JRS Fibers for Life.

Natural Rheology Modifiers

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AGENDA

- VIVAPUR® CS 032 XV
  - Characteristics
  - Activation
  - Rheology Profile
  - Formulations
- VIVASTAR® CS 3005 XV
  - Characteristics
  - Activation
  - Rheology Profile
  - Formulations
- Contact

JRS Fibers for Life.

VIVAPUR®
CS 032 XV

VIVAPUR® CS 032 XV

INCI	Microcrystalline Cellulose, Xanthan Gum
Ø Viscosity (2 %)	~2,000 mPas
Clarity	white
ISO 16128	100 % natural origin
Natural origin	wood, polysaccharides
OECD 301 B	readily biodegradable

Main functions:

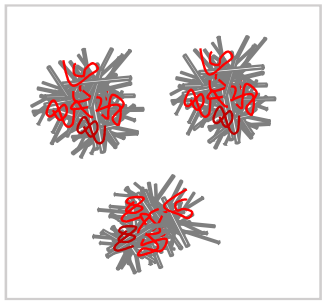
- ✓ smooth thixotropic white gel
- ✓ excellent electrolyte and pH stability
- ✓ compatible with surfactants
- ✓ smoother and non sticky skin feel compared with pure Xanthan Gum

COSMOS approved · NATRUE · Halal · Kosher · Cold Process

CHARACTERISTICS

Definition:

- VIVAPUR® CS 032 XV is a compound of Microcrystalline Cellulose and Xanthan Gum.
- It is more than just a physical blend
- The Xanthan Gum is interwoven with the Microcrystalline Cellulose, resulting in unique synergistic properties



Microcrystalline Cellulose

Xanthan Gum

⟶ Unique stabilizing performance

CHARACTERISTICS

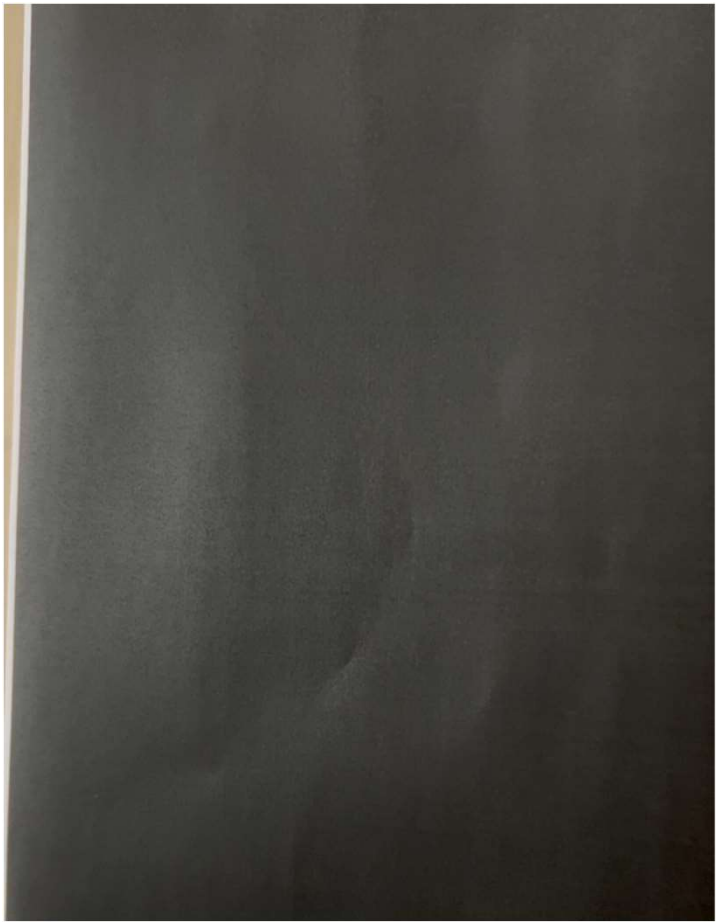
Properties:

- Very good stability
- Easy handling and great effectiveness
- Excellent sensory properties
- High homogeneity and content uniformity of your formulation
- Dosage accuracy (easy sprayable, pumpable & dosing)
- Edible

Applications:

- **Skin Care:** Cleansers, Shower Gels, Creams, Lotions
- **Hair Care:** Shampoos
- **Oral Care:** Toothpastes, Tooth Cleaning Gels

Comparison of Sprayability of pure Xanthan Gum vs. VIVAPUR® CS 032 XV



2 % Standard Xanthan Gum

2 % VIVAPUR® CS 032 XV

MECHANISM OF STABILIZATION

- Reliable stabilization of particles in a suspension cannot be ensured by high viscosity alone, as this only slows down the sedimentation rate
- After activation in water, VIVAPUR® CS 032 XV is building up a 3-dimensional elastic gel-network of insoluble microcrystalline cellulose particles

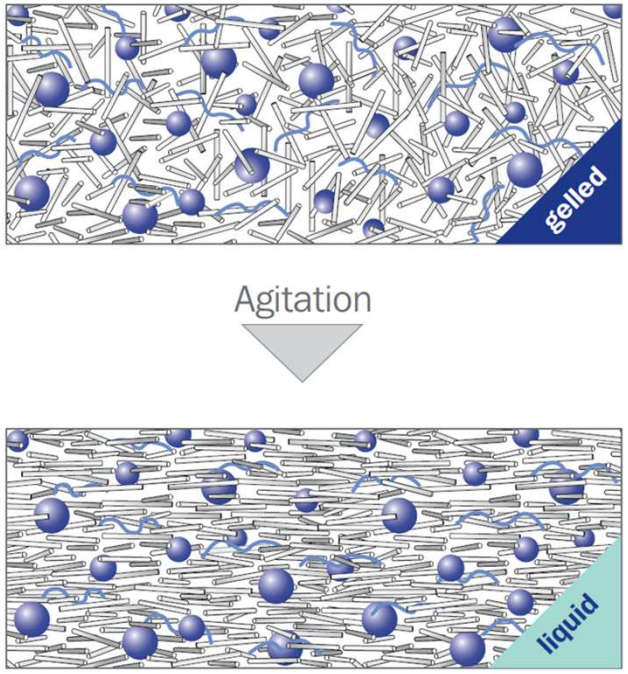
APPLICATION – ACTIVATION GUIDE FOR LAB SCALE

VIVAPUR® CS 032 XV*			
Implementation in process:	Should be done at the beginning only in deionized or distilled water to obtain the optimal performance. First add water, afterwards add the powder step by step under stirring.		
Usage:	cold or hot process		
Equipment for activation:	 propeller ✘ not recommended	 dissolver discs ✓ recommended	 rotor / stator ✓ 1st recommended
Stirrer rotation speed:	-	≥ 2000 rpm	≥ 10,000 rpm
Dispersion time:	-	≥ 5 min	≥ 3 min
Recommended use level:	-	1 – 3 %	
For optimal results:	let dispersion rest for 15 min, then add the other ingredients		

* Recommendations only for lab scale. For upscaling you could need other parameters which are different due to various conditions.


JRS
1600
1200

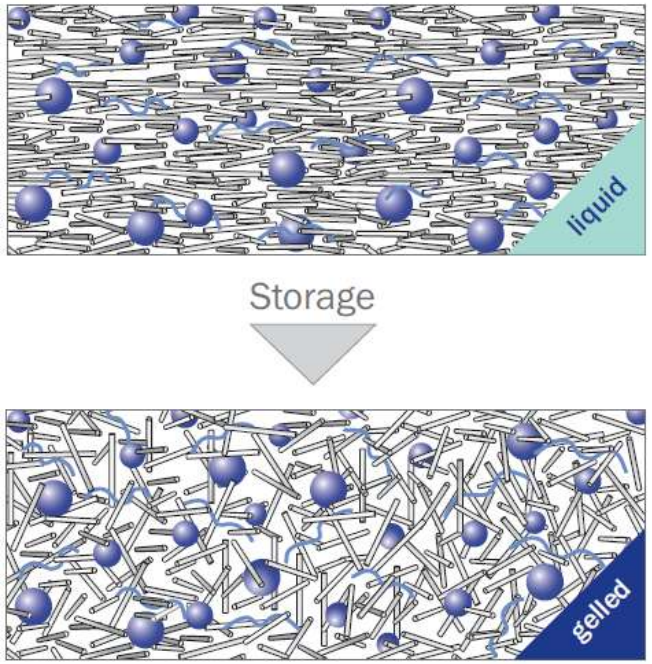
SHEAR THINNING



VIVAPUR® CS 032 XV forms a three dimensional coherent network of insoluble fibrils. All active particles can be kept homogeneously within the sustaining gelled network and are prevented from settling.

