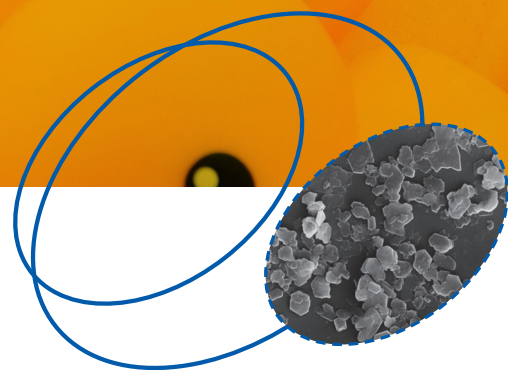


THE APPLICATION OF MINERAL SCIENCE

Kaolin in rubber

ATTRIBUTES

- Reduced permanent set
- Good mechanical reinforcement
- Improved thermal ageing
- Good abrasion resistance
- Low moisture pickup
- Barrier improvements
- Improved electrical insulation



IMERYS, the world leader in mineral-based specialty solutions for rubber

IMERYS is the world leader in mineral-based specialty solutions for industry. We transform a unique range of minerals to deliver functional specialty solutions that are essential to customers' products and manufacturing processes. With 300 scientists, 8 research and technology centres, 21 market-focused regional laboratories and close ties with renowned research institutes, IMERYS leads the way in engineering minerals for industry.

IMERYS Kaolin is a division of IMERYS. With over a hundred years' experience in the minerals business, we offer customers from the rubber industry a wide range of engineered solutions derived from our kaolin portfolio.

To obtain the required properties, this mineral is refined and engineered through various processes that influences its concentration, size, shape, structure and surface chemistry. Thousands of tons of materials are processed to the highest standards of quality, consistency and reliability.

EXPERTISE

IMERYS Kaolin's rubber team is dedicated to providing innovative commercial and technical solutions for our customers. Thanks to an in-depth knowledge of elastomer processing and of how minerals interact in polymers, our technical experts have a long track record for developing products for the rubber industry.

Our European product and applications development laboratories have a full range of analytical equipment used to develop new grades and support our customers.

Our rubber processing equipment includes:

- Laboratory internal mixers
- Laboratory open mills
- Compression moulding presses
- Laboratory extruders

Our rubber testing and analytical equipment includes:

- Rheometers (ODR, MDR, Mooney)
- Weatherometer
- Abrasion tester
- DSC
- TGA
- De Mattia flex tester
- DMTA
- Schering Bridge
- FT-IR
- SEM/TEM EDX

	HYDROUS CLAYS		CALCINED CLAYS	
Application	Benefits	Recommendation	Benefits	Recommendation
Car door seals	-	-	Reduction of electrical conductivity/corrosion, surface finishing, low compression set	Polestar™ 200R Glomax™ LL Polestar™ 400
Hoses	Barrier, reinforcement	Barrisurf™ HX Suprex™, Hexafil™	Low moisture pick-up, good thermal aging resistance (air or water hoses)	Polestar™ 200R Glomax™ LL Polestar™ 400
Tyres	Reinforcement, gas permeability	Suprex™, Barrisurf™ HX	-	-
Gaskets, mattresses	Car mattress, processing, marking	Polwhite™ E	-	-
Gaskets	-	-	Low compression set, high brightness	Polestar™ 200R Polestar™ 400 Glomax™ LL Polarite™ 103A
O-rings	-	-	Low compression set	Polestar™ 200R Polarite™ 103A
Membranes	Reinforcement, barrier	Barrisurf™ HX	Low compression set, reinforcement, low moisture pick-up	Polestar™ 200R Polestar™ 400 Glomax™ LL
Cable sheathing	Reinforcement, abrasion resistance	Suprex™, Hexafil™, Mercap™ 100, Speswhite™	Low moisture pick-up	Polestar™ 200R Polestar™ 400 Polarite™ 103A
Cable insulation	-	-	Electrical insulation, low dissipation factor, low compression set	Polestar™ 200R Glomax™ LX Polestar™ 400 Polarite™ 503S (medium and high voltage insulations)
FR cable	Char promoters	Suprex™, Barrisurf™ HX	Electrical insulation	Polestar™ 200R Polestar™ 400 Polarite™ 103A
Indoor/ outdoor	Reinforcement, processing, marking	Polwhite™ E, Polwhite™ B	-	-
Shoe soles	Reinforcement, abrasion resistance	Suprex™, Hexafil™	-	-
Stoppers, plungers, caps	Reinforcement, barrier	Polwhite™ B	Low surface activity (soluble Al) low compression set	Polestar™ 200P (Silane treated grades)
Hydraulic & Industrial hoses	Reinforcement, adhesion to metal reinforcement	Suprex™, Hexafil™, Speswhite™	Low moisture pick-up	Polestar™ 200R Polestar™ 400 Polarite™ 103A
Carpet backing	Dispersion, reinforcement	Devolite®, Polwhite™ E	-	-

