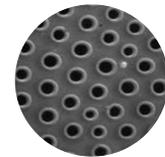
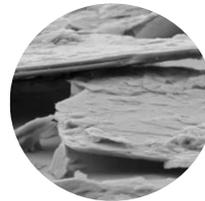
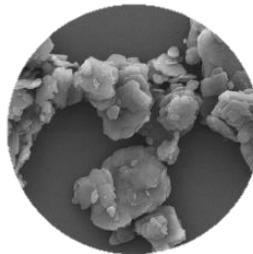
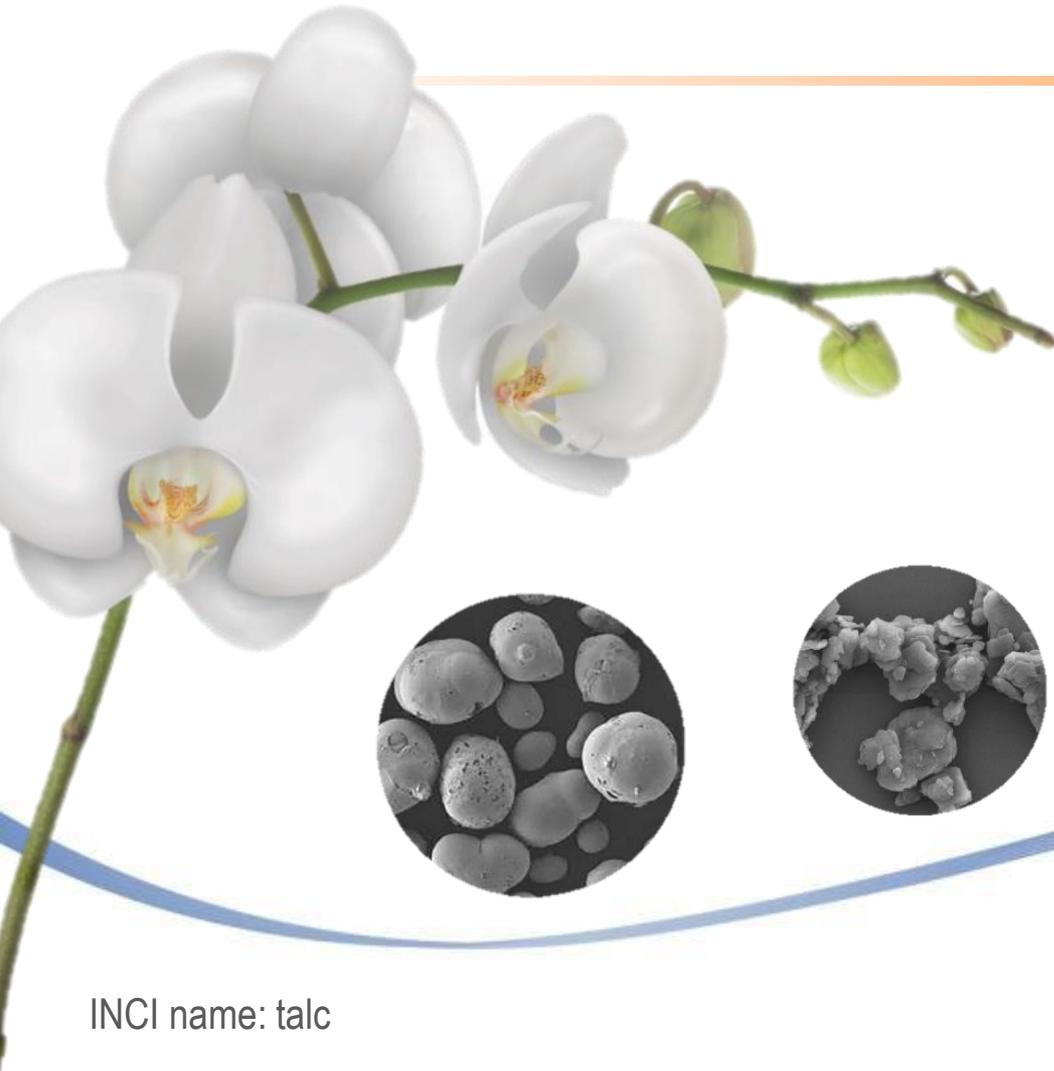