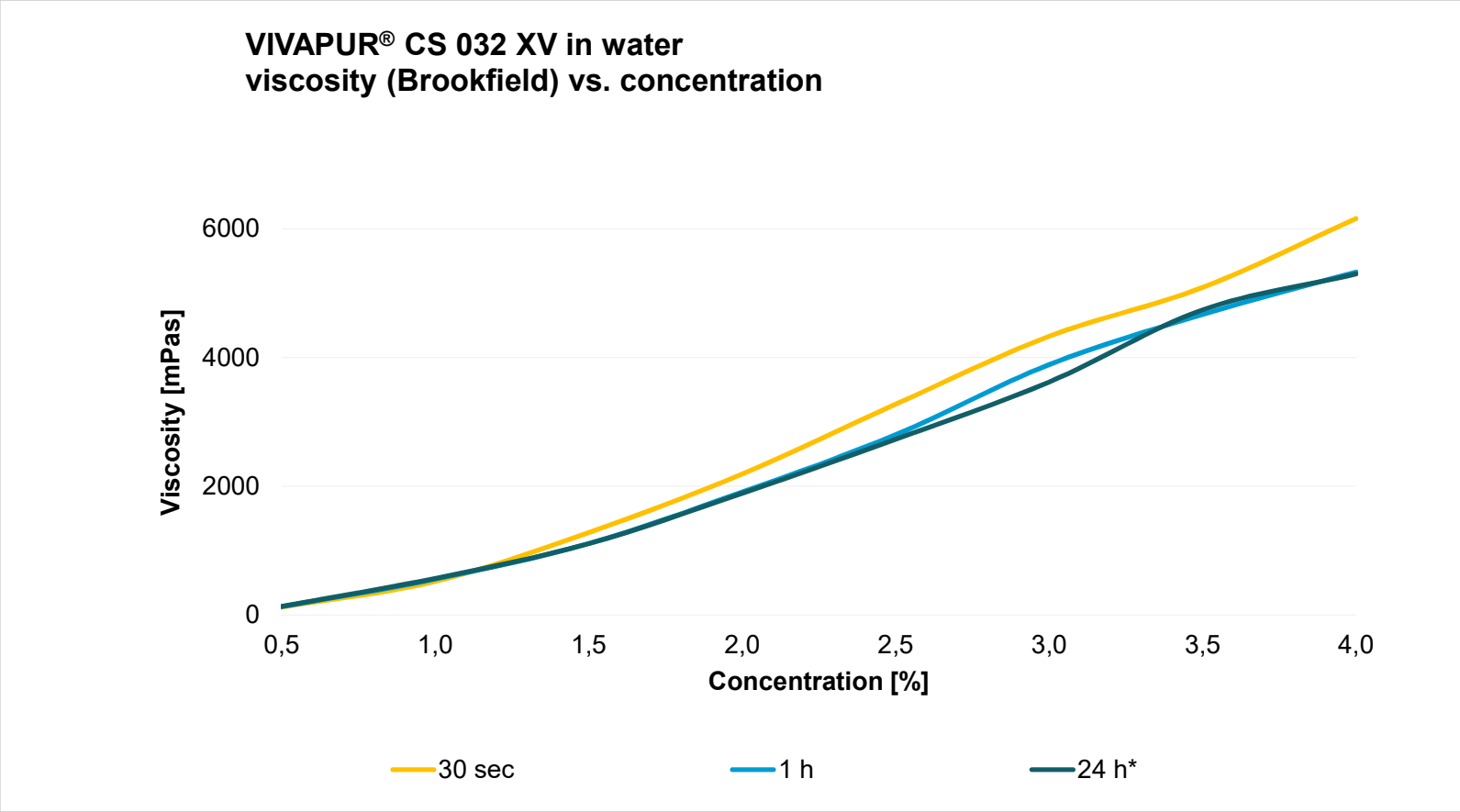
Upon agitation, such as shaking, the microcrystalline cellulose fibrils arrange themselves in the direction of the movement. Thereby, the network loosens up and viscosity decreases. Thus, the dispersion becomes liquid and can be easily poured out of the bottle.

THIXOTROPY



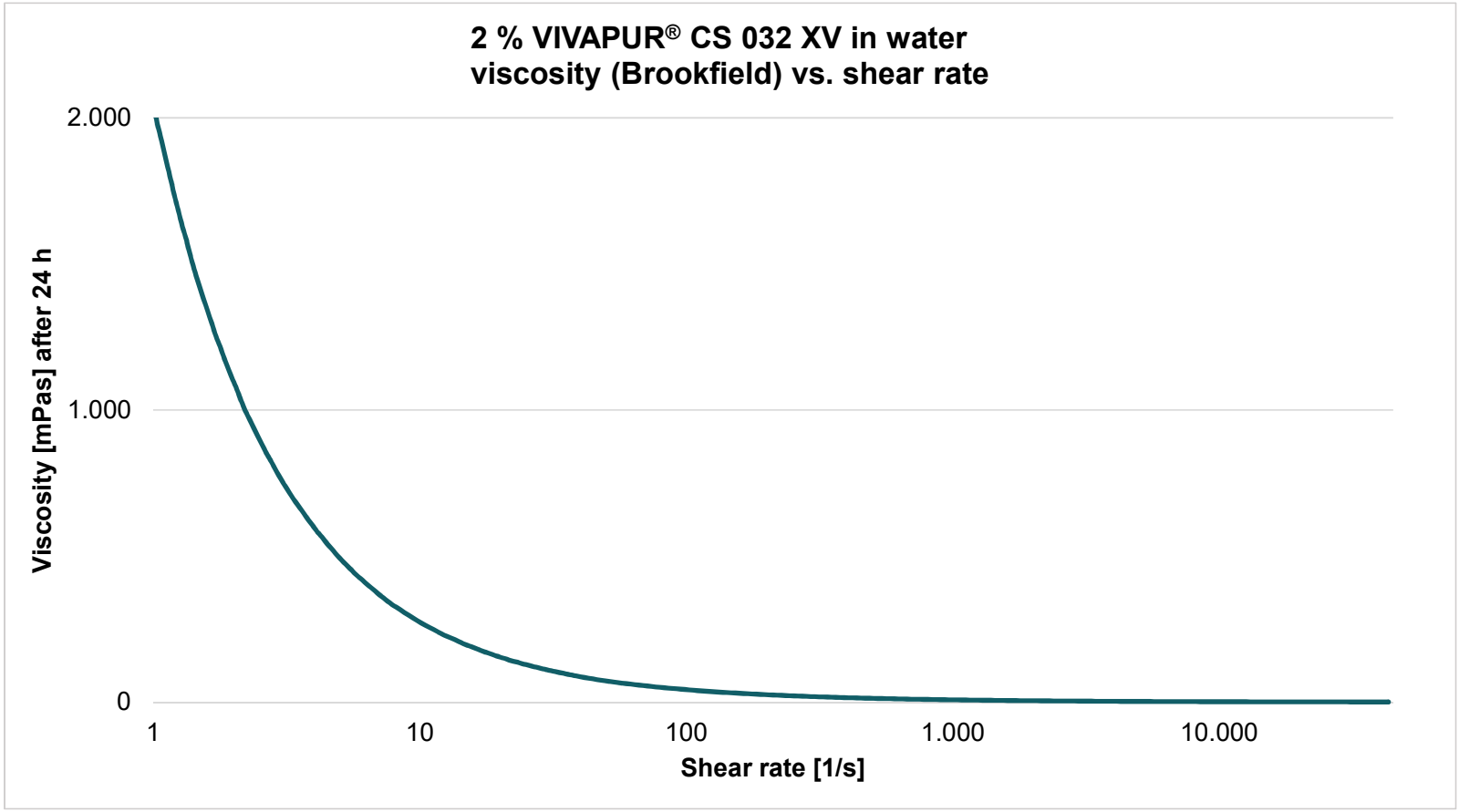
Soon after the agitation stops, the cellulose fibrils entangle again and form a three-dimensional network. The dispersions regain their full stabilizing ability, resulting in long-term stability and formulation homogeneity.

RHEOLOGY PROFILE



* end viscosity is achieved

RHEOLOGY PROFILE



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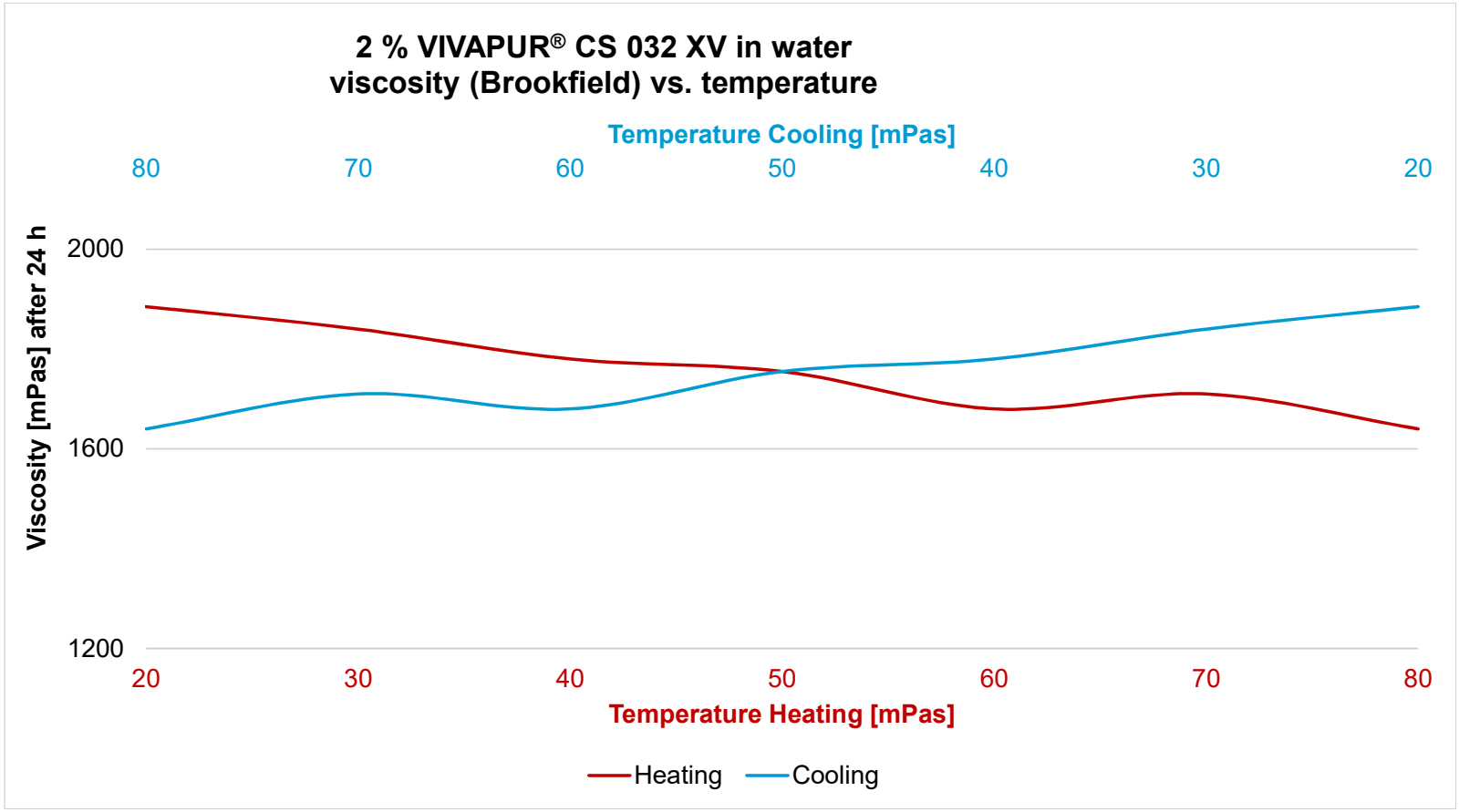

