



PARALOID™ KM-377 Acrylic Impact Modifier
For Vinyl Building Products

Regional Product Availability North America

Description PARALOID™ KM-377 Modifier provides excellent impact resistance, excellent impact retention, and superb processability. PARALOID KM-377 Modifier enables a true wood look in Vinyl siding and fencing by imparting lower gloss without the use of expensive gloss reducing additives or mechanical means. PARALOID KM-377 Modifier is based on PARALOID KM-334 Modifier technology and imparts the same impact resistance, weatherability, and processability in Vinyl formulations.

Physical Description

Chemical Description	Acrylic polymer
Appearance	White, free-flowing powder
Bulk Density, g/cc	0.44
Specific Gravity, at 25°C	1.10

Lower Gloss

Gloss values (75°) in the range of 15 to 20 can be achieved with no other processing or formulation changes other than replacing PARALOID™ KM-334 Modifier in standard siding with PARALOID KM-377 Modifier. Even lower values, in the 8 to 15 range, can be achieved with minimal processing efforts such as die cooling or air knives.

Impact Modifier (5.0 phr)	Processing Aid (0.5 phr)	Gloss Values at 75°
PARALOID™ KM-377	PARALOID™ K-175	16 to 20
PARALOID KM-334	PARALOID K-175	25 to 30
PARALOID KM-334	PARALOID K-120ND	30 to 35

Gloss Control

PARALOID™ KM-377 Modifier can also be used to achieve improved control in higher gloss lines. With minimal changes in processing aids, lubricant levels, or processing conditions, gloss in the range of 20 to 35 can be achieved and more consistently maintained during any changes in processing temperature.

Impact Resistance PARALOID™ KM-377 Modifier exceeds the industry standards for resistance to impact as measured by the Drop Dart test, imparting excellent results even at 0°C. This type of performance is similar to that demonstrated by PARALOID KM-334 Modifier. Typical test data is provided in the following table. The excellent impact resistance obtainable with PARALOID KM-334 Acrylic Modifier has been established over many years of commercial experience.

IMPACT STRENGTH PROCESSING			
TEST SAMPLES: EXTRUDED SHEET (40 MILS)			
CM-35 TWIN-SCREW EXTRUSION CONDITIONS (SEE BELOW)			
Modifier	Drop Dart Impact (ASTM D-4226) in.-lb.		Dynatup Impact Energy to Break
	@ 23°C	@ 0°C	
@ 5 phr			@ 23°C, ft.-lb.
PARALOID™ KM-377	112	74	7.4
PARALOID KM-334	104	68	7.2
Butadiene-modified Acrylic	112	68	7.2

Excellent
Processability

PARALOID™ KM-377 Modifier exhibits excellent processing in typical weatherable Vinyl formulations. PARALOID KM-377 Modifier was designed using the experience gained with PARALOID KM-334 Modifier to assure the same product performance.

EXTRUSION PROCESSING					
Test samples: Extruded Sheet (1 mm x 102 mm)					
Conditions in CM-35 Twin-Screw Extruder					
Barrel Temperatures, °C 175/180/190 Screw motor, rpm 300					
Adapter Temperature, °C 180 Feeder rate, rpm 42					
Screw oil, °C 170					
Modifier	Extrusion Temperature, °C		Extrusion Pressure Psi	Material Appearance	
	Die	Melt		At vent	Extrudate Surface
PARALOID™ KM-377	192	194	2700	Well-fused	Smooth
PARALOID KM-334	192	196	2800	Well-fused	Smooth

Formulations

PARALOID™ KM-377 Modifier will enable more pleasing aesthetics for Vinyl and allow Vinyl to compete with wood more effectively on appearance. The level and type of processing aid selected does affect the gloss level attained. Reducing the amount of PARALOID K-120ND Processing Aid will cause a reduction in the gloss level. The information provided in the table is for a capstock formulation. For a more consistent look, PARALOID KM-377 Modifier is also recommended for substrate.

RECOMMENDED IMPACT MODIFIER AND PROCESSING AID LEVELS FOR DIFFERENT GLOSS RANGES			
	Lowest	Low	Standard
PARALOID™ KM-377	5.0	5.0	5.0
PARALOID K-175	0.5	0.5	0.5
PARALOID K-120ND	-	0.5	1.0
FORMULATION			
Vinyl (K=66)	100		
ADVASTAB™ TM-181 Tin Stabilizer	1.0-1.2		
Calcium Stearate	1.3		
Wax (165°F)	1.0		
Titanium Dioxide	10.0		

Standard
Packaging

The standard package is either a unitized pallet of 50 x 50 lb. bags (2500 lb. net) or a unitized pallet of 2 x 1000 lb. bags (2000 lb. net). Please check with your account representative for specific package availability as some packages are dependent upon density and demand of material.

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Handling Precautions

Refer to the Material Safety Data Sheet (MSDS) for PARALOID™ KM-377 Modifier to see safety related recommendations.

CAUTION! Keep combustible and/or flammable products and their vapors away from heat, sparks, flames and other sources of ignition including static discharge. Processing or operating at temperatures near or above product flashpoint may pose a fire hazard. Use appropriate grounding and bonding techniques to manage static discharge hazards.

CAUTION! Failure to maintain proper volume level when using immersion heaters can expose tank and solution to excessive heat resulting in a possible combustion hazard, particularly when plastic tanks are used.

Storage

Avoid temperature extremes during storage; ambient temperature (20°C – 35°C) preferred. Store away from excessive heat (e.g. steam pipes, radiators), from sources of ignition and from reactive materials. Keep containers tightly closed in a well-ventilated place. Avoid all ignition sources. Ground all metal containers during storage and handling.

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Disposal Considerations

Dispose in accordance with all local, state (provincial) and federal regulations. Empty containers may contain hazardous residues. This material and its container must be disposed in a safe and legal manner.

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