



Kaolin

Extenders for
Coatings and Inks





Kaolin

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At KaMin, we believe that innovation begins with partnerships, one of our core values. We listen carefully to understand the unmet needs of our customers, and then we dedicate ourselves to creating solutions for them. Using performance minerals from KaMin is a common solution for partially replacing titanium dioxide (TiO₂) while simultaneously controlling costs and improving both the performance and appearance in coatings and inks.

KaMin Performance Minerals Kaolin Enhance Coatings and Inks

Kaolin solutions from KaMin can deliver:

- Improved cost (TiO₂ extension)
- Enhanced optical properties
- Improved processing efficiency
- Superior performance and appearance
- Controlled rheology



Kaolin Solutions for Architectural Coatings

Kaolin

High brightness, ease of dispersion, controlled particle size distribution, low specific gravity and platy morphology make KaMin products a value-added component in flat, eggshell, semi-gloss and high-gloss paints.

KaMin products in coatings applications can provide:

- TiO₂ extension
- Increased Opacity and Tint Strength
- Stain Resistance
- Sheen Control
- Color Pigment Extension
- Scrub Resistance
- Rheology Control
- Mud-crack Resistance

Gloss and Semi-Gloss Paints

In gloss and semi-gloss paints, ultrafine particle size KaMin products provide excellent TiO₂ extension while maintaining high gloss. ASP G90, Polygloss 90, ASP 200 and ASP 170 can be used in both latex and solvent-borne paints to improve coverage. KaMin HG 90 and CADAM Gloss AG are recommended for high gloss water-borne paints.

Interior Paint

For interior paints, KaMin products add value by providing TiO₂ extension (ASP® 170, ASP 172, ASP NC X-1, Polyplate P and Polyplate P01) improved opacity and tint strength (Ultrex® 96 and Satintone® products), sheen control (Mattex® and Mattex PRO), washability and stain resistance (ASP NC

X-1, Polyplate P and Polyplate P01) and scrub resistance (Mattex PRO, Satintone W and KaMin 70C).

Mattex PRO

At KaMin we are committed to bringing customers the most innovative and premium quality kaolins. Our newest addition to the coatings portfolio is Mattex PRO, a new patented, engineered, high performance kaolin product designed for use in flat architectural coatings. In addition to providing very high scrub resistance in low VOC paints, Mattex PRO also simplifies paint formulations by eliminating the use of flattening agents, thereby reducing costs.

Exterior Paints

In exterior paints, kaolin positively impacts tint retention (ASP 400P, KaMin 35, KaMin 35B, Satintone W, KaMin 70C and Mattex), gloss retention (ASP 170) and improved crack resistance. The platy structure and low oil absorption of ASP 400P, KaMin 35 and KaMin 35B provide a low degree of chalking and a high resistance to dirt pick up.

Stains

Our Kaolin portfolio includes a range of hydrous kaolin products designed to brighten, strengthen and enhance stain performance. The hydrous pulverized kaolin ASP 400P, KaMin 35 and spray-dried KaMin 35B provide easy dispersion and transparency in stains.



Kaolin Solutions for Automotive and Industrial Coatings

Automotive Coatings

KaMin products play an important role in automotive electro-deposition primers by providing film uniformity, tank stability, film smoothness, corrosion resistance, and edge film build. ASP® grades for automotive primers are characterized by low salt content, easy dispersion, good throwing power and proven performance. Recommended grades are ASP 200 for OEM electrodeposition primers. KaMin 611 is also recommended for some OEM primers. ASP 600 is recommended for refinish primers and primer surfacers.

Industrial and Specialty Coatings

Polyester Gel Coats

Our kaolin products improve blister resistance in unsaturated polyester gel coats, which protects fiberglass composites in products at risk of attack by water, such as boats, snowmobiles and other vehicles. Translink® 37 provides improved blister resistance, superior color retention, and improved viscosity and sag control compared to calcium carbonate (CaCO₃) and talc. Satintone® W and KaMin 70C provide improved opacity. Studies indicate that kaolin has better gloss retention after long term exposure to water.

Powder Coatings

Today, powder coatings are one of the fastest growing segments in the coatings industry. ASP 170, Satintone and Mattex® PRO are used in powder coatings to improve opacity, control gloss, maintain hardness and resist mar/abrasion.

Coil Coatings

ASP 200, KaMin 611 and ASP 170 offer TiO₂ extension, gloss, flexibility, corrosion and humidity resistance.