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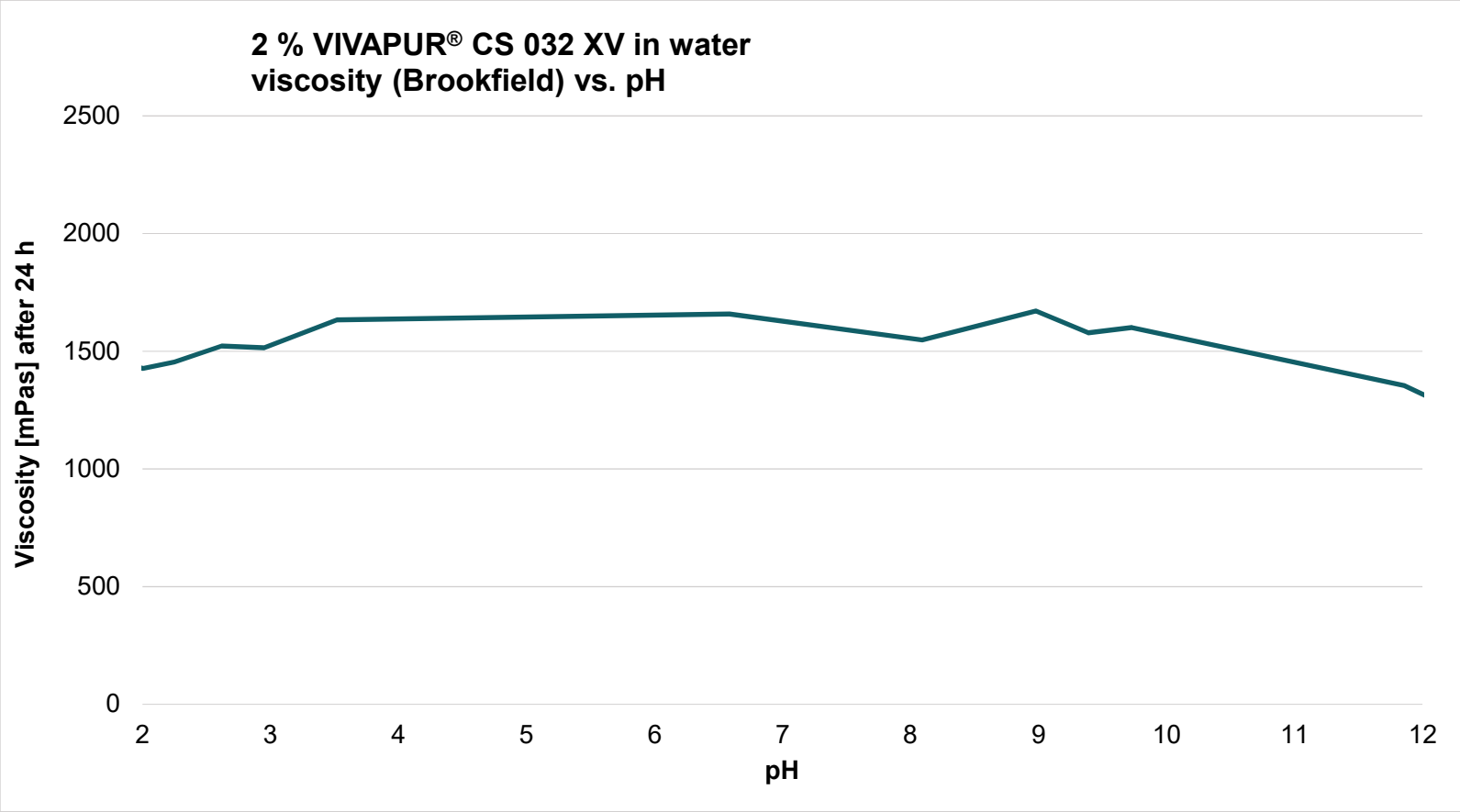

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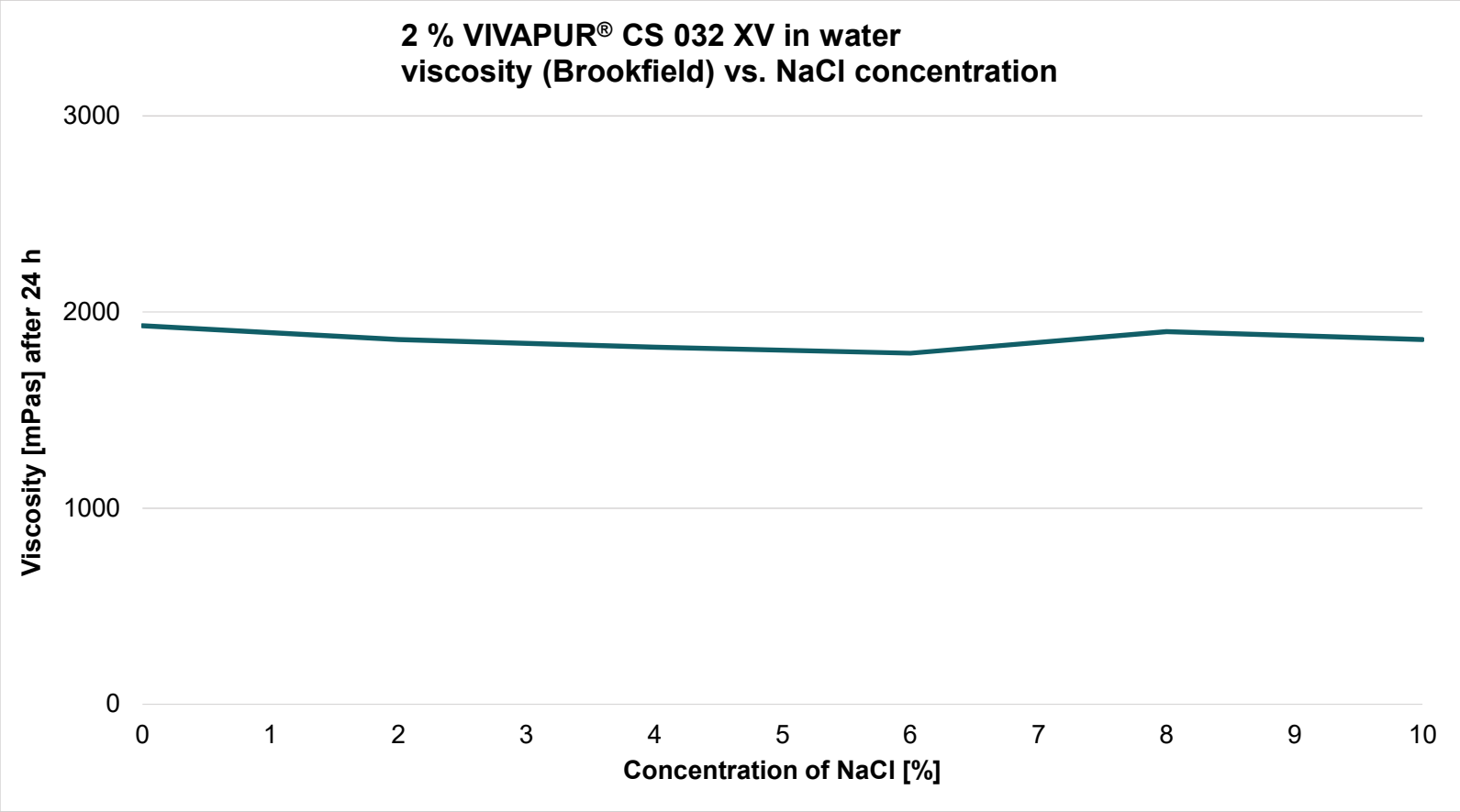

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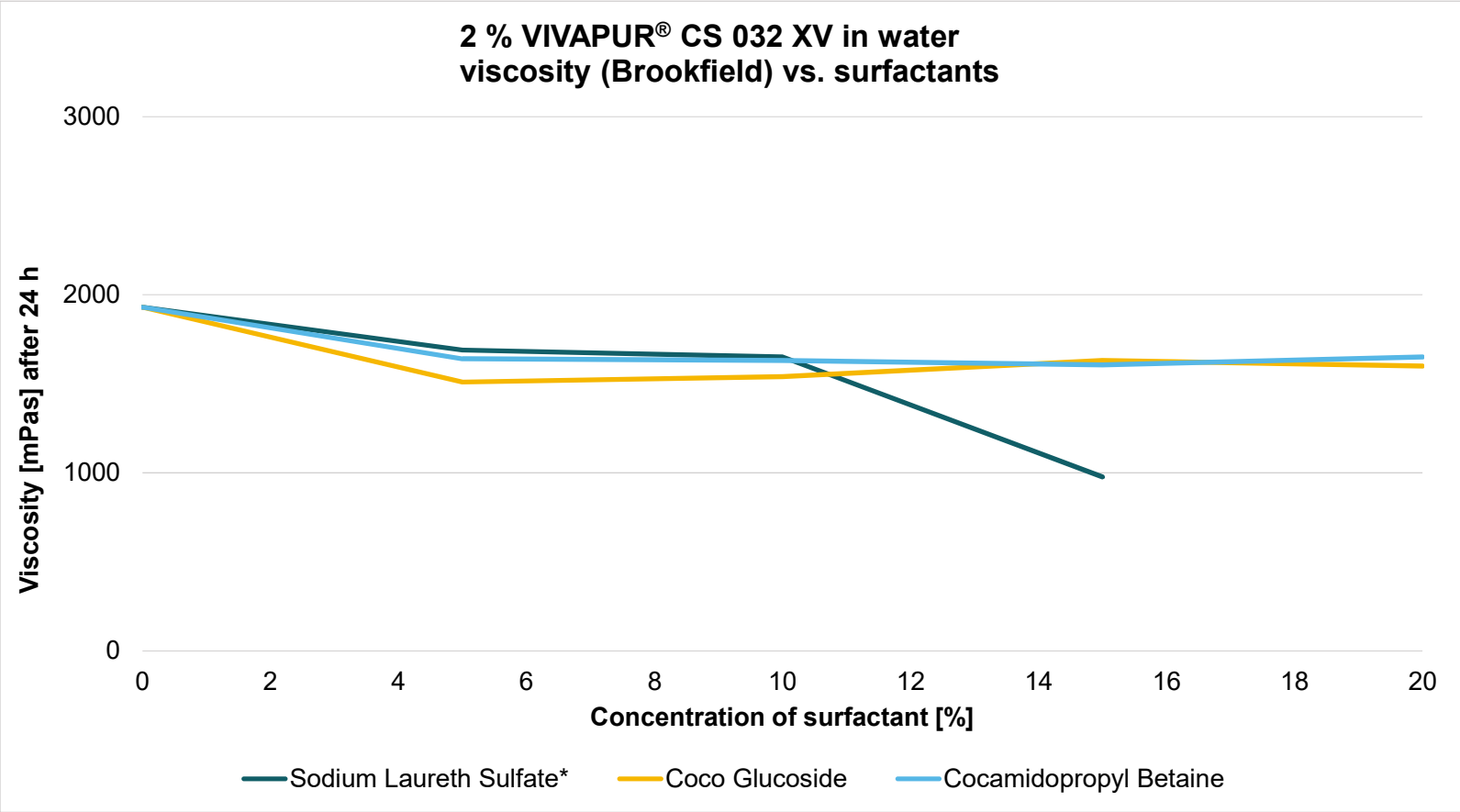

* flocculated/not stable from 15 %

FORMULATION – Shower Gel – Sulfate Free

HBO53.16.16

This white shower gel is easy to prepare and brings a nice skin feel thanks to **VIVAPUR® CS 032 XV**, which is a compound of Microcrystalline Cellulose and Xanthan Gum which acts as stabilizer and sensory agent.