Talc for cosmetics

Nov. 2017

IMERCARE[®]
P A R I S



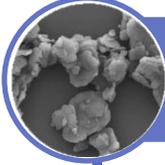
INCI name: talc

IMERYS

ImerCare range



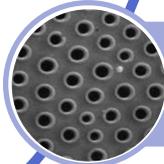
ImerCare[®] P-Scrub range



ImerCare[®] K range



ImerCare[®] T range



ImerCare[®] D range

ImerCare[®] 11T
ImerCare[®] 4T

ImerCare[®] Pharma 00T
ImerCare[®] Pharma 5T
ImerCare[®] Pharma10T

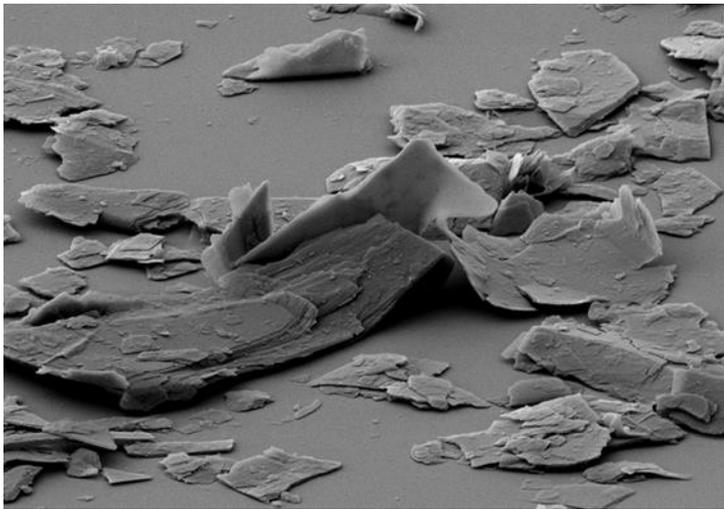
ImerCare[®] Steasilk

Premium talc

ImerCare[®] SheerSilk
ImerCare[®] Velluto
ImerCare[®] Opaline

ImerCare® T - talc range

a multi-faceted mineral for a wide range of cosmetics applications



IMERCARE™
P A R I S



IMERYS
TRANSFORM TO PERFORM

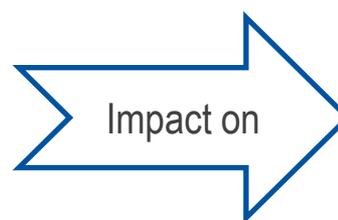
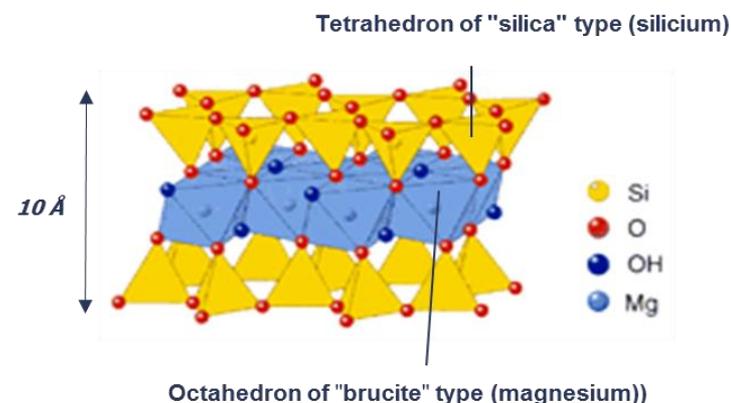
■ All talcs have the same basic properties:

- ◆ Platy, lamellar
- ◆ Softest mineral on earth
- ◆ Hydrophobic and oleophilic
- ◆ Inert

■ But differ due to:

- ◆ Particle size distribution
- ◆ Talc / associated minerals content
- ◆ Morphology (particle shape)

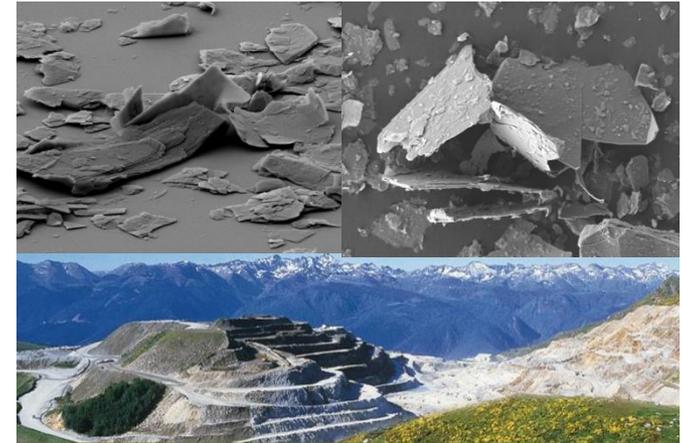
Hydrated magnesium silicate $Mg_3Si_4O_{10}(OH)_2$



Whiteness, optical properties, density, softness, skin adhesion, oil absorption, matt effect...

■ Main benefits

- ◆ Softness
- ◆ Compactibility
- ◆ Carrier for perfume or pigmentd
- ◆ Pearlescence in gels



*Bacteria
control without
irradiations*



■ Main applications

- ◆ Baby/Body powder
- ◆ Make-up (powder, foundations)
- ◆ Deodorant products
- ◆ Skin care
- ◆ Bar soap
- ◆ Shower gel, shampoo

Main applications



SILKY TOUCH AND COMPACTIBILITY IN PRESSED-POWDERS

ImerCare® talcs are widely used as an essential ingredient in pressed powders due to their excellent compactibility and delightfully soft feel.



SOFT, DRY FEEL FOR BODY POWDER APPLICATIONS

With its soft texture and the dry skin feel it confers, ImerCare® talc is an effective anti-chafing agent.



IMERYS

Main applications



TEXTURISING AGENT FOR EMULSIONS

Used in skin care emulsions, Imercare® talc confers a smooth, anti-tack feel and pleasant powdery texture.

*Try our
formulation with
ImerCare® 11T!*



STORAGE AND LATHER AGENT IN BAR SOAPS

ImerCare® Steasilk has been specially developed for bar soap products. ImerCare® Steasilk improves the shelf life of bar soap by preventing cracking during storage. It also confers creaminess to soap lather and enables production costs to be reduced without diminishing performance.



