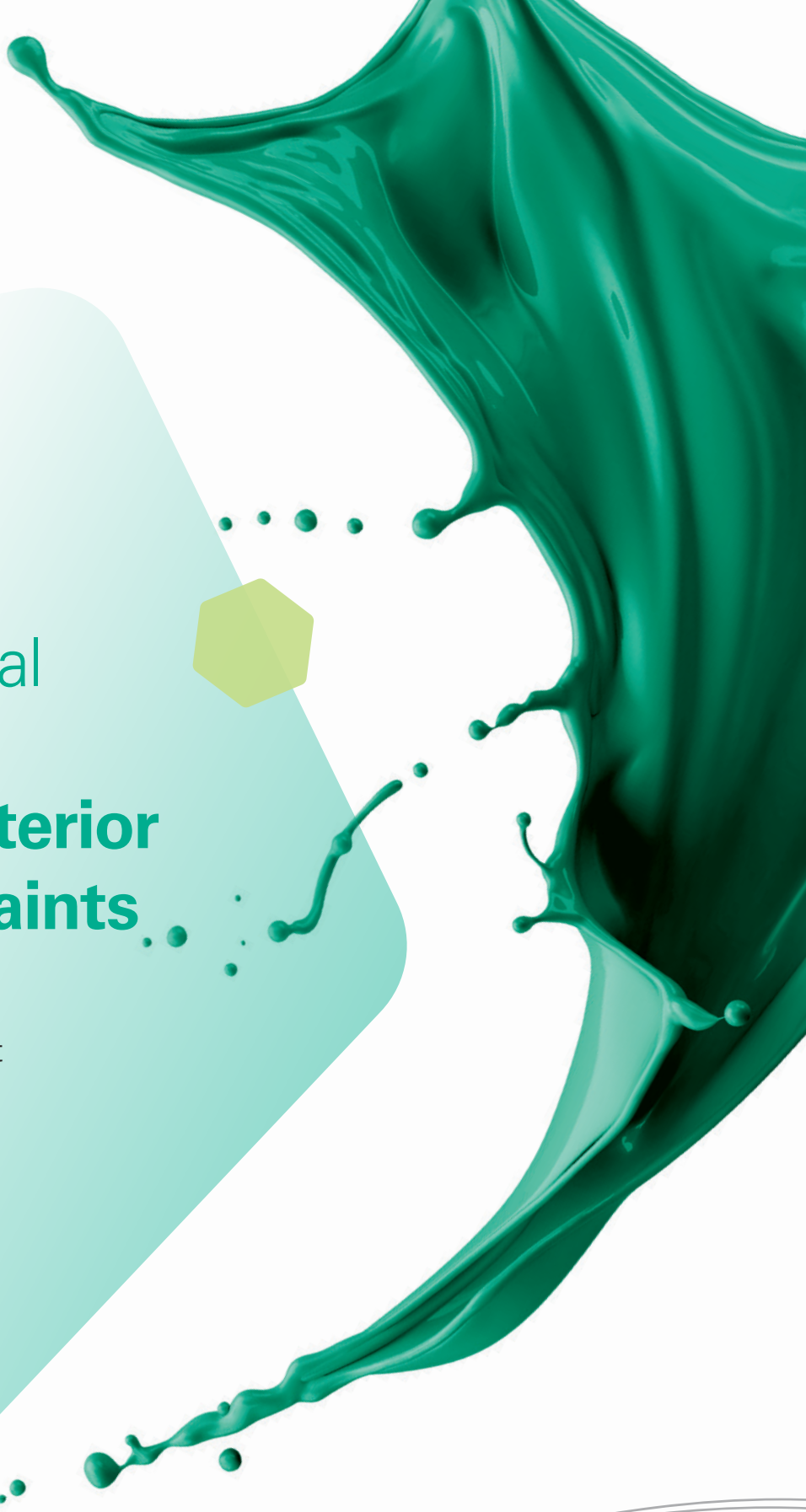
IMERYS

Imerys mineral solutions for **Interior & exterior decorative paints**

- Improved opacity
- Effective TiO_2 replacement
- Increased functionality
- Sustainable solutions



