



Technical Data Sheet

PARALOID™ KM-376

Acrylic Impact Modifier for Weatherable Vinyl Building Applications.

Description

PARALOID™ KM-376 acrylic weatherable impact modifier delivers very high efficiency combined with high gloss necessary for high output profile extrusion. Also maximized is the “process window” in which vinyl compounds containing PARALOID™ KM-376 can reliably develop optimal physical properties, in particular impact resistance.

The particle morphology of PARALOID™ KM-376 is designed to make it suitable for bulk delivery.

This product is also commercialized under the name PARALOID™ KM-376L.

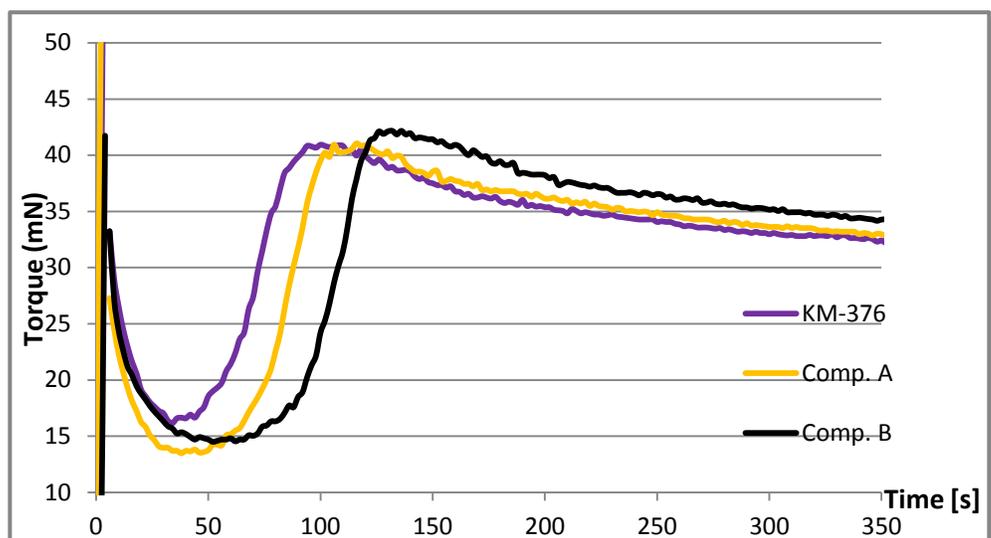
Key properties

- Outstanding impact strength
- Fast gelation
- High gloss
- Control of melt visco-elasticity
 - Low die swell
 - Low post-extrusion shrinkage
- Unparalleled weathering performance

Processing Characteristics

Brabender Rheology

PARALOID™ KM-376 yields faster gelation with slightly lower torque requirements when compared to competitive acrylic modifiers. This feature was ascertained in Brabender testing conducted at 180°C and 50 rpm with a charge weight of 55 grams, using a CaZn stabilized formulation containing 6 phr impact modifiers.



Impact Strength

Impact strength under plane strain conditions is generally regarded as a reliable indicator of an extruded vinyl profile's brittleness. This property is customarily measured with the Single V-Notch Charpy Impact Test (BS 2782/359). To pass the test, a vinyl sample must absorb a minimum energy of 12 kJ/m². Results from evaluations conducted with this procedure clearly demonstrate that PARALOID™ KM-376 is more efficient under plane strain conditions than typical acrylic modifiers.

The Double V-Notch Charpy Impact Test (DIN 53753) is also used to measure the impact resistance of vinyl formulation under plane stress conditions. A minimum energy of 40 kJ/m² is necessary to satisfy the Standard's requirements in this regard. Again, evaluations conducted with this procedure confirm the efficiency of PARALOID™ KM-376 relative to competitive modifiers.

CaZn Formulation	KM-376 6 phr	Comp. A 6 phr	Comp. B 6 phr
BS2782/359, KJ/m²	13.8	11.9	12.8
	± 0.5	± 0.4	± 0.5
Mini value	12.8	10.6	11.7
Maxi value	15.2	12.9	14.6
DIN-53753, KJ/m²	57	55	56
	±2	± 2	± 2
Mini value	52	51	52
Maxi value	61	59	60
Profile wall-thickness, mm	3.03	3.03	3.03
	±0.02	± 0.02	± 0.02

Processing window

PARALOID™ KM-376 is designed to deliver outstanding physical and mechanical properties over a large processing window. This feature was ascertained in extrusion testing under different conditions of temperatures and screws speeds, with a CaZn stabilized formulation impact modified with 6 phr of PARALOID™ KM-376.

Screw Temp.	150°C	160°C	170°C	170°C
Screw Speed	30 rpm	30 rpm	30 rpm	36 rpm
Motor Amperage, A	3.76	3.49	3.43	3.48
Pressure head, MPa	20.3	20.1	19.6	20.2
DSC Melt temperature, °C	185 – 185.5	187- 188	188 - 190	188-191
60° Gloss, GU	44.8 ± 1.0	46.4 ± 0.6	46.0 ± 0.6	45.4 ± 0.4
L*	95.01	95.04	95.04	95.06
a*	-1.02	-1.03	-1.06	-1.04
b*	2.84	2.88	2.93	2.79

Typical Powder Characteristics

Physical Form	Fine white powder
Bulk Density	0.25 – 0.50 g/cm ³
Retained on 30 Mesh	7% max
Retained on 60 Mesh	60% max
Pass through 325 Mesh	25% max

Handling Considerations

Under certain conditions all organic powders can form explosive mixtures with air. PARALOID™ KM-376 is no different in this respect and has been classified as dust explosion class ST1. Risks of this nature can be minimized by careful plant design. To ensure safe handling the appropriate safety regulations should be observed. We recommend that the prospective users determine the safe handling procedures necessary for the user's applications before manufacturing products. A Material Data Safety Sheet, outlining hazards and handling methods, is available on request from your local Dow sales office.

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