



## PARALOID™ Acrylic Impact Modifier Platform for Profiles

### PRODUCT 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**

Basic Formulation:	PVC(K66)	TM-181	B-3314	TiO <sub>2</sub>	CaCO <sub>3</sub>	Acrylic
	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**

Basic Formulation:	PVC(K66)	TM-181	B-3314	TiO <sub>2</sub>	CaCO <sub>3</sub>	Acrylic
	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

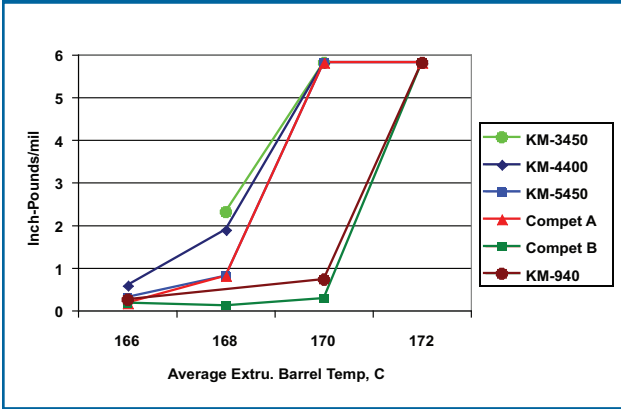
**Brabender, Fusion Properties (185C)**

	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**

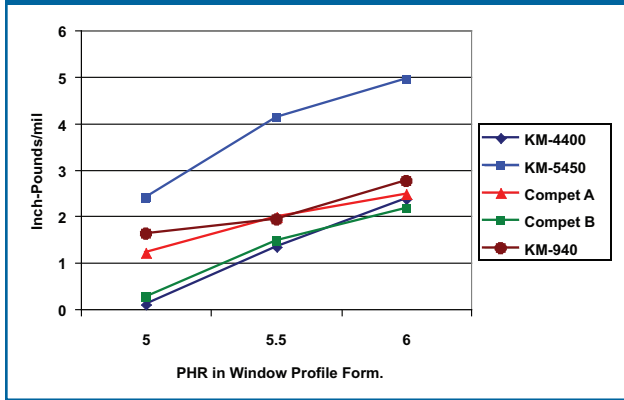
	KM-4100	KM-4400
Time, seconds	90	112
Torque, M-grams	3930	3610
Equilibrium Torque	2465	2445

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



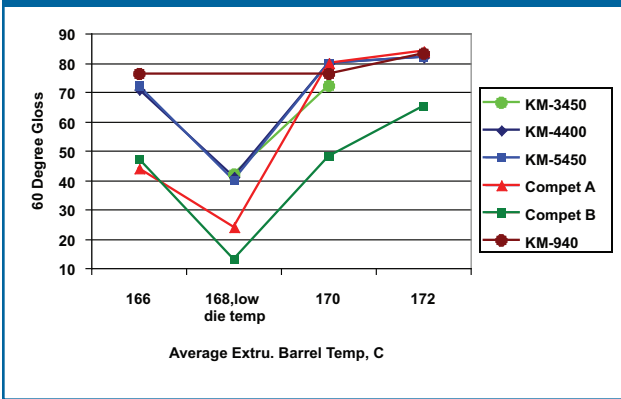
PARALOID™ KM-3450 and PARALOID™ KM-4400 have a wide processing window for impact strength development.

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



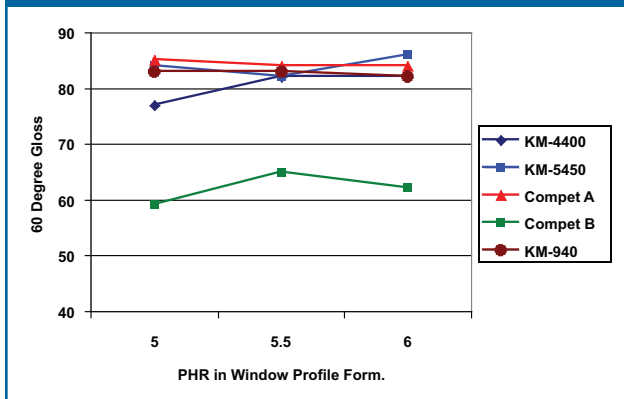
PARALOID™ KM-5450 has excellent low temperature drop dart impact.

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

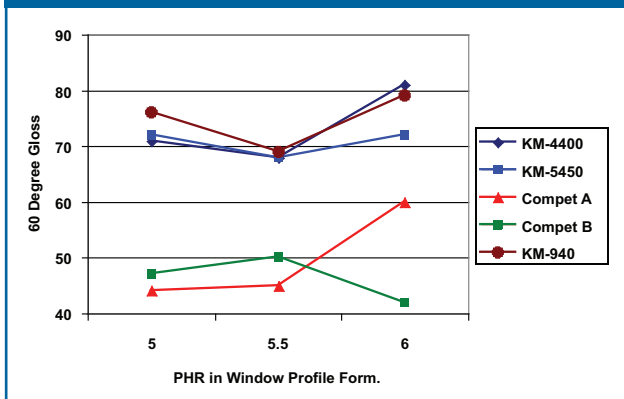


Rohm and Haas PARALOID™ products impart and maintain high gloss in window profile even at lowered processing temperatures.

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

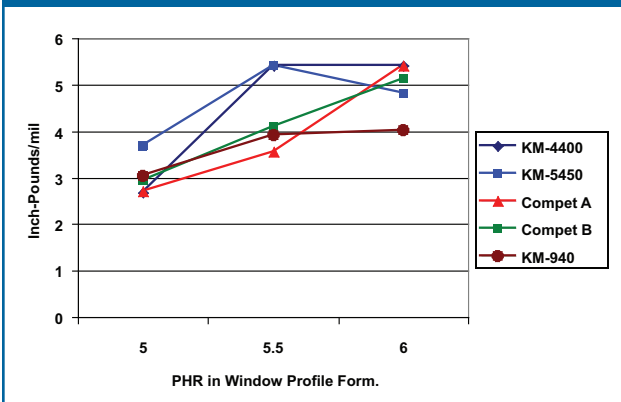


**IMPACT MODIFIER IN PROFILE FORMULATIONS**  
**Gloss; SS, 165/165/170/185C**



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

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





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