Traffic Paint

Satintone W and KaMin 70C offer titanium dioxide extension and abrasion resistance.

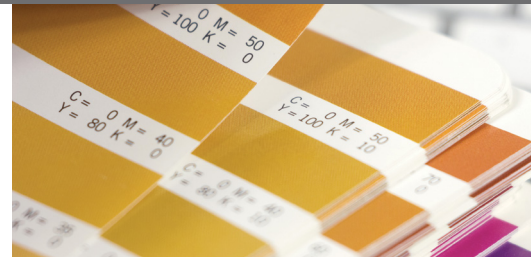
Baking Enamels

ASP 170 offers improved adhesion, titanium dioxide extension and excellent film properties.

Textured Paint

ASP 400P, KaMin 35 and KaMin 35B offer low viscosity, leveling and brushing ease.

For more information and technical data on Kaolin in coating and ink applications, please visit www.kaminsolutions.com or contact us at askus@Kaminsolutions.com



Kaolin Solutions for Inks

KaMin products are common components of most ink systems and are characterized by high brightness and a tightly controlled fine particle size distribution. KaMin products are versatile ink extenders that simultaneously address a wide variety of formulation needs.

ASP® and KaMin grades can provide many benefits in ink applications:

- Strike-through resistance
- Color pigment extension
- Transparency
- Low abrasion
- Controlled ink-water balance
- Formulating flexibility
- Rheology control and ink flow
- Fast dry time

Properties	Kaolin Impact
Abrasion	↓
Block Resistance	↑
Color Development	↑
Dispersion	↑
Gloss	↑
Hold Out	↑
Solvent Release	↑
Stability	↑
Strike Through Resistance	↑
Transparency	↑

↑ = Improved Positive Impact

↓ = Decreased Negative Impact

Offset Inks

Both web and sheet fed offset inks run at high speed and require high viscosity and tack, as well as a high resistance to emulsification from the fountain solution. ASP 101, ASP 200 and ASP 600 offer the best balance of properties and emulsification resistance in ink fountain solution. ASP grades are especially suited for optimal colorant dispersion for improved transparency and high gloss. Lithospere 7005CS and Lithospere NextGen are high performance kaolin extenders with very easy dispersibility, improved rheology, reduced clay bleed and allow reduction of ink resin and oil without impact on performance.

Gravure Inks

The very low abrasion and platy nature of the ASP grades make them an ideal choice for gravure inks. ASP 600 provides excellent strike-through resistance and low abrasion properties and is a very good product for gravure inks.

Other grades suitable for this application are ASP 200, ASP 602, Buca, KaMin 80, KaMin 90 and KaMin 80B. Kaolin's low abrasion helps maximize the lifespan of the images engraved into the Copper cylinders.

Flexographic Inks

For flexible packaging, the high degree of whiteness and fine particle size of ASP 170 and Ultrex® 96 are necessary to efficiently extend TiO₂, provide opacity and promote optimal dispersion of colorant particles. ASP 170, Satintone® 5HB and KaMin 300C provide excellent pigment extension, hiding and ease of dispersion.

Screen Inks

Screen inks are characterized by high viscosity to allow for a high film thickness. Compared to gravure and flexographic applications, a thick film is applied during screen printing to provide vibrant color, opacity and longer service life. Satintone 5HB, KaMin 300C and Ultrex 96, with their high whiteness and light scattering properties, are excellent extenders for screen inks.

Specialty Inks

KaMin products are also used in several types of specialty inks, including letterpress, security, ultraviolet curing and electron beam curing.