Our solutions at a glance

Matting

OptiMat® 2550
Celite® 281
Steamat®
Eco-Phyl®

Opacity

Opacilite™
Supreme™
PoleStar™
SOCAL® P3
SOCAL® UP-G
OptiGloss™
OptiGloss™ XD
ImerSilk™

Scrub resistance

Eco-Phyl®
Plastorit® 00
Plastorit® 000

Stain blocking

SteaShield® 10
MU™ M2/1

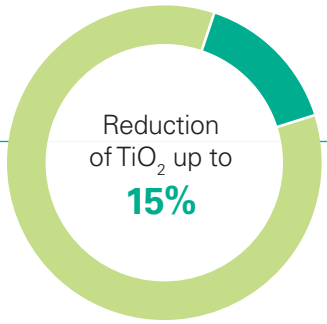
Weather durability

Opacilite™
Nyad® M325
Eco-Phyl®

Anti-cracking & anti-pinholing

PlastGard® 80
Eco-Phyl®
Celite® 281
MU™ 247
Luzenac 20M0
Luzenac 0
SteaShield® 40E

Opacity

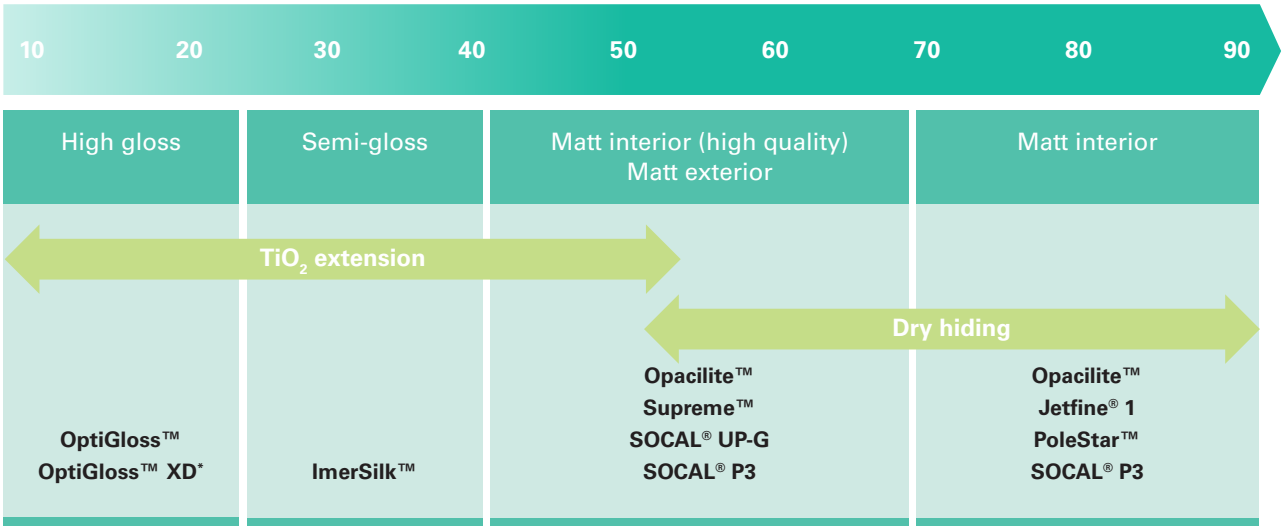


Imerys opacifying agents for high quality decorative paints

There are two options for reducing TiO_2 cost and optimising its use:
Low PVC (PVC < cPVC) – Optimise TiO_2 distribution
High PVC (PVC > cPVC) – Optimise dry hiding effect

Imerys opacifying extenders can reduce the total TiO_2 requirement, whilst generating savings in raw material costs. They can be used to replace up to 15% TiO_2 without any loss of opacity or other key properties such as gloss and mechanical performance.

