



PARALOID™ Acrylic Impact Modifier Platform for Profiles

Description

The latest PARALOID KM series of all acrylic weatherable impact modifiers (WIM) is intended to meet the needs of the vinyl window profile extrusion and compounding industry. The series offers 100% impact modifier function or multifunctional combination with improved external lubrication and metal release. Each product can be used without additional processing aid, and each product offers a different combination of optimized performance around the following listed properties:

- Gardner Impact Efficiency
- Izod Impact
- Gloss
- Processing Window
- Low Temperature Gardner Impact

Chemical/Physical Description

All four products discussed here are acrylic based polymers that are free flowing white powders.

New Product Selection Guide

PARALOID KM-3450 is intended for low shear or low temperature pellet compounding and is formulated as a multifunctional with lubricating/metal release properties. This material imparts the widest barrel temperature processing window to maintain drop dart impact and gloss.

PARALOID KM-5450 delivers excellent Izod impact, low temperature drop dart impact and low die swell in addition to good drop dart impact and gloss control over variable processing temperature ranges. This multifunctional with metal release properties is recommended for powder extrusion where higher levels of profile ductility may be required.

PARALOID KM-4100 is recommended for powder extrusion where faster fusion and lower die swell may be required. It may give slightly lower gloss, and is not formulated for metal release properties.

PARALOID KM-4400 is intended as a standard product best suited for powder extrusion where drop dart impact and gloss consistency are important over a range of barrel temperatures and extruder types. This product is not formulated for metal release properties.

Relative Product Attribute Table

	Drop Dart Process Window	High Gloss	0°C Drop Dart Impact	23°C Izod Impact	Die Swell Control	Shorten Fusion Time
PARALOID KM-3450	(+++)	(+++)	(+)	(+)	(+)	(++)
PARALOID KM-5450	(++)	(++)	(+++)	(+++)	(++)	(++)
PARALOID KM-4100	(++)	(+)	(++)	(++)	(+++)	(+++)
PARALOID KM-4400	(+++)	(+++)	(++)	(+)	(++)	(++)

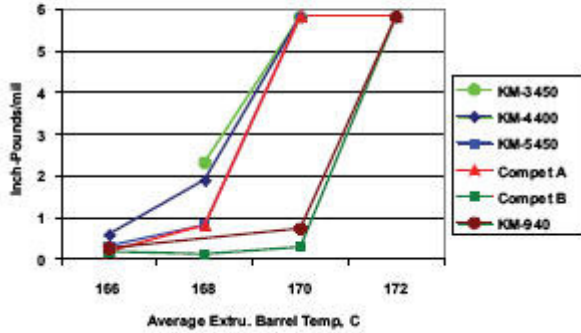
Table 1: Extrusion Performance of New Impact Modifiers

	PVC (K66)	TM-181	B-3314	TiO ₂	CaCO ₃	Acrylic
Basic Formulation:	100	1.2	2.7	9	3	5.5
CM-55 Profile Extrusion, 0.060 inch wall thickness						
	KM-3450	KM-4400	KM-5450	Comp. A	Comp. B	KM-940
ASTM D 4226 Impact (Proc. B, 23°C)	>5.5	>5.5	>5.5	>5.5	>5.5	>5.5
60 Degree Gloss	55	55	48	57	42	51
Amps	23	22	23	22	23	21
Melt Pres., psi	3840	3770	3820	3670	3760	3740
NOTE: 1. KM-940 used at 6.5 phr, others at 5.5 phr total acrylic (PA and AIM) loading 2. CM-55 Conditions: 340scr//365/355/345/345//360adap/360die						

Table 2: Property Performance of New Impact Modifiers

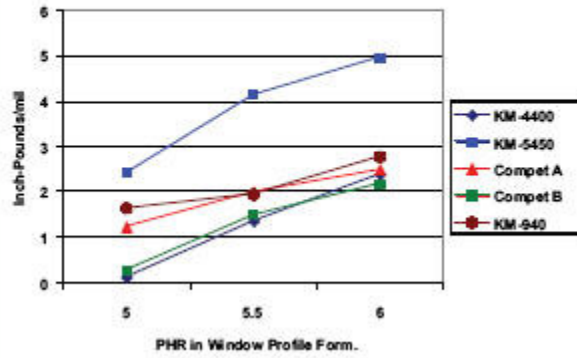
	PVC(K66)	TM-181	B-3314	TiO ₂	CaCO ₃	Acrylic	
Basic Formulation:	100	1.2	2.7	9	3	5.5	
Viscosity at 500 Recipr. Seconds							
	KM-4100	KM-3450	KM-4400	KM-5450	Comp. A	Comp. B	KM-940
Poise	11254	11720	11758	11327	11069	10808	11046
Die Swell, 0.19 inch Capillary Die							
	KM-4100	KM-3450	KM-4400	KM-5450	Comp. A	Comp. B	KM-940
Percent	38	46	45	42	48	41	38
Izod Impact (Ft-Lbs/inch)							
	KM-4100	KM-3450	KM-4400	KM-5450	Comp. A	Comp. B	KM-940
Value	12	6	6	20	not tested	20	not tested
% Ductile	40	10	10	80	not tested	80	not tested
Brabender, Fusion Properties (185C)							
	KM-3450	KM-4400	KM-5450	Comp. A.	Comp. B	KM-940	
Time, seconds	60	56	58	58	54	52	
Torque, M-grams	2765	2850	2865	2930	2635	2755	
Equilibrium Torque	1800	1765	1790	1785	1710	1775	
Alternative Stabilizer Formulation							
	KM-4100	KM-4400					
Time, seconds	90	112					
Torque, M-grams	3930	3610					
Equilibrium Torque	2465	2445					