Phase	Ingredient	INCI	Function	%
A	Demineralized water	Aqua	Solvent	60.3
	VIVAPUR® CS 032 XV	**Microcrystalline Cellulose, Xanthan Gum**	**Stabilizer, Thickener**	**3.0**
B	Plantacare® 818 UP/MB	Coco-Glucoside	Non-ionic surfactant	32.7
	Lamesoft® PO 65/MB	Coco-Glucoside and Glyceryl Oleate	Emollient	3.0
C	Microcare® NB (Thor)	Sodium Benzoate	Preservative	0.5
D	Citric Acid Solution, 50 %	Citric Acid	Adjust pH	0.5

Formulated by AMI CHIMIE, France

Process

Add **VIVAPUR® CS 032 XV** into water step by step under low agitation and maintain this stirring for one minute. Then switch to high shear forces (dissolver disc, 2 000 rpm) for 7 minutes.
Add ingredients of phase B separately and mix all the time.
Add the preservative phase C and adjust pH at 4.8 – 5 with phase D.

FORMULATION – Shampoo Cream – Sulfate Free

HBO79.17.04 Creamy white foaming

Phase	Ingredient	INCI	Function	%
A	Demineralized Water	Aqua	Solvent	53,35
	Microcare® NB (Thor)	Sodium Benzoate	Preservative	0.5
	Sodium Gluconate	Sodium Gluconate	Chelatant	0.2
B	**VIVAPUR® CS 032 XV**	**Microcrystalline Cellulose, Xanthan Gum**	**Rheology Modifier**	**3.0**
C	Plantacare® 818 UP	Coco-Glucoside	Non-ionic surfactant	25.0
	Dehyton® K COS	Cocamidopropyl Betaine, Aqua	Amphoteric surfactant	7.0
	Lamesoft® PO 65/MB	Coco-Glucoside and Glyceryl Oleate	Emollient	2.5
	Plantasil®	Aqua, Dicraprylyl Ether, Decyl Glucoside, Glyceryl Oleate, Benzoic Acid, Citric Acid	Conditioner	6.0
D	Gluadin® KERA-P LM	Hydrolyzed Vegetable Protein, Aqua, Sodium Benzoate	Protection, Repair, Softness	1.0
	Perfume Cosmos Clean Fresh (Robertet)	Parfum	Perfume	0.5
	Citric Acid Solution, 50 %	Aqua, Citric Acid	pH Adjuster	0.95

Formulated by AMI CHIMIE, France

FORMULATION – Shampoo Cream – Sulfate Free

Process

Dissolve preservative and chelating agent in water.
Add **VIVAPUR® CS 032 XV** step by step under low agitation, maintain this stirring for one minute, then leave under strong agitation (dissolver disc at 2000 rpm) for 15 min.
Add the ingredients of phase C one by one, homogenizing between each addition.
Add phase D and adjust pH to 5.

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VIVASTAR®
CS 3005 XV

VIVASTAR® CS 3005 XV

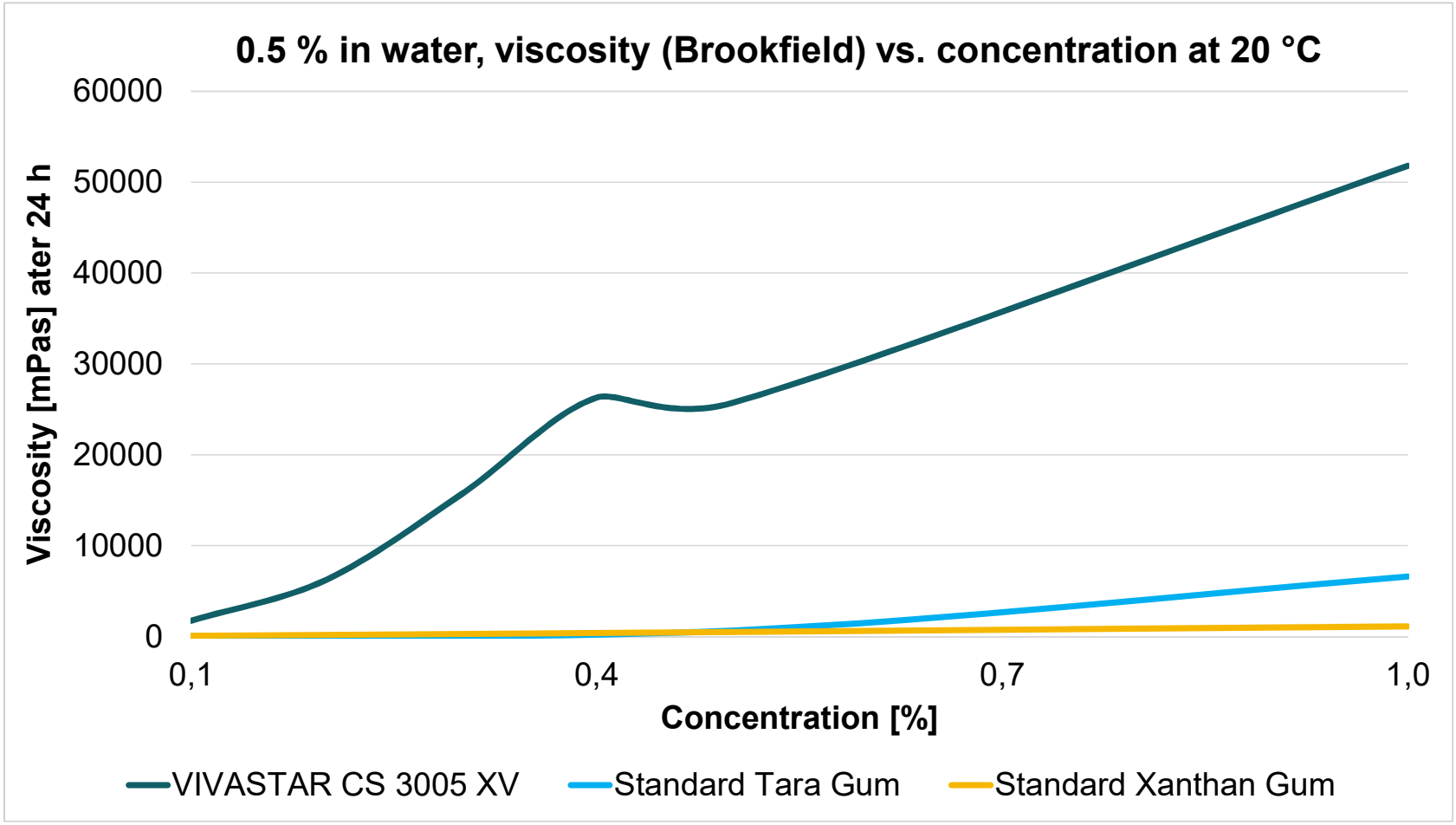
INCI	Caesalpinia Spinosa Gum, Xanthan Gum
Ø Viscosity (0.5 %)	~30,000 mPas
Clarity	transparent
ISO 16128	100 % natural origin
Natural origin	tara, polysaccharides
OECD 301 B	readily biodegradable

Main functions:

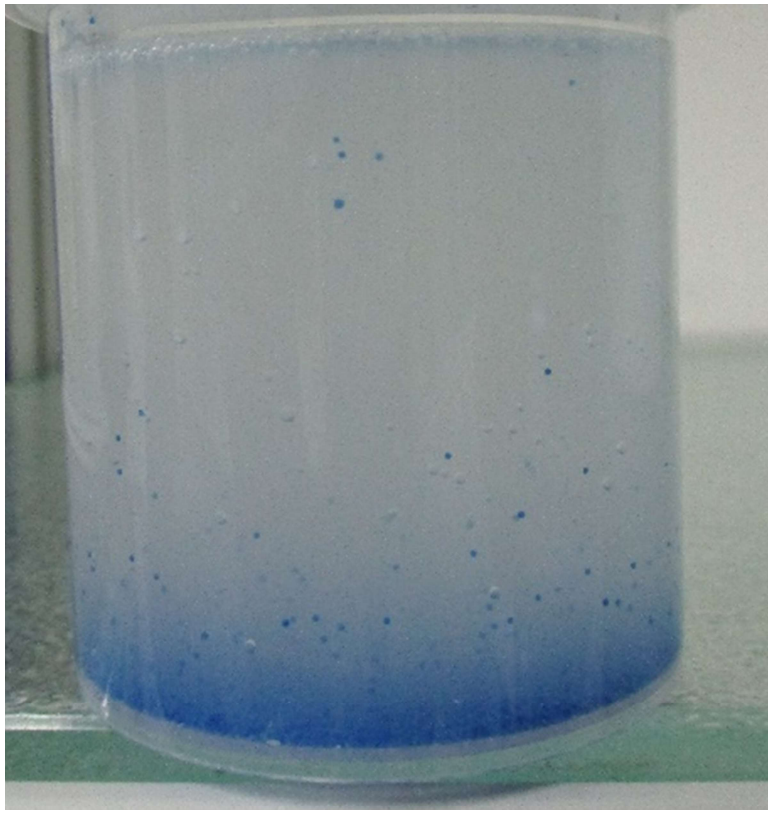
- ✓ transparent thickener
- ✓ high suspending properties
- ✓ very high viscosity at low concentration