Kaolin for Coating and Ink Applications

Kaolin Product	Architectural Coatings												Industrial Coatings							Inks										
	Solvent-Borne						Water-Borne						Solvent or Water-Borne							Solvent or Water-Borne										
	Gloss	Semi-Gloss	Interior Flat	Exterior Flat	Primer	Stain	Gloss	Semi-Gloss	Interior Flat	Interior Satin/Eggshell	Exterior Flat	Primer	Stain	Coil Coatings	Gel Coatings	Textile Coatings (WB)	Traffic Coatings	Appliance	Barrier/Undercoats	Powder Coatings	Electro-Deposition	Primer	Offset	Gravure - solvent	Flexo - solvent	Gravure - aqueous	Flexo - aqueous	Silk Screen		
Hydrous Spray Dried																														
KaMin HG 90							R																					R	R	•
CADAM Gloss AG							R																					R	R	•
ASP 102								•								•														
KaMin 90B								•								•														
ASP 172		R	R				R	R	•	•						R									•		•	•		
ASP 602								•								•									R		R			
KaMin 80B								•								•								R		R				
KaMin 35B									•		R	R	R			•			•	•		R								
Hydrous Pulverized																														
ASP G90	R	•					R	•					R	•		•	•		•	•					R	R	•	•	•	
Polygloss 90	R	•					R	•					R	•		•	•		•	•					R	R	•	•	•	
ASP 170	•	R	R	R			•	R	R		R		R	•		R	R		•	•					•	R	•	•	•	
ASP 200		•			•	R		•				•	R	•			•	•	•	•	R	R	R	•	•	•	•	•	•	
KaMin 611								•					•	R			•	•	•	•	R	R	R	•	•	•	•	•	•	
ASP 400P			•	R	R	R		•		R	R	R						•	•	•	R	R	R	•	•	•	•	•	•	
KaMin 35			•	R	R	R		•		R	R	R						•	•	•	R	R	R	•	•	•	•	•	•	
ASP 600		•						•					•						•	•	R	R	•	•	•	•	•	•	•	
ASP 900																					•	•								
BUCA®																							•	R		R				
KaMin 90																							•	R		R				
KaMin 80																							•	R		R				
Delaminated																														
Polyplate P				•	R	R		•	R	•	•				•			•				•								
ASP NC X-1								•	R	•	•				•			•				•								
Polyplate P01								•	R	•	•				•			•				•								
ASP 802										•	•	•										•								
Polyplate HMT										•	•	•										•								
Hydrous Surface Modified																														
ASP 101														•								•	R							
Lithospense 7005CS																							R						R	
Lithospense NextGen																							R						R	
Calcined																														
Mattex			R	•					R		•																			
Mattex MX			R	•					R		•																			
Mattex PRO			R						R								R			•										
Satintone W			R	R	•				R	R	R	•			R		R			•		•								
KaMin 70C			R	R	•				R	R	R	•			R		R			•		•								
Satintone 5HB			•	•					R	R	•				•		•					R				R		R	R	
KaMin 300C			•	•					R	R	•				•		•					R				R		R	R	
KaMin 2000C			•	•					R	R	•				•		•					R				R		R	R	
Ultrex 96			•	•					R	R	•				•		•								R		R		R	
Ultrex HP			•	•					R	R	•				•		•								R		R		R	
Calcined Surface Modified																														
Translink 37				•	•									R							•			•						
Translink 77															•															
Translink 445																				•	•									
Nylok 171																														