Our solutions for TiO_2 extension – by PVC level



*for sb formulations

Opacity

Matt decorative paints

Effective dry hiding

High brightness

Outstanding opacity

Product	Mineral Type	ISO opacity ($8m^2/L$)	Typical properties L*	Gloss 85°	Low shear viscosity
Opacilite™	Flash calcined kaolin	+++	++	++	++
PoleStar™ 200P	Calcined kaolin	++	+++	+++	++
Supreme™	Hydrous kaolin	++	++	++	+++
Jetfine® 1	Talc	++	+	+	+
SOCAL® P3	PCC	++	+++	++	+
SOCAL® UP-G	PCC	+++	+++	+	++

High gloss paints

OptiGloss™ and **OptiGloss™ XD** ultrafine kaolin extenders allow the paint manufacturer to significantly reduce the raw material cost of high gloss paints.

Formulation guidelines

Add to gloss paint at addition level equalling 30% by volume of titanium dioxide.

Reduce titanium dioxide to match current coating opacity. Up to 10% TiO_2 reduction is possible.

Reduce binder to maintain paint volume solids. 8-10% reduction is normal.

Check key properties: opacity, gloss.

Check the level of dispersant in the new higher PVC paint; a deficiency can result in reduced gloss.

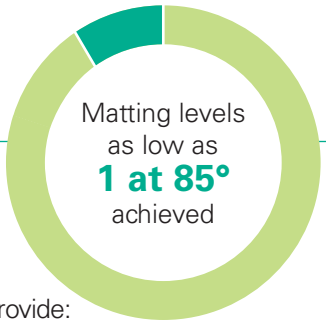
Semi-gloss paints

ImerSilk™ has the optimal property profile for use in semi-gloss, silk and satin decorative paints, allowing cost reduction through titanium dioxide and resin extension.

High gloss binder; resin extension possible

Paint components (wt%)	
Water & additives	37.2
TiO_2 – Rutile	18.0
ImerSilk™	**10.9**
Styrene-acrylic copolymer	33.9
TOTAL	**100**
PVC (%)	35
Gloss 60°	**40**

Matting

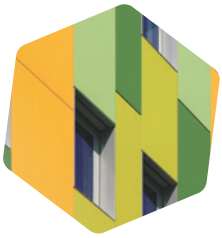


Solutions to meet a wide range of matting levels

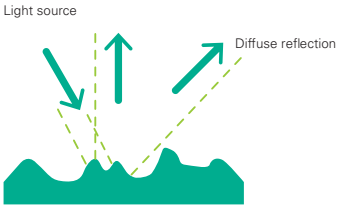
There is increasing demand for deep matt paints from both DIY and professional users. When applied on ceilings and walls, these paints need to provide:

- Deep matting - High whiteness and opacity - Excellent mechanical performance

Imerys' matting agents offer customized solutions for a wide range of matting levels.



Product	Mineral Type	Typical properties			
		Matting efficiency	Scrub resistance	Opacity	Brightness
OptiMat® 2550	Perlite	+++	++	+++	++
Celite® 281	Flux calcined DE	++	++	++	+++
Steamat®	Talc	+	++	++	++
Eco-Phyl®	Leucophyllite	+	+++	++	++



Eco-Phyl® for matting and improved mechanical performance

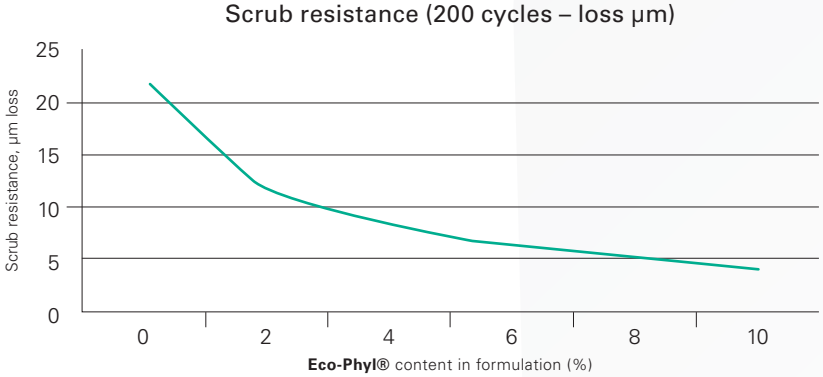
Eco-Phyl® is a matting agent that enables formulators to achieve efficient matting without losing opacity.