COSMOS approved · NATRUE · Halal · Kosher

Comparison of pure Xanthan and Tara Gum vs. VIVASTAR® CS 3005 XV



Comparison of pure Xanthan Gum vs. VIVASTAR® CS 3005 XV



0.5 % Xanthan Gum with 0.5 % Spheres

0.15 % VIVASTAR CS 3005 XV with 0.5 % Spheres

APPLICATION – VIVASTAR® CS 3005 XV

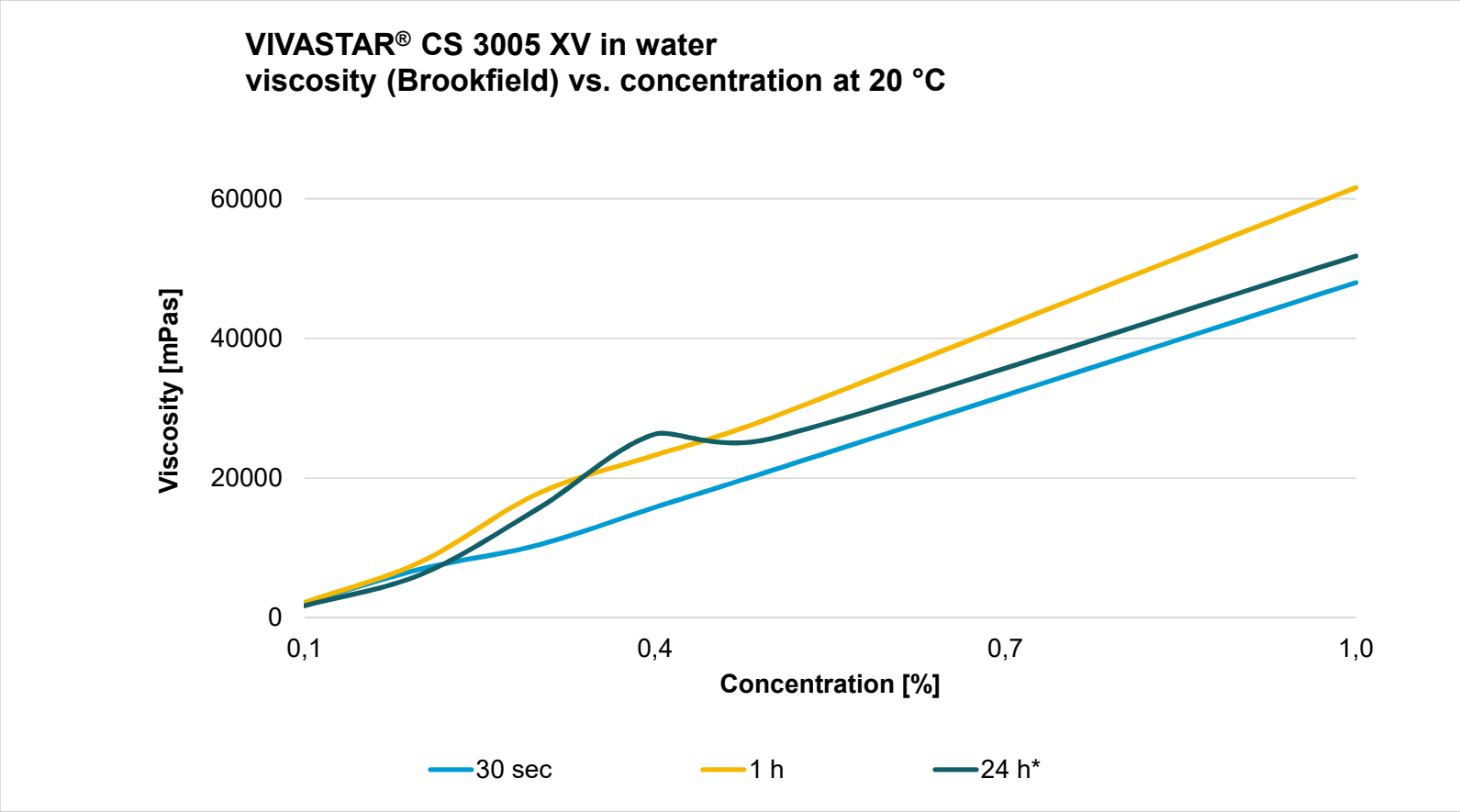
Main application areas	Water based transparent formulations Powder to gel formulations  **Hair Care:** Shampoos, Styling Gels **Skin Care:** Shower Gels, Serums, Soothing Gels
Rheology	VIVASTAR® CS 3005 XV has thixotropic properties that lead to high suspension properties for stabilizing e.g. peeling particles. The transparent color supports its use for clear formulations.

APPLICATION – ACTIVATION GUIDE FOR LAB SCALE

VIVASTAR® CS 3005 XV*			
Implementation in process:	Should be done at the beginning, only in deionized or distilled water to obtain the optimal performance. First add water, afterwards add the powder step by step.		
Usage:	hot process recommended, but also possible cold process		
Equipment for activation:	 propeller	 dissolver discs	 rotor / stator
	✓ recommended	✓ recommended	✘ not necessary
Stirrer rotation speed:	≥ 2000 rpm	≥ 1000 rpm	-
Dispersion time:	15 minutes under heating to 70 °C	3-5 minutes under heating to 70 °C	-
Recommended use level:	0.1 – 1 %	0.1 – 1 %	-
For optimal results:	let solution rest for 15 min until it has cooled completely, then add the other ingredients		

* Recommendations only for lab scale. For upscaling you could need other parameters which are different due to various conditions.

RHEOLOGY PROFILE



* end viscosity is achieved

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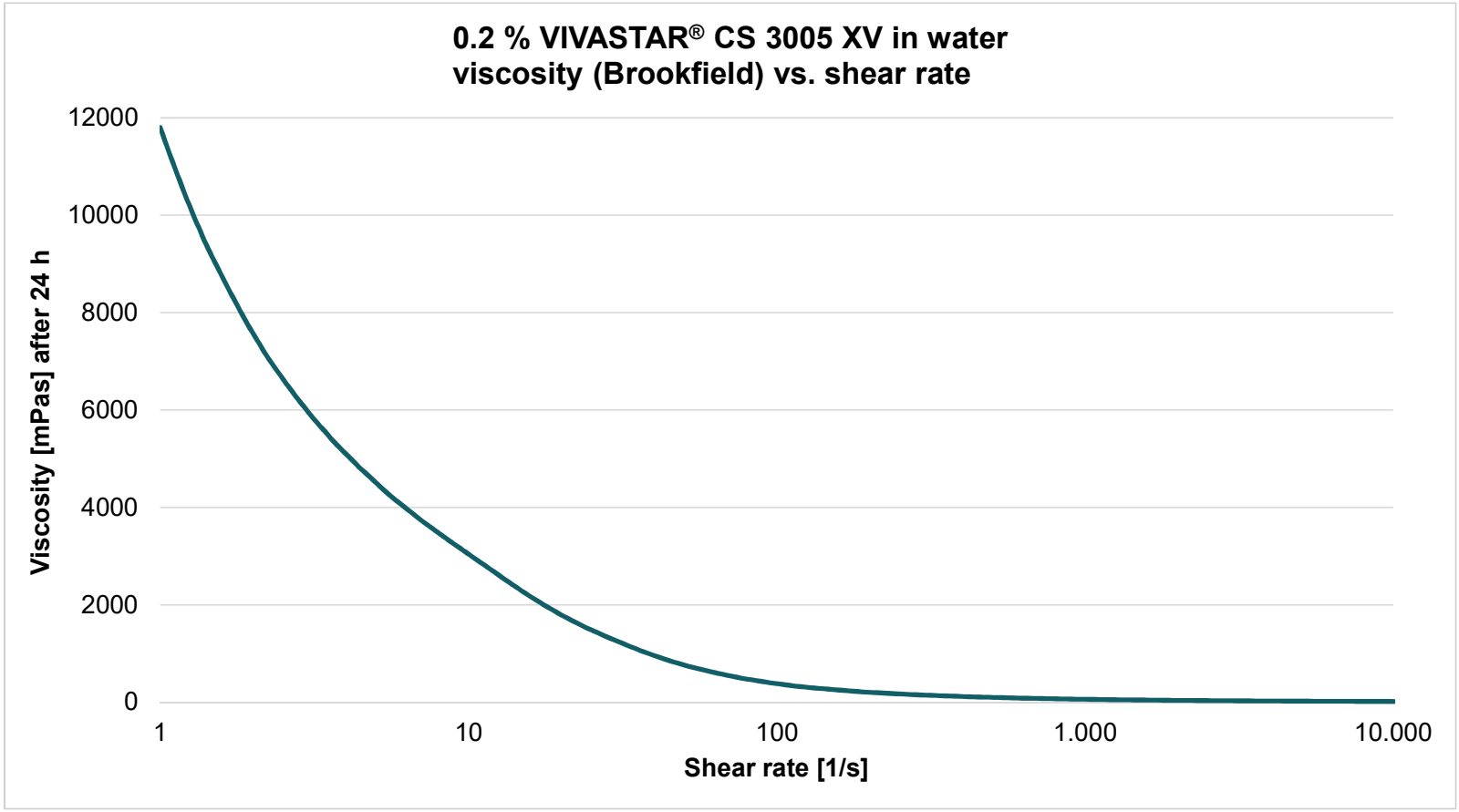