IMERYS

ImerCare T range

	Y	BET (m ² /g)	d50las (μm)	d50 sed (μm)	Lamellarity Index	Tapped dens. (cm ³ /g)	Bulk dens. g/cm ³	Oil absorption mL/100g	Ecocert COSMOS
ImerCare® 11T	91	3	26	11	1,4	0,85	0,45	40	X
ImerCare® 4T	94	7	10	4	1,5	0,50	0,25	60	X
ImerCare® Pharma 00T	89	2,0	17	10	0,7	0,90	0,50	33	X
ImerCare Pharma® 10T	93	3	19	10	0,9	0,90	0,50	40	X
ImerCare Pharma® 5T	93	4	10	5	1,0	0,60	0,30	45	X
ImerCare® Steasilk	91	5	14	7	1,0	0,8	0,4	40	X

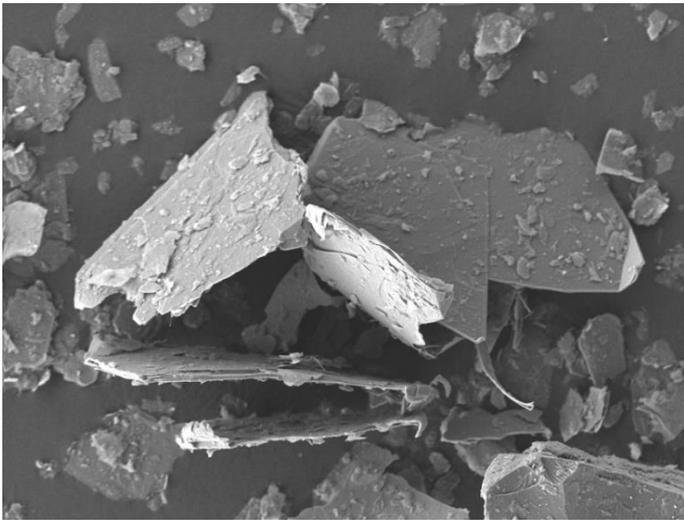
Advices for final applications:

- For body powders use ImerCare® 11T
- For bar soaps use ImerCare® Steasilk

- For emulsions and powders use
 - ◆ ImerCare® Pharma 00T
 - ◆ ImerCare® Pharma 10T
 - ◆ ImerCare® Pharma 5T
- For emulsions and powders use
 - ◆ ImerCare® 11T
 - ◆ ImerCare® 4T

... when Pharmacopeia is requested

Premium talc for Cosmetics



INCI name: talc

IMERCARE™
P A R I S



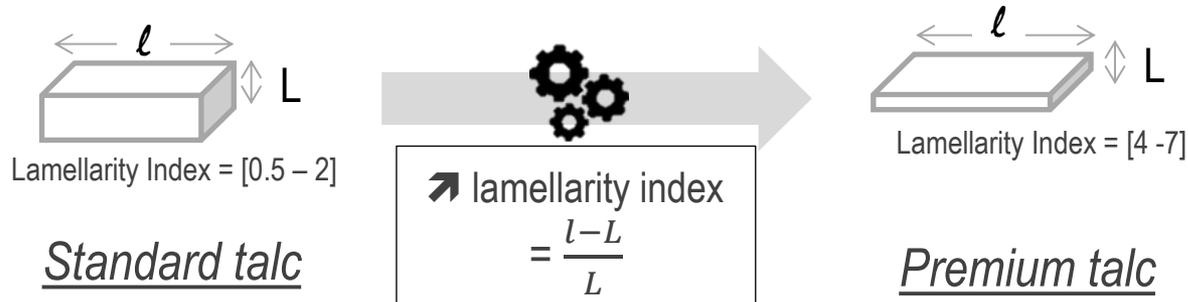
Premium talc: a natural mineral range for innovative make-up powders

■ BEFORE – Control only on:

- ◆ Deposit
 - Ex: ImerCare 11T and ImerCare 4T from Italy
 - Ex: ImerCare Pharma 00T from France
- ◆ Particle size thanks to process
 - Ex: ImerCare 11T is coarse
 - Ex: ImerCare 4T is fine

■ NOW - Control on:

- ◆ Morphology (= lamellarity) thanks to an innovative, patented process



■ Characteristics of new talc compared to standard talc

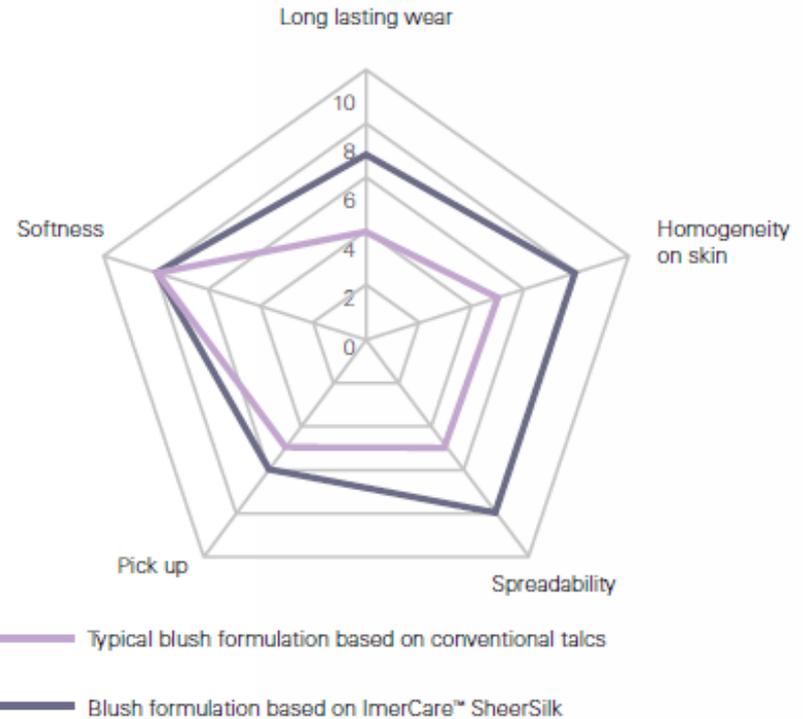
	l = d50las (µm)	L = d50sed (µm)	Lamellarity Index
ImerCare 11T	26	11	1,4
ImerCare 4T	10	4	1,5
ImerCare Pharma 00T	17	10	0,7
ImerCare Pharma 10T	19	10	0,9
ImerCare Pharma 5T	10	5	1,0
ImerCare Steasilk	14	7	1,0
ImerCare Sheersilk	22	3	6,3
ImerCare Velluto	11	2	4,5

