ROHM AND HAAS

PARALOID™ KM-334

Acrylic Impact Modifier for Vinyl Building Products

Description

PARALOID KM-334 acrylic polymer is an impact modifier for Vinyl used in weatherable applications such as siding, window profiles, pipe and fencing. PARALOID KM-334 modifier is based upon proven Rohm and Haas weatherable technology. PARALOID KM-334 modifier, when used with PARALOID K-120ND and PARALOID K-175 processing aids, provides Vinyl building product producers with superior extrusion processing behavior in terms of fusion, melt homogeneity, metal release, and smooth extrudate surface.

In addition, PARALOID KM-334 modifier offers the following product benefits:

- Excellent impact strength
- Gloss control
- Proven weatherability

Physical Description

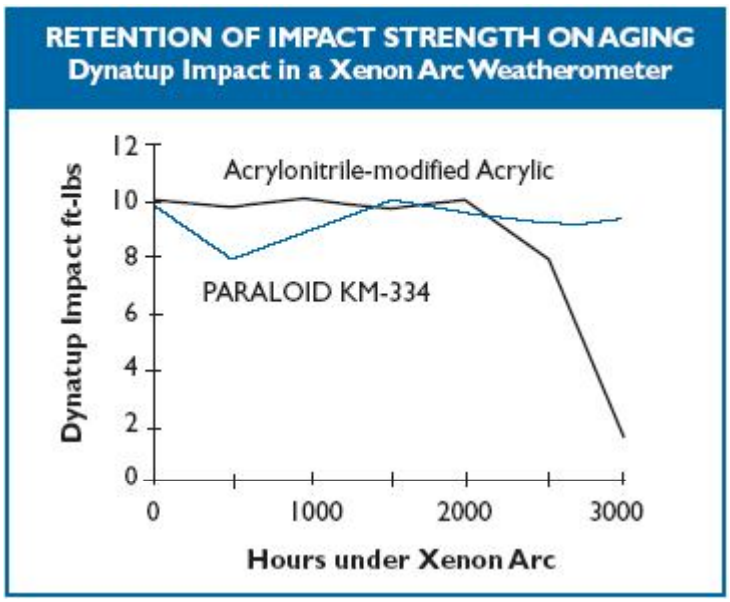
Chemical Description: Acrylic Polymer-based compound
Appearance: Free-flowing white powder
Bulk Density: 0.41 - 0.63

Impact Resistance

PARALOID KM-334 modifier exceeds the industry standards for resistance to impact as measured by the Gardner test. PARALOID KM-334 modifier imparts excellent results even at 0°C.

Retention of Impact Resistance

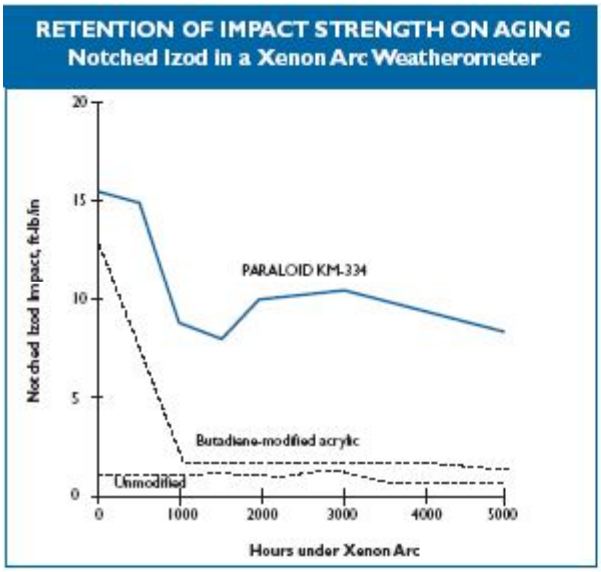
Retaining impact resistance is important in building products applications. Years of service are expected by the consumer. The superior performance of PARALOID KM-334 modifier over CPE and acrylonitrile- or butadiene-modified additives is demonstrated both in the laboratory and in actual exposure testing in Arizona.

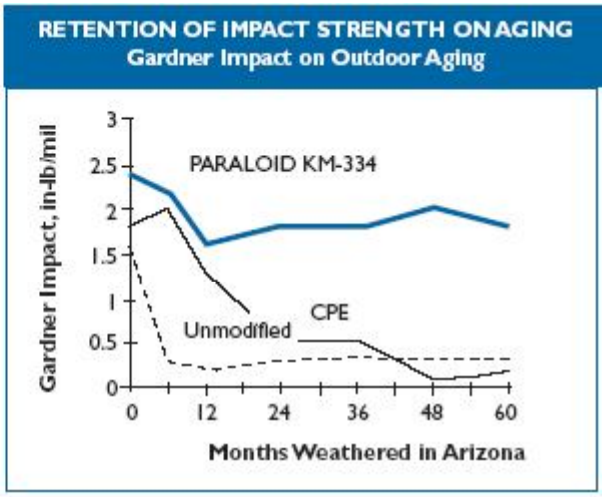


Impact Strength Performance

Test Samples: Extruded Sheet (43 mils); 188°C Die

Modifier	Gardner Impact in.-lb./mil		Dynatup Impact Energy at Break
5/1 phr	@ 23°C	@ 0°C	@ 23°C, ft.-lb.
PARALOID KM-334 /PARALOID K-120ND	3.53	2.74	11.2 (+/-0.3)
Butadiene-modified Acrylic /PARALOID K-120ND	3.10	2.70	10.1(+/-0.4)