IMPACT MODIFIER IN PROFILE FORMULATION
23°C DD Imp. (Proc. B) as Proc. Temp. Varies



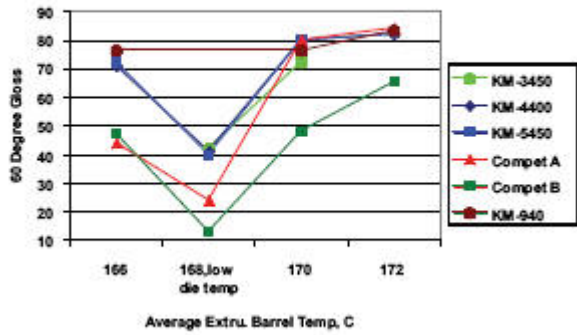
PARALOID KM-3450 and PARALOID KM-4400 have a wide processing window for impact strength development.

IMPACT MODIFIER IN PROFILE FORMULAITONS
0°C Drop Dart Imp. (Proc. B) SS, 170/170/175/185C



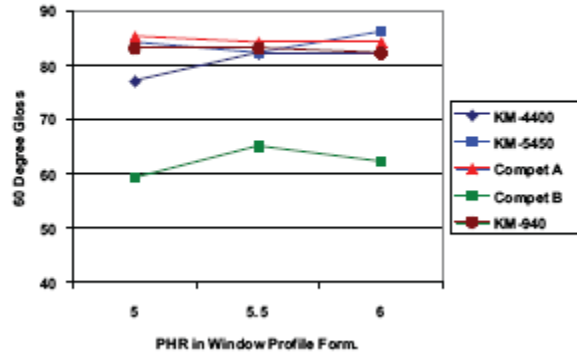
PARALOID KM-5450 has excellent low temperature drop dart impact.

IMPACT MODIFIER IN PROFILE FORMULATIONS
Gloss as Proc. Temp. Varies

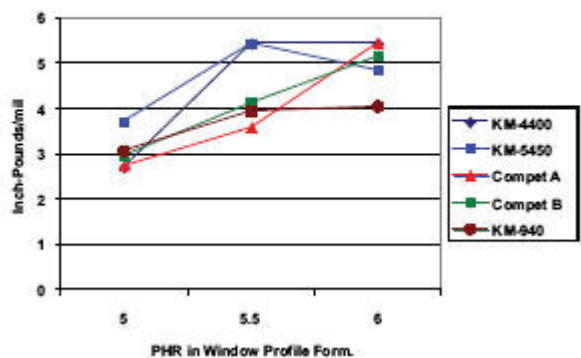


Dow PARALOID products impart and maintain high gloss in window profile even at lowered processing temperatures.

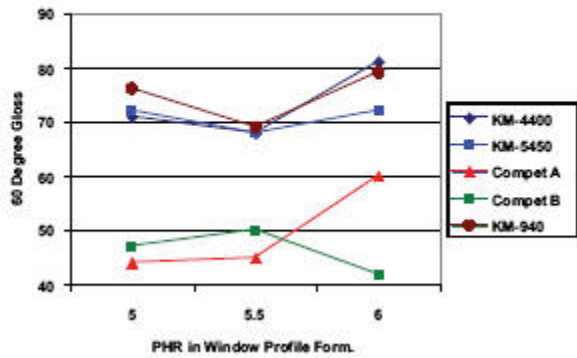
IMPACT MODIFIER IN PROFILE FORMULAITONS
Gloss; SS, 170/170/175/185C



IMPACT MODIFIER IN PROFILE FORMULAITONS
0°C Drop Dart Imp. (Proc. B) SS, 175/175/180/185C



IMPACT MODIFIER IN PROFILE FORMULAITONS
Gloss; SS, 165/165/170/185C



Dow PARALOID products impart and maintain high gloss in window profile even at lowered processing temperatures.

The Plastics Additives business of Kureha Chemical was purchased by The Dow Chemical Company in 2002. Some products formerly sold under the Kureha name have been re-branded PARALOID.

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