Premium talc: a natural mineral range for innovative make-up powders

IMERCARE® SHEERSILK

IMERCARE® VELLUTO

- 2 grades have been developed with innovative properties compared to standard talc:
 - ◆ Innovative optical properties
 - Shiny
 - Opaque or more transparent
 - ◆ Homogeneity on skin
 - ◆ Long lasting wear
- Usable in wet process (contrary to standard talcs)



Conventional talcs



ImerCare™ SheerSilk and Velluto

Premium talc: a natural mineral range for innovative make-up powders

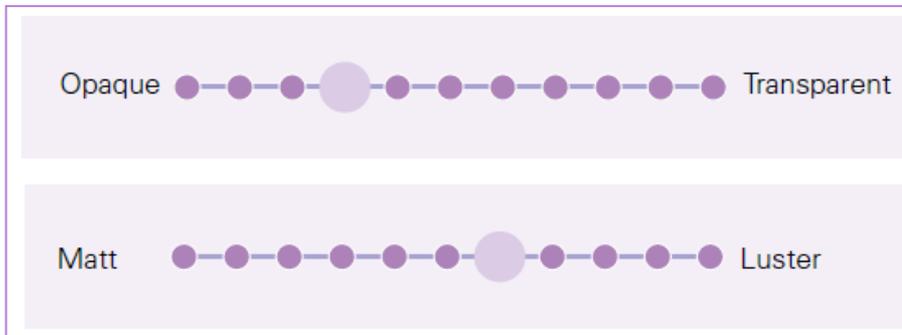
ImerCare® Velluto

- Origin from French Pyrenees
- New technology to obtain **high coverage** power and **shiny effect**
- **Unctous feel** skin touch



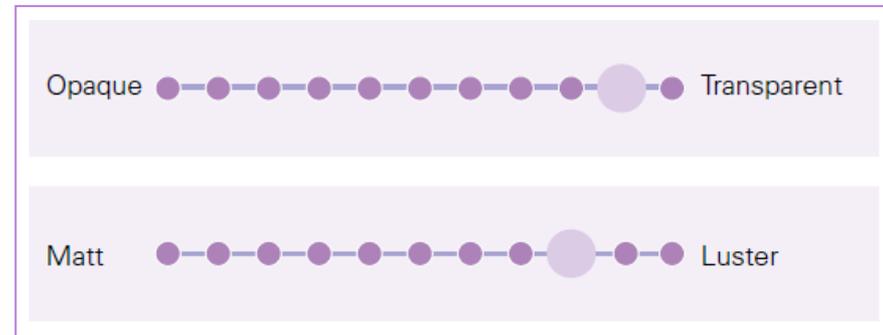
ImerCare® SheerSilk

- Origin from Italian Alps
- New technology to obtain high **transparency & shiny effect**



■ Applications

- ◆ Powder foundation
- ◆ Concealers
- ◆ Eye contour



■ Applications

- ◆ Eye shadow
- ◆ Blush
- ◆ BB cream



Formulation

■ “STARRY, STARRY NIGHT” EYE-SHADOW

Phase	INCI Name	Ingredients	Function	%
A	Talc	ImerCare® SheerSilk (Imerys)	Transparency and Lustre Agent	41.0
	Iron oxides	SunPuro Blackiron oxide (Maprecos)	Pigment	10.0
	Black Iron Oxide (and) Sodium Lauroyl Glutamate (and) Lysine (and) Magnesium Chloride	ASL-1 Black BL-100P (Daito Kasei)	Pigment	15.0
	Calcium Sodium Borosilicate (and) Titanium Dioxide (and) SnO2	OTS-DK Pearl-GFIF Blue (Daito Kasei)	Pigment	3.0
	Synthetic Fluorophlogopite	SynMica Fine (Maprecos)	Nacreous Agent	3.0
	Synthetic Fluorophlogopite (and) Iron Oxides	SunShine Ultra Glitter Bronze (Maprecos)	Nacreous Agent	1.8
	Polymethyl Methacrylate	Makibeads 1 (Daito Kasei)	Lubricant	15.0
	Silica	CL Silica 700 (Maprecos)	Smoothing Agent	1.2
B	Cyclohexasiloxane (and) Vinyl Dimethicone/Methicone Silsesquioxane Crosspolymer (and) Acrylamide/Sodium Acryloyldimethyltaurate Copolymer (and) Isohexadecane (and) Polysorbate 80 (and) PEG-10 Dimethicone	Gelaid® SILK (Innospec)	Silky Agent	3.0
	3-methyl-1,3-butanediol	Isopentyldiol (Kuraray)	Emollient	2.0
	Coco-Caprylate/Caprate	Cetiol® LC (BASF)	Emollient	2.0
	Dimethicone	Dimethisil® DM-200 (Innospec)	Spreadability Agent	3.0

Formulation

■ “BONNE MINE” MINERAL BLUSH

« You can use ImerCare® SheerSilk and ImerCare® Velluto as a base for your product. Up to 95% !”