Eco-Phyl® improves scrub resistance. In tests, the formulation which did not contain **Eco-Phyl®** was a Class 3 system.

Using 10% **Eco-Phyl®** enabled the same formulation to be upgraded to Class 1.

Paint components (wt%)	
Water & additives	33
TiO_2 – Rutile	8
ImerCarb™ 32	**18**
ImerCarb™ 22	**26-x**
Jetfine® 1	**3**
Eco-Phyl®	**x**
Vinyl acetate copolymer, MFT 0°C, 53%	12
TOTAL	**100**

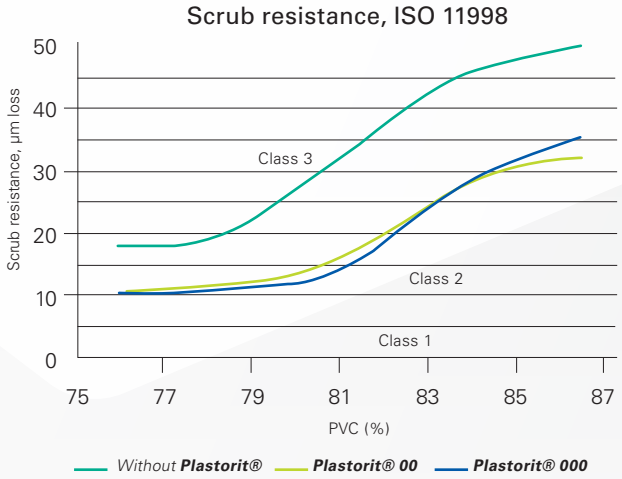
x = 0, 2, 4, 6 and 10 wt-%



Scrub resistance

Plastorit® 00 & 000 for improved scrub resistance in interior paints

Partial replacement of a coarse (5µm) carbonate with **Plastorit®** improves scrub resistance significantly. Using **Plastorit®** in the formulation allows paint formulators to lower resin content by ~25 %, while maintaining the same scrub resistance performance.



Replace 5 wt-% of coarse GCC (5µm) by **Plastorit® 00** and **000**

Paint components (wt%)					
Water & additives	33.0	33.7	34.4	35.3	36.0
TiO_2 – Rutile	8.5	8.5	8.5	8.5	8.5
ImerCarb™ 32	**21.0**	**21.4**	**21.8**	**22.1**	**22.5**
ImerCarb™ 22	**21.5**	**21.9**	**22.3**	**22.6**	**23.0**
Plastorit® 00 or Plastorit® 000	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Jetfine® 1	**3.0**	**3.0**	**3.0**	**3.0**	**3.0**
Vinyl acetate copolymer, MFT 0°C, 53%	13.0	11.5	10.0	8.5	7.0
TOTAL	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**
PVC (%)	75.8	78.2	80.7	83.3	86.0
CPVC (%)	63.4	63.4	63.5	63.5	63.6

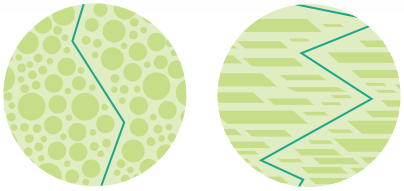
Stain blocking

SteaShield® 10 for highly effective stain blocking

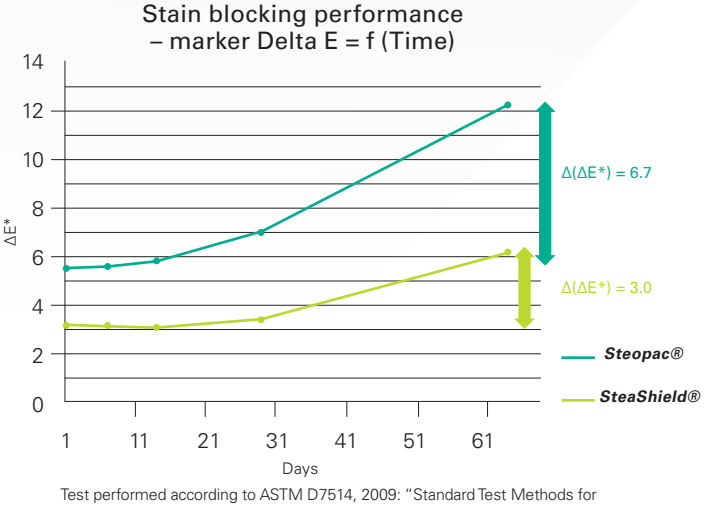
SteaShield® 10 improves barrier protection over time and significantly limits stain migration.

