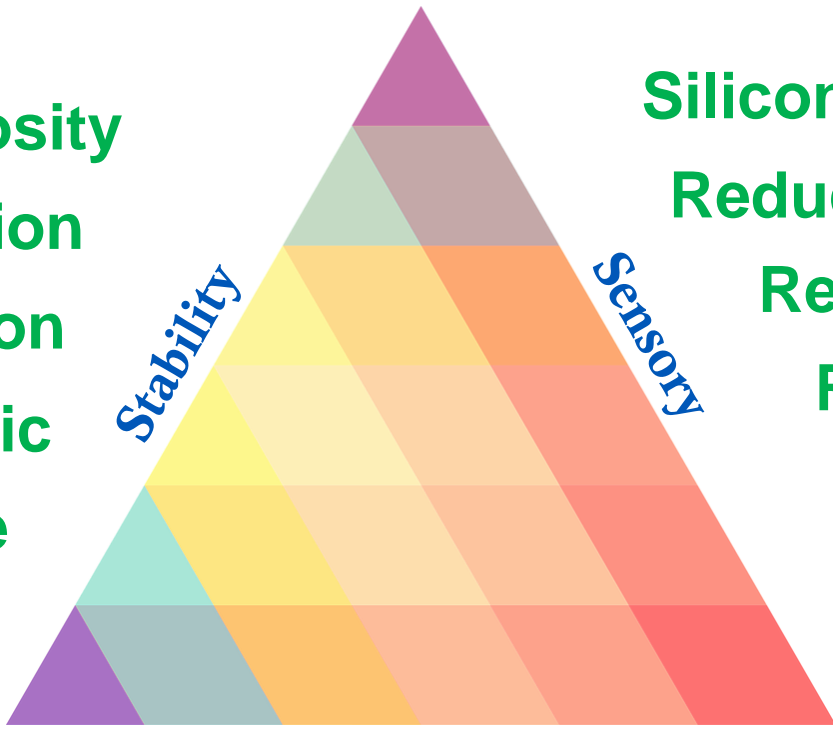
**LOW SPF**



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# Benefits of Valida in Suncare

- ✓✓ Low viscosity
- ✓✓ Stabilisation
- ✓✓ Suspension
- ✓✓ Thixotropic
- ✓✓ Sprayable



- Silicone-like skin feel ✓✓
- Reduces greasiness ✓✓
- Reduces soaping ✓✓
- Reduces pilling ✓✓
- Reduces tack ✓✓
- Hydrating ✓✓

## SPF Efficacy

- ✓✓ SPF Boosting
- ✓✓ UVAPF Boosting
- ✓✓ Spreadable
- ✓✓ Thixotropic



# EXAMPLE FORMULATION

Phase	Ingredient	INCI	Function	Benchmark % w/w	Valida % w/w
A	Deionised Water	Aqua	Carrier	To 100	To 100
	Glycerin	Glycerin	Humectant	1.00	1.00
	Valida S+ CS-3 <sup>1</sup>	Aqua, Cellulose, Cellulose Gum, Sodium Benzoate, Citric Acid	Stabiliser, SPF Booster, Sensory enhancer	-	8.00
	Benchmark	Acrylates/Beheneth-25 Methacrylate Copolymer	Stabiliser	1.30	-
	NaOH 20% Soln.	Sodium Hydroxide	pH Adjuster	0.50	-
	Crodafos CS20A <sup>2</sup>	Cetearyl Alcohol, Ceteth-20 Phosphate, Dicetyl Phosphate	Emulsifier	2.50	2.50
B	Cithrol GMS 40 SE <sup>2</sup>	Glyceryl Stearate SE	Emulsifier	0.50	0.50
	Mfsorb 502 <sup>3</sup>	Butyl Methoxydibenzoylmethane	UV Filter	5.00	5.00
	Mfsorb 104 <sup>3</sup>	Octocrylene	UV Filter	5.50	5.50
	Mfsorb 503 <sup>3</sup>	Ethylhexyl Salicylate	UV Filter	4.00	4.00
	Mfsorb 504 <sup>3</sup>	Homosalate	UV Filter	7.00	7.00
	Mfsorb 507 <sup>3</sup>	Ethylhexyl Triazone	UV Filter	1.50	1.50
	Mfsorb 509 <sup>3</sup>	Bis-Ethylhexyloxyphenol Methoxyphenyl Triazine	UV Filter	4.00	4.00
	Crodamol AB <sup>2</sup>	C12-15 Alkyl Benzoate	Emollient	3.50	3.50
C	Sunboost ATB Natural <sup>4</sup>	Argania Spinosa Kernel Oil, Tocopheryl Acetate, Bisabolol	SPF Booster	1.00	1.00
	Euxyl PE9010 <sup>5</sup>	Phenoxyethanol, ethylhexylglycerin	Preservative	0.80	0.80
D	NaOH 20% Soln.	Sodium Hydroxide	pH Adjuster	QS	QS

Suppliers: 1) Sappi; 2) Croda; 3) MFCI via Aston Chemicals UK; 4) Kobo via Aston Chemicals UK; 5) Ashland via IMCD UK

# Summary of Valida's Properties

## Robust

- pH and Electrolyte tolerant
- Non-ionic

## Sustainable

- Natural, Biodegradable and Renewable
- FSC and PEFC Certified
- Cold-process

## Rheology

- Suspend particles without thickening
- Thixotropic, resulting in non-drip sprays

## Sensory

- Create non-tacky, non-greasy formulations
- Reduces soaping and/or pilling

## Multifunctional

- Stabilise emulsions without emulsifier
- SPF Boosting
- Foam boosting
- Reduces TEWL

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Valida

Xanthan Gum





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Booth 5F96

Thank  
you!