TYPICAL FORMULATION INGREDIENTS

Phase	INCI Name	Ingredients	Function	%
A	Talc	ImerCare® SheerSilk (Imerys)	Transparency and Lustre Agent	78.0
	CI 16035	Suncroma FD&C Red N°40 (Maprecos)	Pigment	10.0
B	Isocetyl Stearoyl Stearate	DUB SSIC (Stearinerie Dubois)	Binder	12.0

ImerCare® SheerSilk imparts a natural, satin finish to blushes.



When formulating ImerCare® SheerSilk, it is important to use a low shear process to blend the ingredients in order to preserve the inherent properties of ImerCare® SheerSilk ultra platy particles

Formulation

■ “CAREZZA VELLUTO” MINERAL FOUNDATION

TYPICAL FORMULATION INGREDIENTS

Phase	INCI Name	Ingredients	Function	%
A	Talc	ImerCare® Velluto (Imerys)	Covering and Smooth Satin Effect Agent	93.0
	Black Iron Oxide (and) Sodium Lauroyl Glutamate (and) Lysine (and) Magnesium Chloride	ASL-1 Black BL-100P (Daito Kasei)	Pigment	0.59
	Red Iron Oxide (and) Sodium Lauroyl Glutamate (and) Lysine (and) Magnesium Chloride	ASL-1 Red R-516P (Daito Kasei)	Pigment	0.91
	Yellow Iron Oxide (and) Sodium Dilauramidoglutamide (and) Lysine (and) Magnesium Chloride	ASL-1 Yellow LL-100P (Daito Kasei)	Pigment	2.50
B	Isocetyl Stearoyl Stearate	DUB SSIC (Stearinerie Dubois)	Binder	3.0



When formulating ImerCare® Velluto, it is important to use a low shear process to blend the ingredients in order to preserve the inherent properties of ImerCare® Velluto ultra platy particles

ImerCare® Velluto is an ideal base for concealers and powder foundations

Formulation

■ “MINERAL TOUCH” EMULSION

Phase	INCI Name	Ingredients	Function	%
A	Aqua	-	Solvent	QSP 100
	Bentonite	Mineral Colloid BP (BYK)	Thickener	3.0
B	Limnanthes Alba Seed Oil	Fancor Meadowfoam Seed Oil (Elementis)	Emollient	10.0
C	Talc	ImerCare® Velluto (Imerys)	Covering and Smooth Satin Effect Agent	5.0
D	Glycerin	-	Humectant	3.0
	Phenylpropanol (and) Propanediol (and) Caprylyl glycol (and) Tocophérol	Sensiva PA 40 (Schülke & Mayr)	Preservative	1.0
	Citric Acid	10% in a water solution	pH Adjuster	0.2
	CI 17200	Unicert Red K7057-J (Sensient)	Dye	QSP

COSMETAGORA 2017: the unique texture of this mineral emulsion is produced using a cold process. This fluid, light formulation contains only five raw materials. It provide a protective veil thanks to Imercare® Velluto, a premium talc with an velvet finish. This powder imparts a refined skin texture and a natural make-up effect. Mineral Touch is ideal for Friday make-up.

ImerCare® Opaline

A new natural talc conferring pearlescent properties
to shower gels and shampoos

INCI name: talc



ImerCare® Opaline: benefites

■ Main properties

- ◆ Pearlizing agent
- ◆ Eco-friendly solution: Ecocert & Cosmos Approved
- ◆ Neither pH nor non-ionic sensitive
- ◆ Luxurious wholesome quality
- ◆ Chemical resistance, inertnes
- ◆ Specifically heat-treated to control microbial organisms



**COSMOS
APPROVED**



■ Main applications

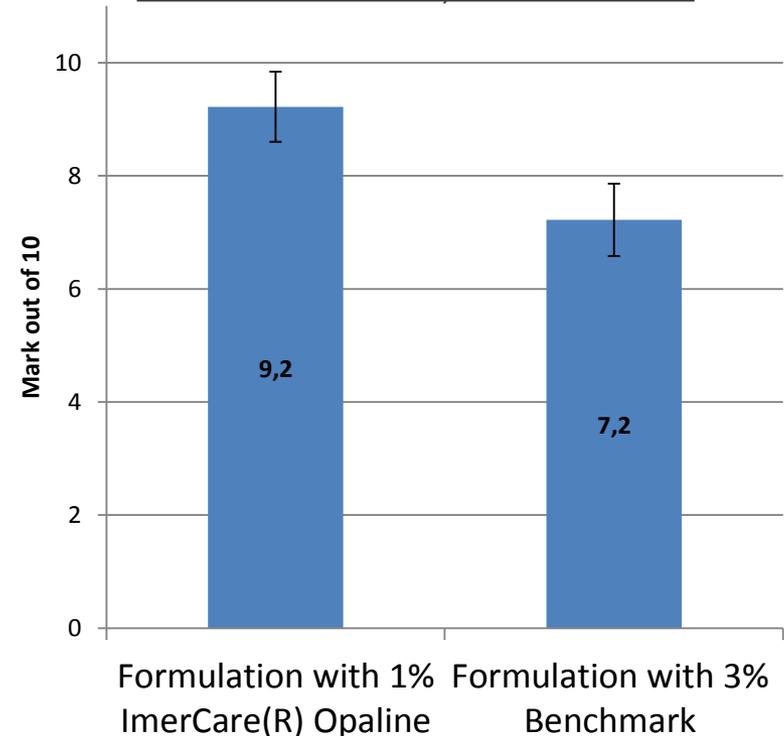
- ◆ Bath & Shower gel
- ◆ Liquid hand soaps
- ◆ Shampoo