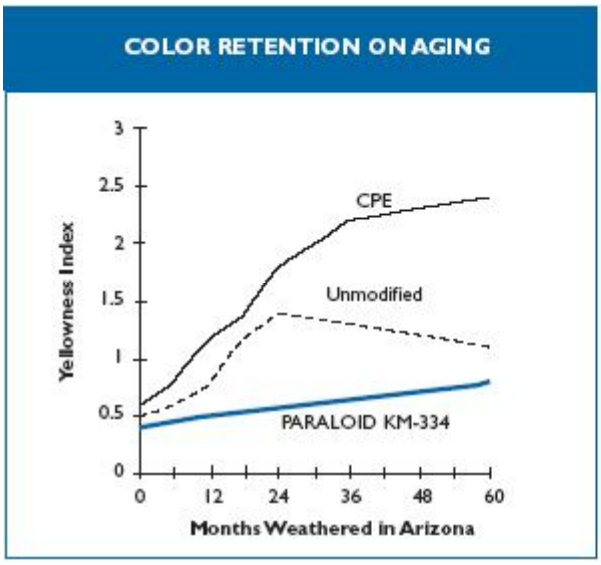


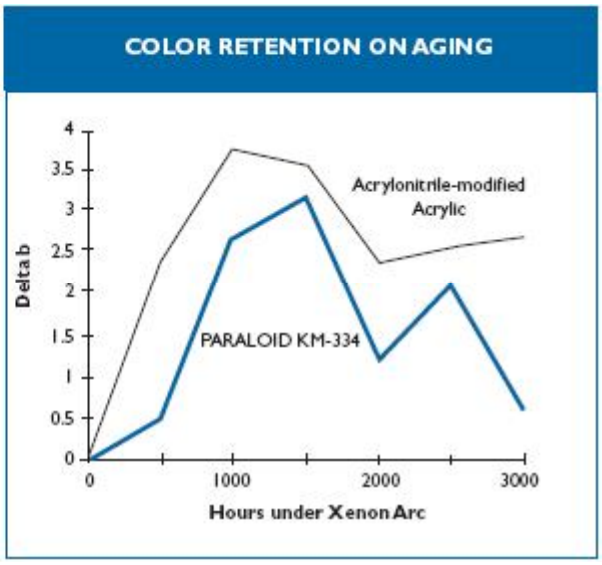


Color Retention

Resistance to color change on exposure to the elements is also an important characteristic in building products applications such as fencing. The superior resistance of acrylic modifiers over CPE in siding exposed to the Arizona sun is indicated by the low yellowness index of Vinyl modified with PARALOID KM-334 modifier. In this test, the acrylic modifier enhanced the performance of unmodified Vinyl while the CPE worsened the performance.

The ability of PARALOID KM-334 modifier to resist color change to a greater extent than acrylonitrile-modified additives under exposure to UV is demonstrated in the laboratory exposure in a Xenon Arc Weatherometer. Lower delta b indicates less yellow/blue color change in the sample.





Gloss Reduction

Improved siding appearance when using PARALOID KM-334 modifier is a result of lower gloss levels with this modifier.

Gloss Control

Test Samples: Extruded Sheet; 188°C Die	
Modifier at 6 phr total	**Gloss at 60°, %**
PARALOID KM-334/ PARALOID K-120ND	35
Butadiene-modified Acrylic/ PARALOID K-120ND	46

Formulations

The twin-screw extrusion formulations used in the evaluations to determine the data presented in these notes were:

Formulations

Vinyl (K=66)	100.0
ADVASTAB™ TM-181 (Tin Stabilizer)	1.2
Calcium Stearate	1.3
Wax 165	1.0
Titanium dioxide	10.0
PARALOID KM-334 or Buadiene-modified Acrylic	5 5
PARALOID K-120ND	1

Processability

PARALOID KM-334 modifier exhibits excellent processing in typical weatherable formulations.

Extrusion Processing

Test Samples: Extruded Sheet (1mm x 70mm)
Conditions in KMDL-25 Twin-Screw Extruder

Feed Temperature, °C	175	Screw Speed, rpm	38
Metering Temperature, °C	170	Feeder Speed, rpm	40

	Extrusion Temperature		Extrusion Pressure	Material Appearance	
Modifier	°C Die Set	kg/sq cm Melt		At Vent	Extrudate Surface
PARALOID KM-334/ PARALOID K-120ND 5/1phr	193	195	276	Well fused	Smooth

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.

Storage and Handling
(see MSDS for details)

Standard recommended storage conditions are as follows:

- Store indoors, protected from weather (moisture)
- Temperature should not exceed 60°C
- Protect from ultraviolet light
- With stretch hood or stretch wrap intact (if applicable)

Unopened (if material is opened, it should not be left exposed and should be used within one month); ambient temperature preferred.

When stored correctly in the original packaging, the shelf life is:

2.5 years from date of manufacture

Safe Handling Information

Avoid high concentrations of dust in air and accumulation of dust on equipment. An airborne dust of this material can create a dust explosion. When handling and processing this material, local exhaust ventilation may be required to control dust and reduce exposure to vapors. To prevent dust explosions, employ bonding and grounding for operations capable of generating static electricity. Dispose by placing powder or pellets in air tight bags. Incinerate or landfill at a permitted facility in accordance with local, state and federal regulations.

Material Safety Data Sheets (MSDS)

Material Safety Data Sheets are available outlining hazards and safe handling methods. Contact Rohm and Haas for copies of the MSDS for this product and for other handling information.

Rohm and Haas Company is a raw materials supplier, not an end-use manufacturer of product. Development of a final formulation, testing, application, and ultimate performance of the end-use product is fully the responsibility of the formulator.

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