IMERYS PRODUCTS FOR RUBBER

PRODUCT	RUBBER COMPOUNDS									PROCESSING			TYPICAL PROPERTIES											
	Cable Insulations	Cable Sheathing	Hoses	Footwear	Flooring	Pharmaceuticals	Seals & Gaskets	Tyres	Extrusion	Moulding	Calendering	Brightness (ISO) R457	Yellowness (max)	+ 10µm (mass % max)	- 2µm (mass %)	d ₅₀ (µm)	Surface Area (BET; m ² /g)	Moisture (mass % max)	Oil absorption (g/100g)	Aerated powder density (kg/m ³)	Tapped powder density (kg/m ³)	Specific Gravity (kg/m ³)	+ 53µm (ppm max)	
Soft Kaolin																								
Devolite™	•	•	•	•	•	•	•	•	•	•	78.5	7.0	35	29	3.5	7.0	1.5	33	400	650	2.6	500		
Polwhite™ E	•	•	•	•	•	•	•	•	•	•	78.5	7.0	35	25	3.5	8.0	1.5	33	360	810	2.6	500		
Polwhite™ B	•	•	•	•	•	•	•	•	•	•	82.5	5.2	15	45	2.1	10.0	1.5	38	370	750	2.6	500		
Barrisurf™ HX	•	•	•	•	•	•	•	•	•	•	Contact for details													
Silane treated Hard Kaolin																								
Mercap 200	•	•	•	•	•	•	•	•	•	•	75.0	-	1.0	93	0.3	24.0	-	35	-	-	2.6	2500		
Mercap 100	•	•	•	•	•	•	•	•	•	•	75.0	-	1.0	93	0.3	24.0	-	35	-	-	2.6	2500		
Hard Kaolin																								
Suprex™	•	•	•	•	•	•	•	•	•	•	75.0	-	1.0	70	0.3	240	1.0	38	-	-	2.6	2500		
Hexafil™	•	•	•	•	•	•	•	•	•	•	60.0	10.0	1.5	84	0.25	23	2.8	35	480	860	2.6	700		
Speswhite™	•	•	•	•	•	•	•	•	•	•	85.5	4.7	0.5	79.5	0.7	14.0	1.5	42	360	620	2.6	200		
Calcined Kaolin																								
PoleStar™ 450	•	•	•	•	•	•	•	•	•	•	85.8	-	-	64	1.5	-	0.5	60	-	-	2.6	-		
Opacilite™	•	•	•	•	•	•	•	•	•	•	87.0	3.9	5.0	55	1.6	11.0	-	74	260	480	2.6	500		
PoleStar™ 200R	•	•	•	•	•	•	•	•	•	•	88.5	5.0	1.0	44	2.1	8.5	0.5	50	340	600	2.6	500		
PoleStar™ 200P	•	•	•	•	•	•	•	•	•	•	90.0	5.0	12.0	50	2.0	8.0	0.5	50	330	600	2.6	500		
Glomax™ LL	•	•	•	•	•	•	•	•	•	•	91.0	4.0	5.0	66	1.5	9.0	0.5	65	290	520	2.6	200†		
PoleStar™ 400	•	•	•	•	•	•	•	•	•	•	92.0	4.0	2.0	94	0.6	15	1.0	76	270	390	2.6	200†		
Silane treated Calcined Kaolin																								
Polarite™ 103A	•	•	•	•	•	•	•	•	•	•	90.0	5.0	10.0	45	2.1	8.5	0.5	50	430	610	2.6	500		
Polarite™ 503S	•	•	•	•	•	•	•	•	•	•	90.0	4.0	2.0	68	1.5	9.0	0.5	65	400	750	2.6	500		

KEY

- Recommended
- Can be used
- † 45µm content (max)
- * Blue light reflectance
- † G.E.% of MgO
- Please note the properties quoted within this document are typical properties only and do not constitute a specification.

If you wish to discuss further how IMERYS can help with your polymer needs, please contact your local IMERYS representative.

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