ImerCare® Opaline: panel test

■ Panel test – sensory analysis

- ◆ According to ISO 13299
- ◆ Descriptors
 - Intensity of pearlescence
 - Opacity
 - Impact on foam
- ◆ Expert panel of 20 people.
- ◆ Scale of 0 to 10 (test in pairs).
- ◆ Formulation
 - “Blue pearl shower gel formulation” (see formulation guidelines) containing 1% ImerCare® Opaline
 - Same formulation with 3% synthetic pearling agent (glycol stearate derivative).

ImerCare® Opaline compared to synthetic pearlescent agent (glycol stearate derivatives) in blue formula

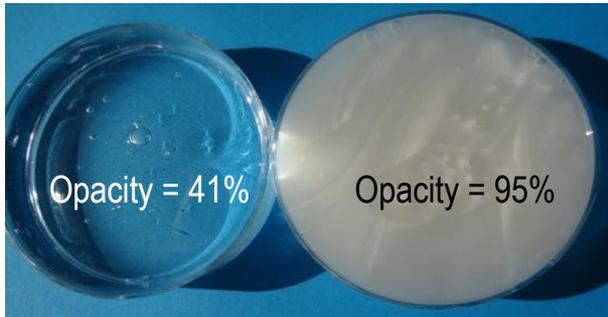


Pearlizing effect of ImerCare®
Opaline validated by expert panel !

ImerCare® Opaline: impact on formulation

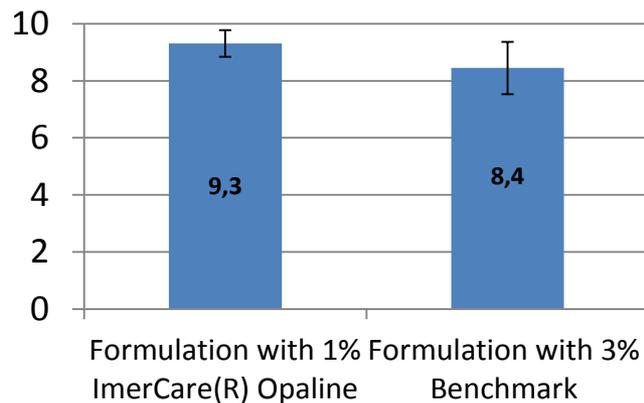
■ ImerCare® Opaline imparts opacity

◆ Instrumental measurement



1% ImerCare® Opaline vs Placebo

◆ Panel test (Rank 0-10)



■ ImerCare® Opaline has no impact on formulation compare to formulation with benchmark

■ Panelists

◆ Rank 0-10

◆ Descriptors

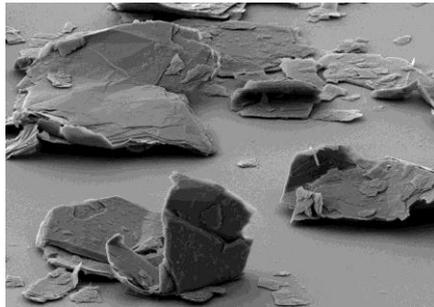
– Viscosity

– Size of bubbles

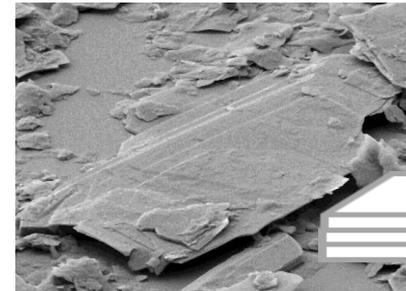
– Homogeneity of bubbles

	Viscosity	Size of bubbles	Homogeneity of bubbles
1% ImerCare Opaline	6,5	1,5	7,5
3% Benchmark	6,5	1,9	8,2

ImerCare® Opaline imparts pearlescence thanks to controlled lamellarity

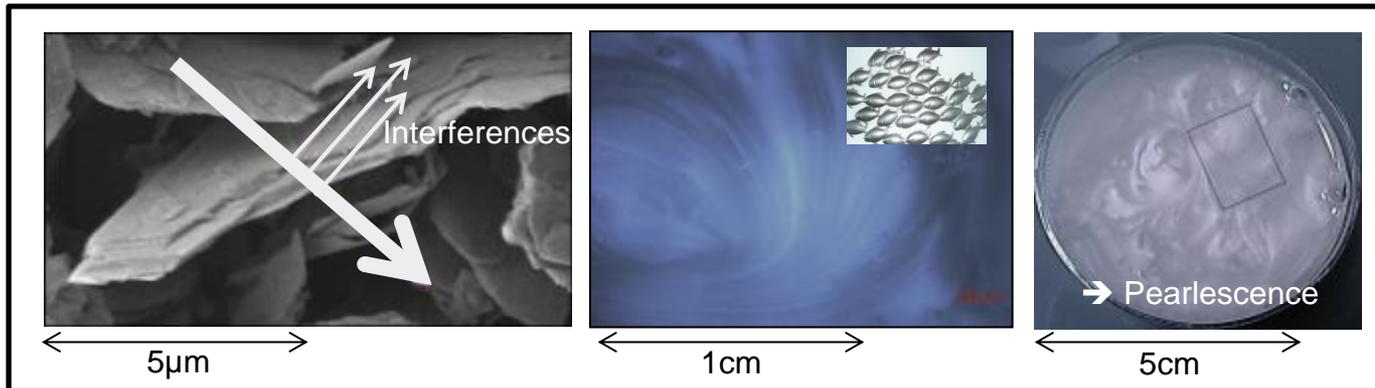
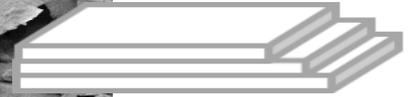