SteaShield® 10 is easy-to-formulate (dosage 5-18%) and suitable for all types of resin solvent and water-based systems.

Diffusion path



Non lamellar filler — **SteaShield™ 10**



Test performed according to ASTM D7514, 2009: "Standard Test Methods for Evaluating Ink Stain blocking of Architectural Paint Systems by Visual Assessment"

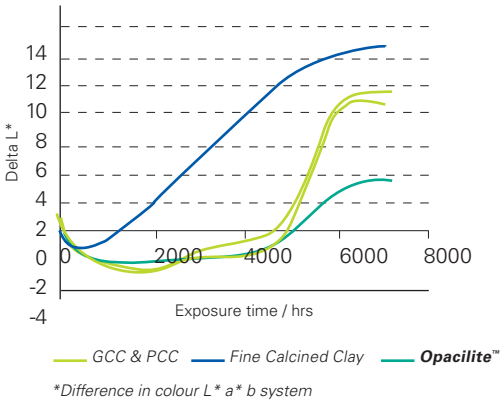
Weather durability

Improved weather durability

Opacilite™ offers additional benefits in exterior paints compared to other extenders such as fine calcined clays or ultrafine calcium carbonates.

Opacilite™ gives good opacity, better matting and good UV weathering performance. This is shown by a delay in the onset of chalking or colour change after UV exposure.

Change in whiteness of blue tinted exterior paints containing 18% TiO_2 and 8% test extender

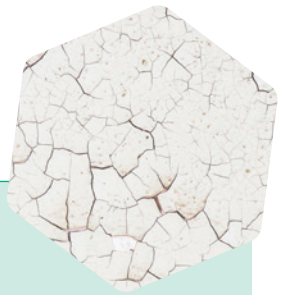


Difference in colour L a* b system

Imerys solutions for high weather durability

Opacilite™
Nyad® M325
Eco-Phyl®

Anti-cracking & anti-pinholing



Improved anti-cracking & anti-pinholing

To study the influence of **Eco-Phyl®** on cracking, the paints were applied in wedge profile from 200µm up to 1500µm. The graph shows the thickness where cracking begins.

The addition of **Eco-Phyl®** significantly reduces cracking in decorative paints. It also reduces the tendency to crack at a lower organic resin content.

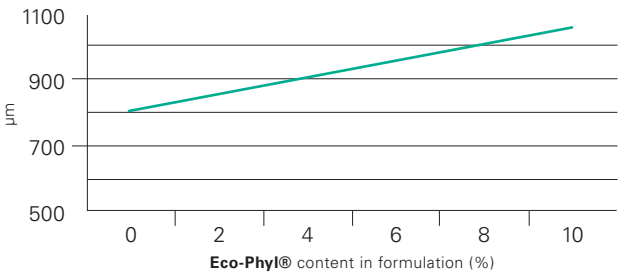
Imerys solutions for anti-cracking & anti-pinholing:

PlastGard® 80
Eco-Phyl®
Celite® 281
MU™ 247
Luzenac 20M0
Luzenac 0
SteaShield® 40E