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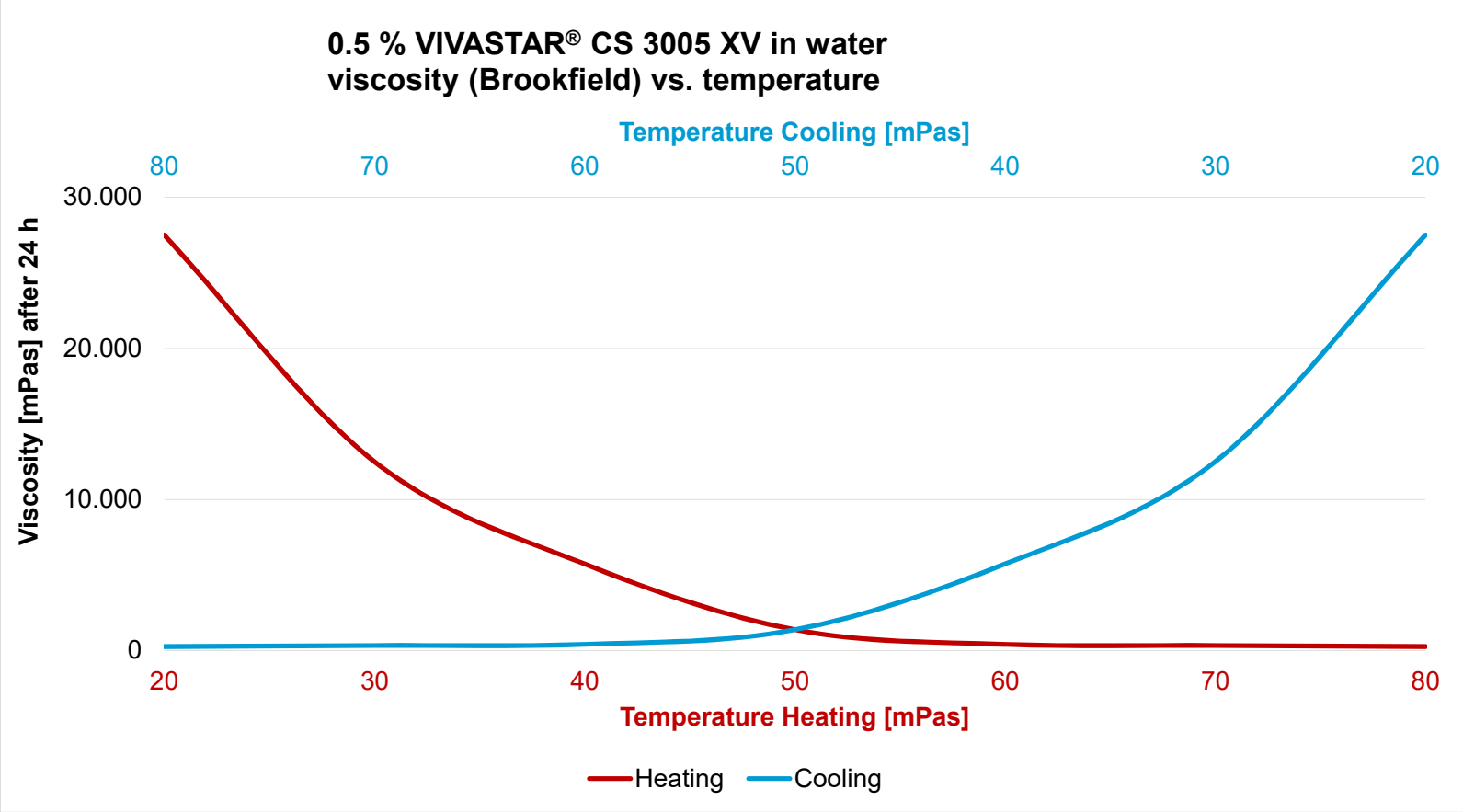

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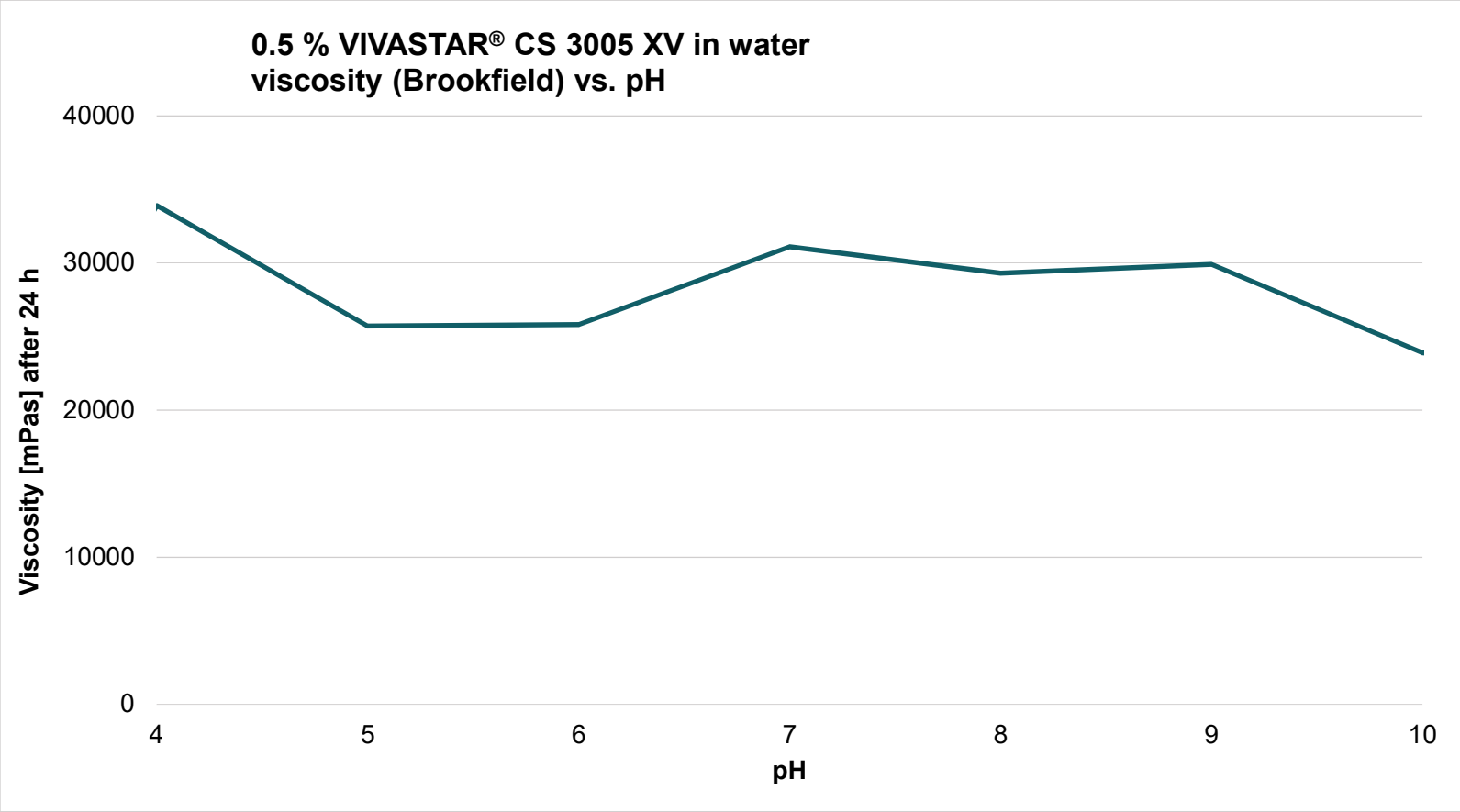

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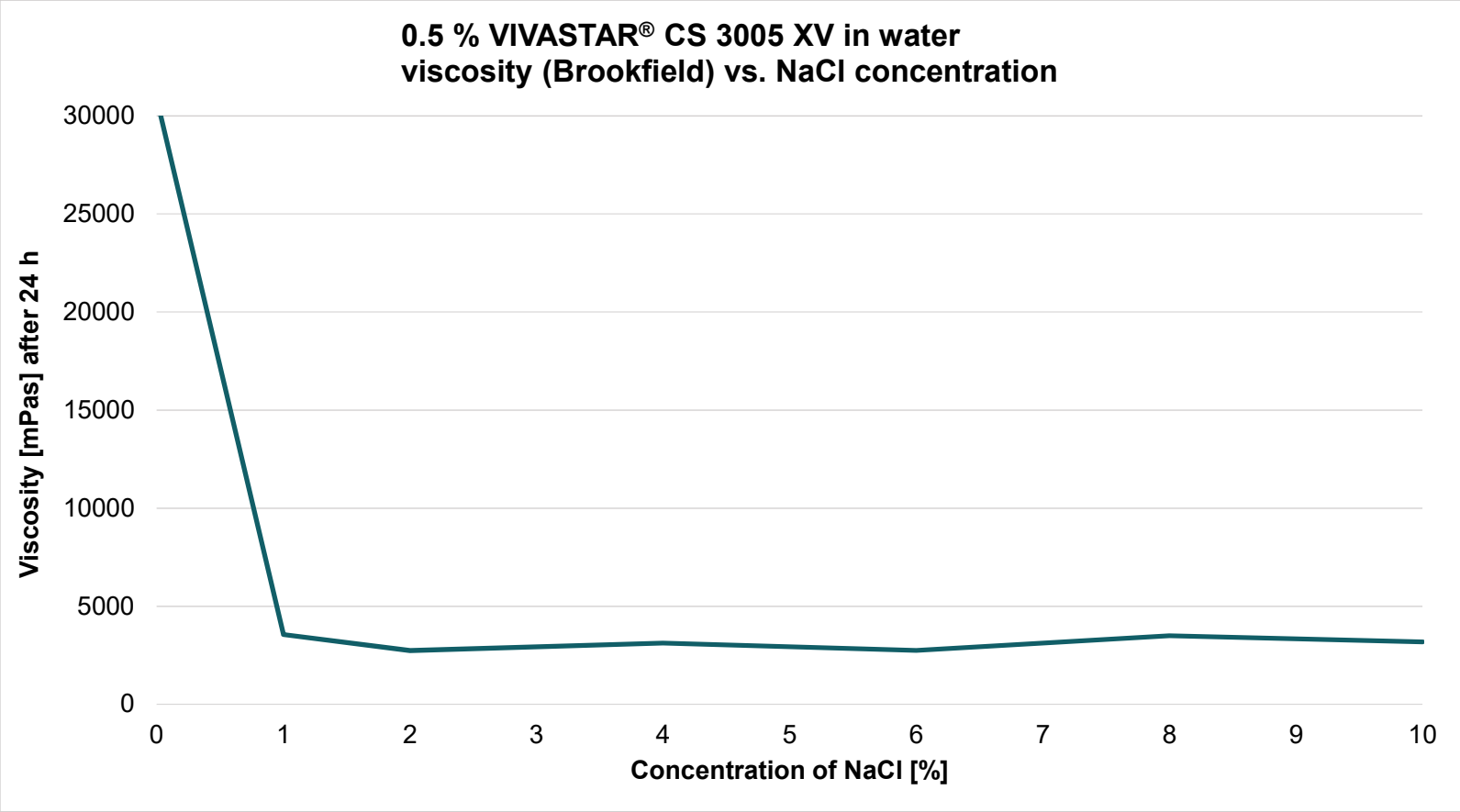