Standard talc



ImerCare® Opaline

Multi layer system
Controlled thickness



- The natural lamellarity and the natural multi-sheet structure of talc can be maintained and optimized using a patented mechanical process.
- By carefully controlling process parameters, the thickness of the multi-sheet talc structure produces interference, hence different colours and ultimately pearlescence.

How to formulate ImerCare® Opaline

■ Guideline

- ◆ Can be used in all formulations requiring opacity.
- ◆ Recommended loading level: 0.5 to 1.5 wt%



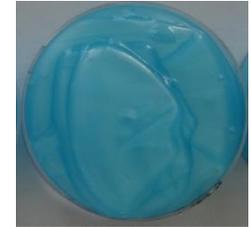
■ Minimal formula changes:

- ◆ Use a suitable suspension agent in your formulation, such as acrylates copolymer, xanthan gum or blend of natural/synthetic suspension agent.
- ◆ To suspend 1% ImerCare® Opaline formulators can use :

INCI	Commercial name	Viscosity @ 1 week (Brookfield, # spindle, speed)	Stability, 3 months @ 23°C, 40°C, 4/40°C
3 % Acrylate Copolymer (dry content)	10% Carbopol® Aqua SF-1 Polymer (Lubrizol)	11 900 (5,20rpm)	Stable
0,5% Xanthane Gum	0,5% Rhodicare® T (Solvay Novacare)	1 400 (3, 20rpm)	Stable

■ How to use in the process:

- ◆ Create a pre-mix with ImerCare® Opaline, Glycerin & water at room temperature and add it at the end of the process



■ Blue pearl shower gel with synthetic thickener

Phase	INCI Name	Ingredients	%
A	Aqua	-	QSP 100
	Acrylate Copolymer	Carbopol® Aqua SF-1 Polymer (Lubrizol)	10.0
	Glycerin	-	1.0
B	Sodium Laureth Sulfate	Texapon ® NSO UP (BASF)	45.0
	Sodium Hydroxide	10% in a water solution	4.0
C	Aqua (and) Methylisothiazolinone	Microcare® MT (Thor)	0.1
	Sodium Chloride	-	2.0
D	Aqua	-	3.0
	Glycerin	-	2.0
	Talc	ImerCare® Opaline (Imerys)	1.0
E	Citric Acid	50% in a water solution	QSP pH
	Sodium Benzotriazolyl Butylphenol Sulfonate (and) Buteth-3 (and) Tributyl Citrate	Cibafast® H Liquid (BASF)	0.3
	CI 42090	Unicert Blue 05601-J (Sensient), 0.1% in water	0.7

◆ Procedure

- Add phase B to phase A under low shear mixing until homogeneous.
- Incorporate successively phase C ingredients and mix until homogeneous (neutralisation at pH > 6.5-7.0)
- Premix phase D components, add to the blend whilst gently stirring until homogeneous.
- Add successively the phase E components and adjust the pH if necessary (5.8<pH<6.2).

◆ Characteristics

- Appearance: blue and pearlescent
- pH:
- Viscosity: mPa.s (Brookfield, spindle , rpm, 23°C)
- Stability: 3 months at 23°C, 40°C, 4/40°C (thermal cycle)



■ Pearl shower gel with natural thickener

Phase	INCI Name	Ingredients	%
A	Aqua	-	QSP 100
	Glycerin	-	1.0
	Xanthan Gum	Rhodicare® T (Solvay)	0.5
B	Aqua (and) Decyl Glucoside (and) Cocamidopropyl Betaine (and) Sodium Chloride	Oramix™ GB10 (Seppic)	30.0
	1,2-Hexanediol (and) Propanediol (and) Caprylhydroxamic Acid	Spectrastat™ PHL (Inolex)	3.0
C	Aqua	-	0.1
	Glycerin	-	2.0
	Talc	ImerCare® Opaline (Imerys)	1.5
D	Aqua	-	1.0
	Sodium Benzoate	-	0.5
E	Citric Acid	50% in a water solution	0.25

◆ Procedure

- Pre-wet xanthan gum with glycerin until homogeneous and stir in water.
- Gently mix phase B ingredients successively into phase A.
- Premix phase C and add to the blend.
- Weigh phase D and stir until solubilisation of sodium benzoate.
- Add phase D to the blend and control the pH.

◆ Characteristics

- Appearance: cream coloured and perlescent
- pH:
- Viscosity: mPa.s (Brookfield, spindle , rpm, 23°C)
- Stability: 3 months at 23°C, 40°C, 4/40°C (thermal cycle)

Award



100% natural minerals - effective alternatives to synthetic ingredients for opacity and pearlescence in shower gels and shampoos



Pagis L, Leroy H, Jouffret F - Imerys, Toulouse, France
laure.pagis@imerys.com - www.imerystalco.com



24th Conference of the International Federation of Societies of Cosmetic Chemists

IFSCC has chosen the poster presented ImerCare® Opaline development as one of the 10 best posters presented at the 2017 annual conference



Introduction

Opacifiers and pearling agents are widely used to improve the appearance of shower gels and shampoos. Most opacifying and pearling solutions are based on synthetic ingredients (styrene/acrylate copolymers for opacifiers, glycol stearate derivatives for pearling agents).