R = Recommended • = Can be Used

Kaolin for Coating and Ink Physical Properties

Kaolin Product	Physical Form	Surface Modifications	GE Brightness	Screen Residue	pH	Median Sedigraph Particle Size	Oil Absorption	Loose Bulk Density	Tamped Bulk Density
			(%Reflectance)	(% + 325 Mesh)	(20% solids)	(µm)	(D-281 Rubout)	(lbs/ft ³ /kg/m ³)	(lbs/ft ³ /kg/m ³)
Hydrous Spray Dried									
KaMin HG 90	Spray-Dried	Dispersant	91	0.01	6-8	0.2	42	50/795	56/891
CADAM Gloss AG	Spray-Dried	Dispersant	89	0.01	7-8	0.2	41-45	N/A	N/A
ASP 102	Spray Dried	Dispersant	86	0.01	6-8	0.4	40-50	44/700	58/930
KaMin 90B	Spray-Dried	Dispersant	88	0.01	6-8	0.4	43	35/557	42/668
ASP 172	Spray Dried	Dispersant	90	0.01	6-8	0.4	40-50	44/700	58/930
ASP 602	Spray Dried	Dispersant	86	0.01	6-8	0.6	35-45	44/700	58/930
KaMin 80B	Spray-Dried	Dispersant	87	0.01	6-8	0.5	42	36/573	44/700
KaMin 35B	Spray-Dried	Dispersant	83	0.03	7	4	27	N/A	N/A
Hydrous Pulverized									
ASP G90	Pulverized	Dispersant	90	0.01	6-8	0.2	40-50	13/210	18/290
Polygloss 90	Pulverized	Dispersant	91	0.01	7	0.2	42	10/159	12/191
ASP 170	Pulverized	Dispersant	90	0.01	6-8	0.4	40-50	15/240	20/320
ASP 200	Pulverized	None	86	0.01	3.5-5	0.4	40-50	18/290	30/480
KaMin 611	Pulverized	Dispersant	87	0.01	5	0.4	40	35/557	42/668
ASP 400P	Pulverized	None	80	0.15	3.5-5	3.5	30-40	25/400	40/640
KaMin 35	Pulverized	Dispersant	84	0.03	7	4	27	28/445	31/493
ASP 600	Pulverized	None	85	0.01	3.5-5	0.6	35-45	20/320	30/480
ASP 900	Pulverized	None	83	0.15	3.5-5	1.5	30-40	25/400	40/640
BUCA	Pulverized	Dispersant	86	0.01	6-8	0.4	40-50	16/260	20/320
KaMin 90	Pulverized	Dispersant	88	0.01	7	0.4	43	12/191	15/239
KaMin 80	Pulverized	Dispersant	87	0.01	7	0.5	42	12/191	16/255
Delaminated									
Polyplat P	Pulverized	Dispersant	88	0.01	6-8	0.75	45	40/636	47/748
ASP NC X-1	Spray Dried	Dispersant	87	0.01	6-8	0.7	40-50	40/650	55/890
Polyplate P01	Spray-Dried	Dispersant	88	0.01	7	0.75	42	17/270	18/286
ASP 802	Spray Dried	Dispersant	86	0.02	6-8	2.5	35-45	48/770	54/900
Polyplate HMT	Spray-Dried	Dispersant	88	0.01	6-8	1.2	42	40/636	45/788
Hydrous Surface Modified									
ASP 101	Pulverized	Stearate	86	0.03	3.5-5	0.4	40-50	18/290	30/480
Lithospense 7005CS	Pulverized	Hydrophobic	84	N/A	N/A	0.4	40	N/A	N/A
Lithospense NextGen	Pulverized	Hydrophobic	84	N/A	N/A	N/A	N/A	N/A	N/A
Calcined									
Mattex	Pulverized	Dehydroxylated	90	0.01	5-7	1.3	60-70	20/320	30/480
Mattex MX	Pulverized	Dehydroxylated	90	0.01	5-7	1.1	65-75	20/320	30/480
Mattex PRO	Pulverized	Dehydroxylated	89	0.30	6-8	2.7	52-62	26/416	44/704
Satintone W	Pulverized	Dehydroxylated	90	0.02	5-7	1.4	50-60	20/320	30/480
KaMin 70C	Pulverized	Dehydroxylated	91	0.01	6	1.3	54	23/366	28/445
Satintone 5HB	Pulverized	Dehydroxylated	91	0.01	5-7	0.8	85-95	13/210	20/320
KaMin 300C	Pulverized	Dehydroxylated	92	0.01	5.5	0.6	90	N/A	N/A
KaMin 2000C	Pulverized	Dehydroxylated	92	0.01	6-7.5	0.6	65	14/223	25/398
Ultrex 96	Pulverized	Dehydroxylated	96	0.02	5-7	0.8	85-95	16/260	22/350
Ultrex HP	Pulverized	Dehydroxylated	93	0.02	5-7	N/A	N/A	13/210	20/320
Calcined Surface Modified									
Translink 37	Pulverized	Vinyl Silane	90	0.02**	N/A	1.4**	45-55	20/320	35/560
Translink 77	Pulverized	Vinyl Silane	91	0.02**	N/A	0.8**	80-90	13/210	21/340
Translink 445	Pulverized	Amino Silane	90	0.02**	8-10	1.4**	45-55	20/320	35/560
Nylok 171	Pulverized	Amino Silane	91	N/A	8.5	1.4**	N/A	N/A	N/A

** Pre-treatment value

About KaMin - 95 Years of Innovation

How does innovation begin? At KaMin and CADAM, we believe that innovation begins with partnerships, one of our core values. We listen carefully to understand the unmet needs of our customers, and then we dedicate ourselves to creating solutions for them.

For decades, KaMin and CADAM have pioneered enhancements in kaolin products and processes. What have we learned along the way? We can tell you that there is not one single recipe for success! Innovation is, however, always about leveraging the right resources to design the right solution. Whether those resources include a state-of-the-art pilot coater, advanced scientific instruments, exceptional applications expertise, a rich reserve portfolio, scientists, technologists, logistics or flexible manufacturing facilities — we have the tools to create solutions.

At KaMin and CADAM, innovation is the outcome of what we do every day — creating value for our customers from the ground up.

Contact

Headquarters

822 Huber Road
Macon, GA 31217

Phone: +1 (478) 745-4751

askus@KaMinsolutions.com

www.kaminsolutions.com

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