

MICA

The Premium Choice for Mud-Crack Resistance

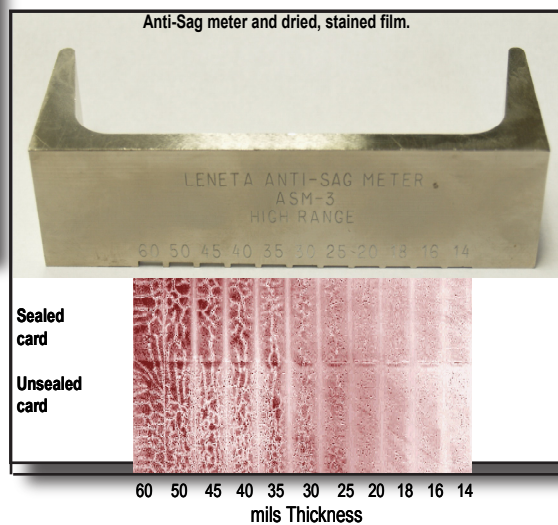
QUALITY MINERAL PRODUCTS ENRICHING OUR DAILY LIFE

Mica mineral products are characterized by high aspect ratios. Micahs are the products of choice for high quality architectural and industrial paints and coatings, having been specified in many applications for over 50 years. One of the key properties Mica delivers is the ability to reduce mud-cracking of paints, especially where those paints have a high application film build. The high aspect ratio of Micahs help to delocalize stresses which build during drying and which lead to cracking.

This Imerys study evaluated the effect of adding mica to a 55% PVC decorative interior coating and considers the effect on mud-crack formation. This was evaluated by use of an Anti-Sag meter (picture below) which allows a film to be prepared at multiple thickness's ranging from 14 through 60 mils (355 to 1524 microns). Mica was added at 0, 37.5 and 75 lb per 100 gallons with a corresponding reduction in Calcium Carbonate to maintain a constant pigment volume. After 24 hours dry time the film was stained to highlight cracking and the highest film thickness at which no significant cracking was visible with the unaided eye was recorded.

Formulations

MATERIAL	GALLONS	LBS	GALLONS	LBS	GALLONS	LBS
WATER	41.10	342.36	41.10	342.38	41.10	342.36
KTPP	0.09	1.80	0.09	1.80	0.09	1.80
TAMOL 731	0.87	8.00	0.87	8.00	0.87	8.00
IGEPAL CO-610	0.46	4.00	0.46	4.00	0.46	4.00
COLLIDS 681F	0.41	3.00	0.41	3.00	0.41	3.00
TIO2(R-706)	2.73	91.02	2.73	91.03	2.73	91.00
NEOGEN 2000	7.23	158.34	7.23	158.34	7.23	158.34
CALWHITE	7.89	177.53	6.16	138.55	4.43	99.50
MICA	0.00	0.00	1.7	37.5	3.46	74.90
NATROSOL PLUS	0.49	4.50	0.49	4.50	0.49	4.50
GRIND TOTALS	61.27	790.55	61.27	789.07	61.27	787.50
UCAR 379	28.08	249.90	28.08	249.91	28.08	249.90
ETHYLENE GLYCOL	2.69	24.99	2.69	24.99	2.69	24.99
TEXANOL	1.36	10.00	1.36	10.00	1.36	10.00
WATER	6.60	54.98	6.60	54.98	6.60	54.99
TOTAL PAINT	100.00	1130.41	100.00	1128.95	100.00	1127.50



Mud-Crack Resistance

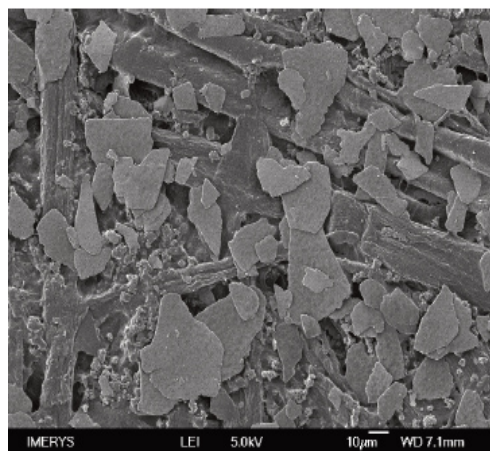
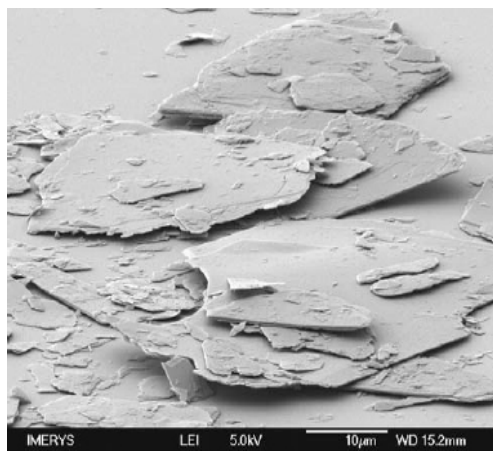
performance minerals north america

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Product	Mineral	Mean particle size (micron)	Relative Aspect Ratio	Color	Zero Mica (Unsealed)	37.5 lb Mica (Unsealed)	75 lb Mica (unsealed)	Zero Mica (Sealed)	37.5 lb Mica (Sealed)	75 lb Mica (Sealed)
Kaopaque 10S	Kaolin	0.6	Moderate	Off-white	20	35	35	20	25	25
C-4000	Muscovite	17	Moderate	Off-white	20	45	50	20	35	45
WG-325	Muscovite	33	High	Off-white	20	55	60+	20	40	60+
4-K	Muscovite	54	Moderate	Off-white	20	45	60+	20	40	60+
L-140	Muscovite	60	V. High	Off-white	20	60+	60+	20	60+	60+
Suzorite 400HK	Phlogopite	15	Moderate	Dark	20	40	60	20	45	55
Suzorite 325HK	Phlogopite	29	High	Dark	20	45	60+	20	40	60+
Suzorite 325S	Phlogopite	37	High	Dark	20	45	60+	20	40	60+

The evaluation shows that when Mica is added to paint formulations it has a clear influence on the mud-crack resistance of the paint applied at high application film builds. This was seen for permeable substrate, represented by the unsealed card, and was even more pronounced with an impermeable substrate (sealed card) where there is only one surface that volatiles can leave the film. There is also a clear trend where mud-cracking is improved as both the average particle size AND/OR the aspect ratio of the mica is increased.



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