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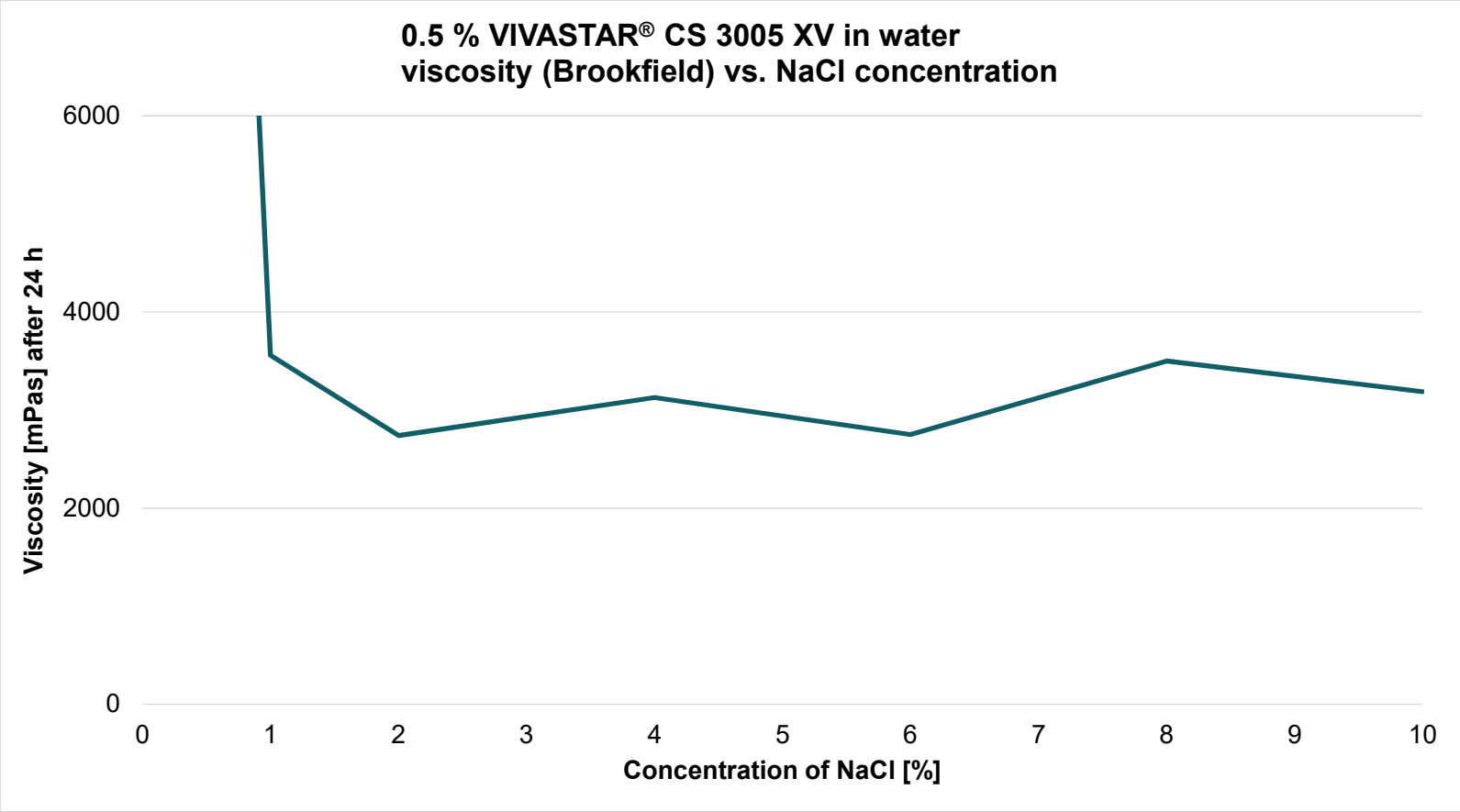

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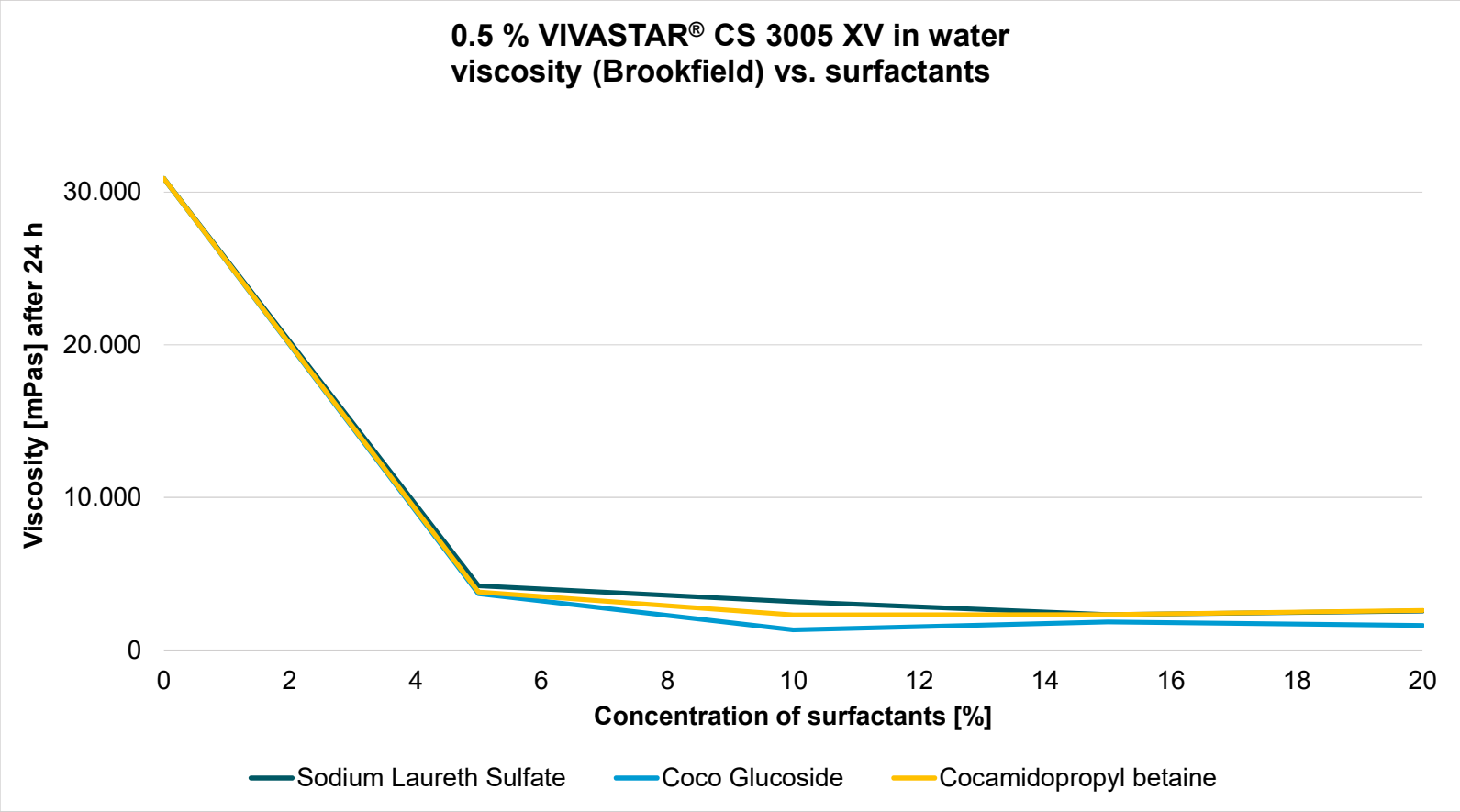

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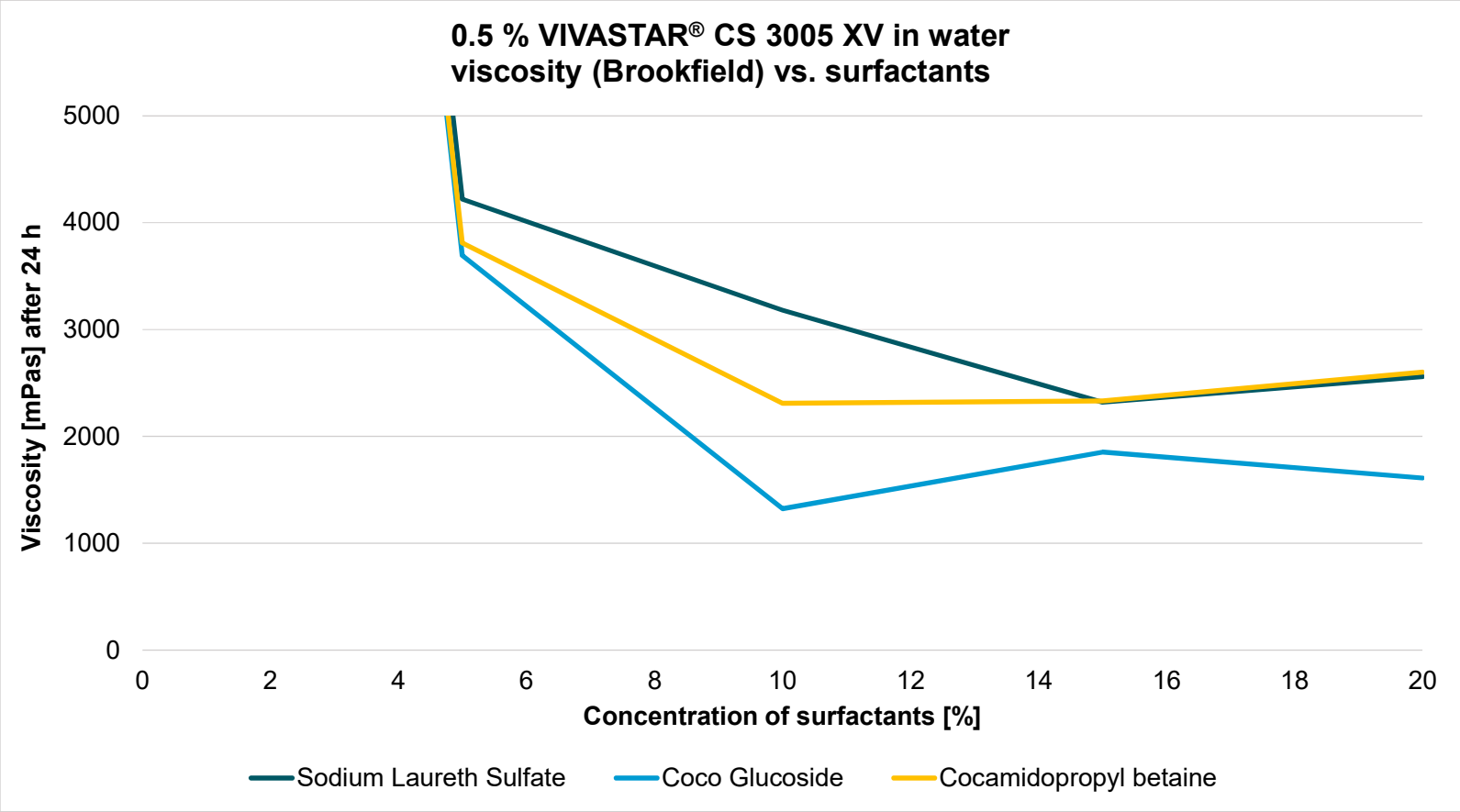
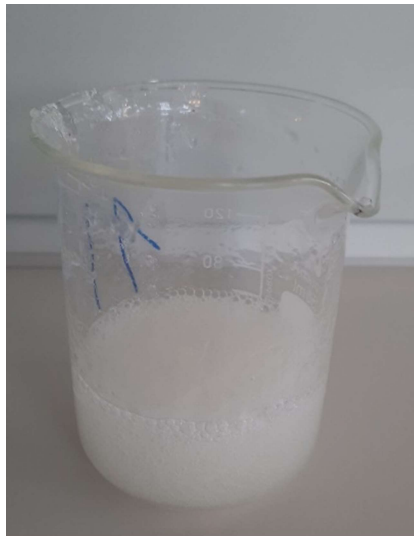