These synthetic ingredients are in the line of fire due to current trends towards zero-plastic and zero-nano particle products. They can also be difficult to formulate.

This study demonstrates that a **specific natural kaolin-based solution** can be used to replace synthetic opacifiers and a **specific natural talc-based solution** can replace conventional pearling agents.

Material and methods

Formulations - the opacifiers and pearling agents were formulated in typical shower gel formulations at different loadings.

Colour measurement
Whiteness: L* a* b* scale.
Instrument: Minolta 3700d (illuminant D65/10°).

Opacity measurement
Instrument: Minolta 3700d (illuminant D65/10°)
One-centimeter high containers filled with gels were placed on an opacity chart.

Opacity (%) = $\frac{\text{whiteness on black background} - \text{whiteness on white background}}{\text{whiteness on white background}} \times 100$

Panel test: pearlescence intensity measurement
20 volunteers according to ISO 13299.
Volunteers assessed the pearlescence intensity of the formulations on a scale of 0 to 10.

Conclusion

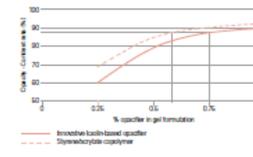
Two minerals were developed: one with the same performance as a synthetic opacifier and one with superior performance to a synthetic pearling agent:

- a natural aluminosilicate belonging to the kaolinite group proved to be an interesting alternative to petroleum-derived synthetic opacifiers. Thanks to an innovative processing method, this novel mineral has a controlled porosity that imparts whiteness and opacity to shower gel and shampoo formulations.
- a talc product, also produced using an innovative processing method, conferred a highly pearlescent effect. This new talc has been specially designed to optimize particle shape and control lamellae thickness so that the particles, when suspended in a clear liquid, impart a pearlescent effect.

These two minerals are 100% natural (Ecocert and Cosmos approved), non-allergen, can be used at all pHs with all ingredients, even ionic, and are cold processable.

AN INNOVATIVE KAOLINITE MINERAL TO REPLACE SYNTHETIC OPACIFIER

Instrumental test demonstrated that this new natural kaolin-based solution is equivalent to the synthetic opacifier

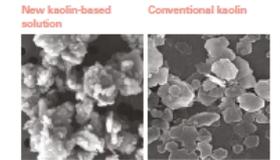


The new kaolinite mineral solution confers a rich, creamy optical effect and luxurious wholesome quality to shampoo and shower gels

Why does the new kaolin-based solution impart opacity?

- From a unique mine in USA, secondary deposit - whitest in the world - very fine sediments due to erosion
- From an innovative thermal process - optimized refractive index due to controlled porosity
- Far better whiteness and opacity:

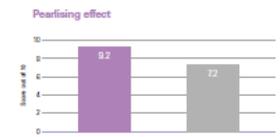
	0.25% Innovative kaolin-based opacifier	0.25% Conventional talc-based opacifier
Opacity (%)	87	77
Whiteness (L*)	82	71



The new kaolin-based solution has a different morphology from conventional kaolin.

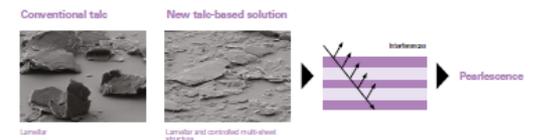
AN INNOVATIVE TALC MINERAL TO REPLACE PEARLISING AGENTS

Panel test demonstrated that the new talc-based solution confers a better pearling effect than the pearling agent based on glycol stearate



Why does the new talc-based solution impart pearlescence?

- Talc is one of the most lamellar natural minerals
- Innovative talc: multi-layer particle structure is optimized thanks to an innovative grinding process



Talc range

Premium talc

Grade	Y	BET (m ² /g)	d50las (μm)	d50 sed (μm)	Lamellarity Index	Tapped d. (cm ³ /g)	Bulk Dens g/cm ³	OA mL/100g
ImerCare® 11T	91	3	26	11	1,4	0,85	0,45	40
ImerCare® 4T	94	7	10	4	1,5	0,50	0,25	60
ImerCare® Pharma 00T	89	2,0	17	10	0,7	0,89	0,47	33
ImerCare® Pharma 10T	93	3	19	10	0,9	0,90	0,50	40
ImerCare® Pharma 5T	93	4	10	5	1,0	0,60	0,30	45
ImerCare® Steasilk	91	5	14	7	1,0	0,8	0,4	40
ImerCare® Sheersilk	89	19	22	3	6,3	0,50	0,30	65
ImerCare® Velluto	89	20	11	2	4,5	0,35	0,15	60
ImerCare® Opaline	92	20	11	2	4,5	0,40	0,20	50

Thank you

IMERCARE™
P A R I S



■ Stability of formulations containing 1 % ImerCare® Opaline

- ◆ 5 % Carbopol® Aqua SF-1 Polymer : Fail

- ◆ 10% Carbopol® Aqua SF-1 Polymer : Stable

→ Minimal loading of Carbopol® Aqua SF-1 Polymer somewhere between 5% and 10 %

- ◆ 0,5% Xanthane Gum: Stable

- ◆ <0,5 % Xanthane gum: not tested

→ Minimal loading of Xanthane gum somewhere between 0,1% 0,5 %