Paint components (wt%)	
Water & additives	33
TiO_2 – Rutile	8
ImerCarb™ 32	**18**
ImerCarb™ 22	**26-x**
Jetfine® 1	**3**
Eco-Phyl®	**x**
Vinyl acetate copolymer, MFT 0°C, 53%	12
TOTAL	**100**

x = 0, 2, 4, 6 and 10 wt-%

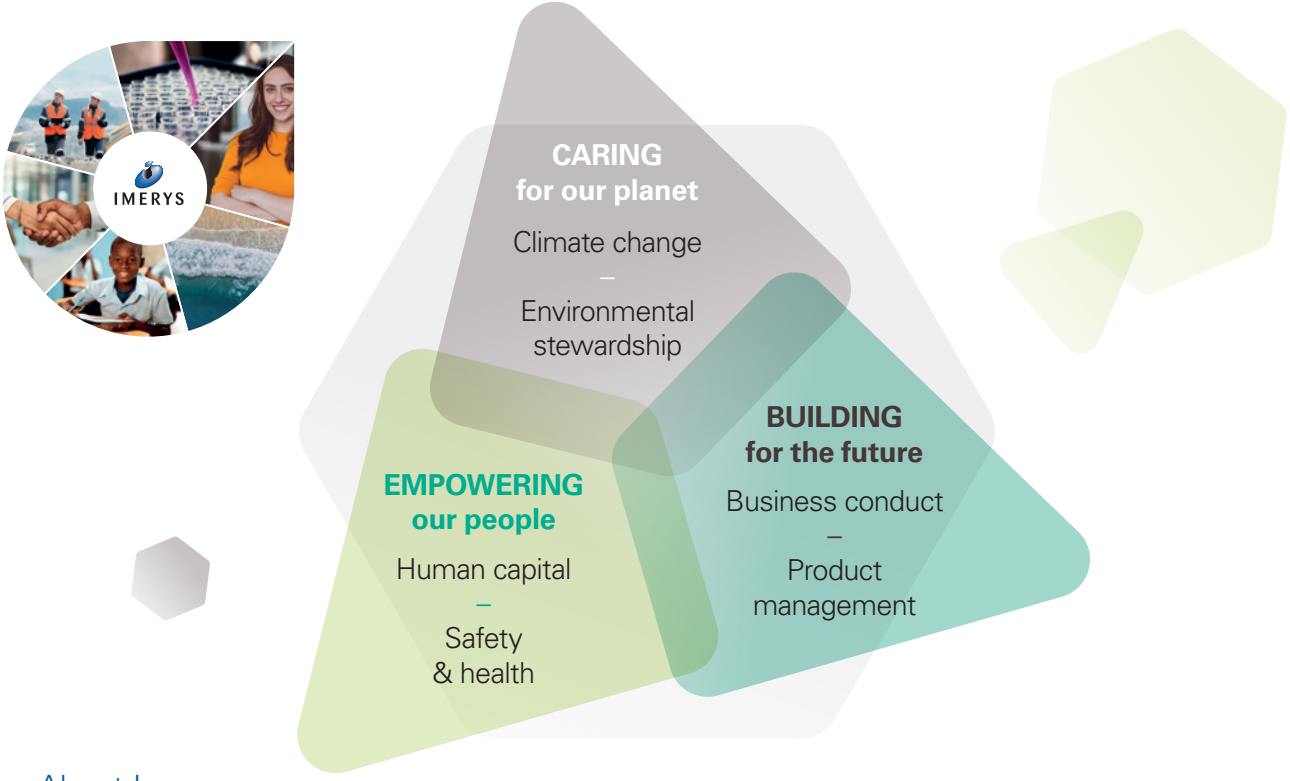
Cracking point



Integrating sustainable development into all we do

At Imerys, we respect the world in which we operate. We are committed to our role in society, to meeting our obligations to the countries and communities in which we do business, as well as to acting as responsible environmental stewards.

Imerys is your partner for sustainable solutions



About Imerys

The world leader in mineral-based specialties for industry, Imerys delivers high value-added, functional solutions to a diversified set of industrial sectors, from processing industries to consumer goods. The Group draws on its knowledge of applications, technological expertise and its material science know-how to deliver solutions based on the beneficiation of its mineral resources, synthetic minerals, and formulations. These contribute essential properties to customers' products and performance, including refractoriness, hardness, conductivity, opacity, durability, purity, lightness, filtration, absorption and repellency. Imerys is determined to develop responsibly, in particular by fostering the emergence of environmentally friendly products and processes.

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