FORMULATION – Shower Gel – Sulfate – Free

Phase	Ingredient	INCI	Function	%
A	Demineralized water	Aqua	Solvent	79.8
	VIVASTAR® CS 3005 XV	**Caesalpinia Spinosa Gum, Xanthan Gum**	**Rheology Modifier**	**1.0**
	Sodium Benzoate	Sodium Benzoate	Preservative	0.5
	Potassium Sorbate	Potassium Sorbate	Preservative	0.5
B	Coco-Glucoside	Coco-Glucoside	Surfactant	8.0
	Decyl Glucoside	Decyl Glucoside	Surfactant	8.0
C	Perfume	Parfum	Perfume	0.2
D	Citric Acid 30 % solution	Aqua, Citric Acid	pH Adjuster	2.0



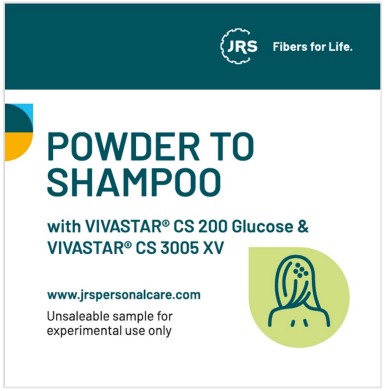
Formulated by Laboratorio Cosmpolita, Italy

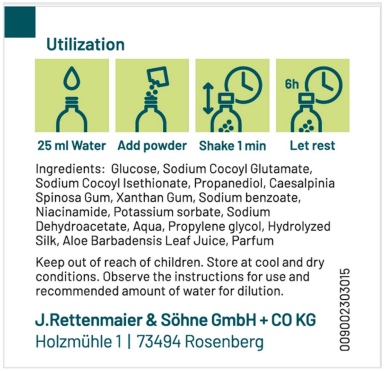
Process:

Prepare Phase A dispersing **VIVASTAR® CS 3005 XV** under stirring. A homogeneous gel is obtained. Add Phase B under stirring. Add Phase C under stirring. Adjust the pH with Phase D in the range 4.5 – 5.0.

FORMULATION – Powder to Shampoo (Multidose)

Phase	Ingredient	INCI	Function	%
A	**VIVASTAR® CS 200 Glucose**	**Glucose**	Carrier, flow aid, anti-caking	**35.0**
	Amisoft CS-11	Sodium Cocoyl Glutamate	Surfactant	21.0
	Jordapon SCI Powder	Sodium Cocoyl Isethionate	Surfactant	18.5
B	Propanediol	Propanediol	Surfactant	9.9
	VIVASTAR® CS 3005 XV	**Caesalpinia Spinosa Gum, Xanthan Gum**	Rheology modifier	**9.9**
C	Sodium benzoate	Sodium Benzoate	Preservative	2.5
	Potassium sorbate	Potassium Sorbate	Preservative	0.6
	Sodium Dehydroacetate	Sodium Dehydroacetate	Preservative	0.6
D	Perfume	Parfum	Perfume	0.2
	Silk protein	Aqua, Propylene Glycol, Hydrolyzed Silk	Hair care	0.5
	Niacinamide	Niacinamide	Skin care	1.0
	Biochemica Biovera 200X Aloe	Aloe Barbadensis Leaf Juice	Moisturizing	0.3





Formulated by Laboratorio Cosmpolita, Italy

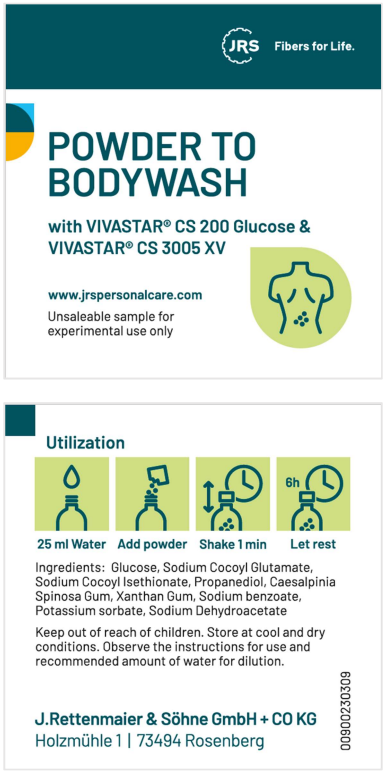
Process:

Mix together Glucose and the surfactants in the powder mixer for 2 – 3 minutes. Prepare separately a mixture of Propanediol and VIVASTAR® CS 3005 XV. Add phase B to phase A and mix for the time necessary to have a homogenous powder without lumps. Add phase C and phase D and mix again.

FORMULATION – Powder to Bodywash (Multidose)

Phase	Ingredient	INCI	Function	%
A	**VIVASTAR® CS 200 Glucose**	**Glucose**	Carrier, flow aid, anti-caking	**37.0**
	Amisoft CS-11	Sodium Cocoyl Glutamate	Surfactant	21.0
	Jordapon SCI	Sodium Cocoyl Isethionate	Surfactant	18.5
B	Propanediol	Propanediol	Surfactant	9.9
	VIVASTAR® CS 3005 XV	**Caesalpinia Spinosa Gum, Xanthan Gum**	Rheology Modifier	**9.9**
C	Sodium benzoate	Sodium Benzoate	Preservative	2.5
	Potassium sorbate	Potassium Sorbate	Preservative	0.6
	Sodium Dehydroacetate	Sodium Dehydroacetate	Preservative	0.6

Formulated by Laboratorio Cosmpolita, Italy



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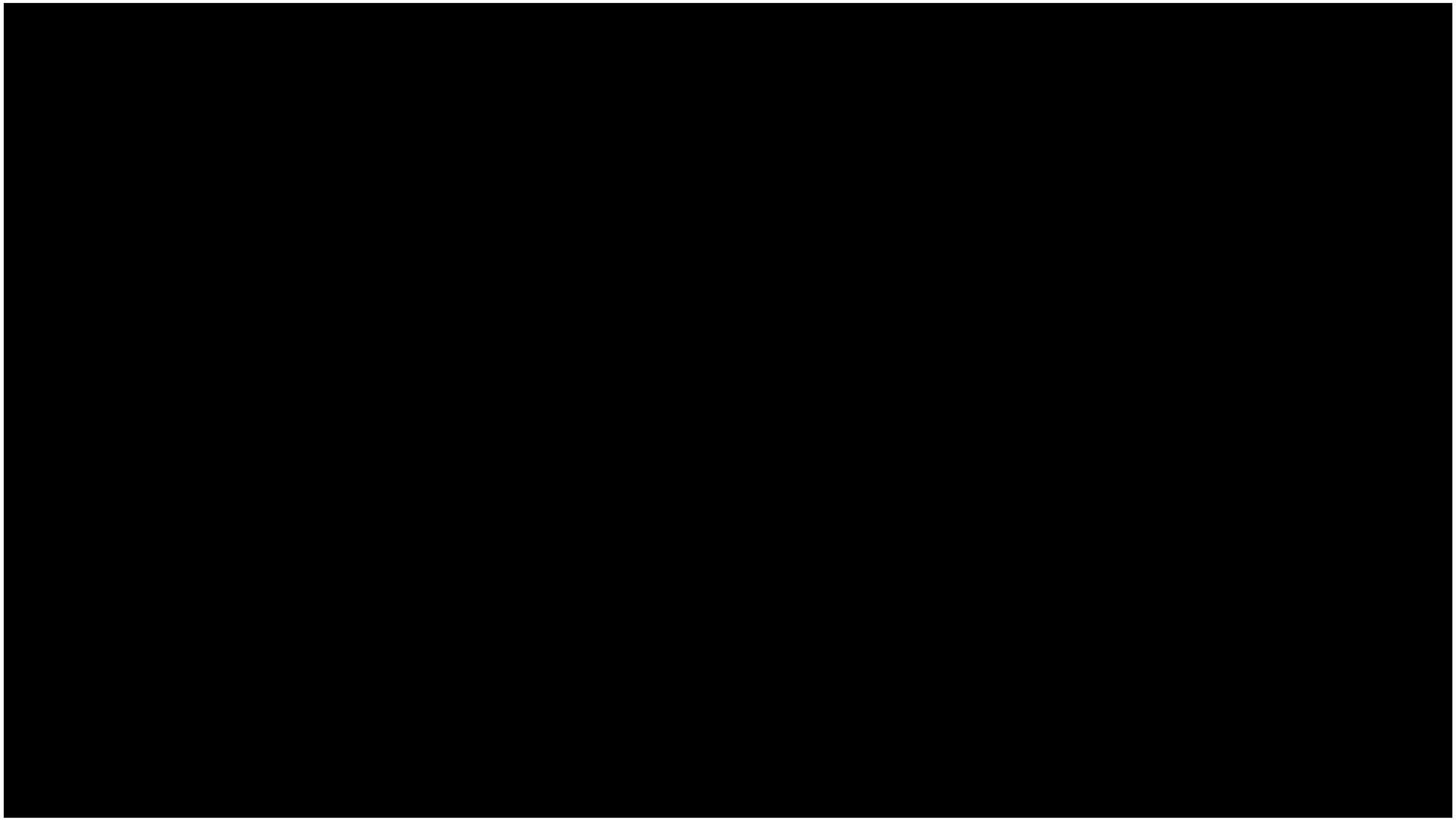

Let it rest for several hours

JRS Fibers for Life.

CONTACT JRS

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