INDOFIL CHEMICALS COMPANY
SPECIALITY & PERFORMANCE CHEMICALS

PVC ADDITIVES

INDOFIL KM-355

Superior Acrylic Impact Modifier for Opaque Applications

1 INTRODUCTION

INDOFIL KM-355 is superior impact modifier with an all acrylic base. It is designed for use in rigid PVC opaque applications which require higher toughness in low dosages with good durability. It has extremely good weather resistance for outdoor applications.

You get the following advantages over conventional impact modifiers viz. :

- Enhanced weatherability
- Easy & economical processibility
- Higher impact strength even at low temperatures
- Low creep during use
- Good Mechanical strength
- Faster fusion promotion
- Correct dimensions due to low shrinkage

2. PHYSICAL CHARACTERISTICS

TYPICAL PHYSICAL PROPERTIES (These do not constitute specifications)	
Appearance	White, fine free-flowing powder with uniform particle size
Bulk Density, g/cc	0.40 to 0.45
Specific Gravity, @ 25 °C	1.10
Volatiles (%)	Max 1
Sieve Test Retention time	
60 mesh	Max 2
100 mesh	Max 20
200 mesh	Max 70
Partical Size Distribution	See Graph A

3 PERFORMANCE CHARACTRISTICS

3.1 Rheological Charactristics :

Please refer Graph B on next page.

Conditions : Machine used = Haake Rheocord 90
Rotor speed = 60 rpm
Charge weight = 65 gms.
Bowl Temp. = 180°c

Properties	Control	6phR of INDOFIL KM - 355
Fusion time (sec)	60.00	28.00
Fusion Temp. (°C)	171.00	169.00
Gelation time (minutes)	5.50	4.00
Gelation Temp. (°C)	206.00	206.00
Equillibrium Torque (Nm)	25.82	25.06
Thermal Stability (minutes)	10.08	12.20

Recipe used :

PVC Resin (K 67)	100 phR
Tin Stabiliser	2.25 phR
GMS	0.60 phR
OP Wax	0.40 phR
INDOFIL K-120ND	2.00 phR
INDOFIL KM 355	6.00 phR

Graph A

MALVERN INSTRUMENTS

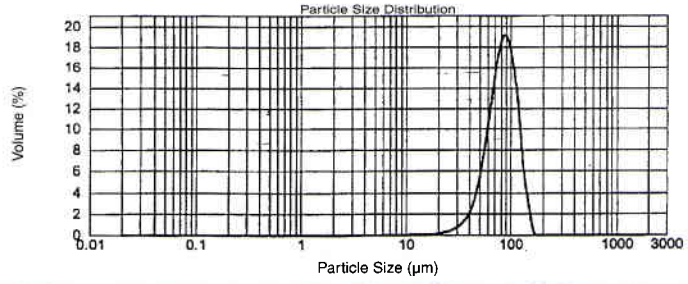
MASTERSIZER 2000

MALVERN PARTICLE SIZE DISTRIBUTION GRAPH

Result Analysis Report

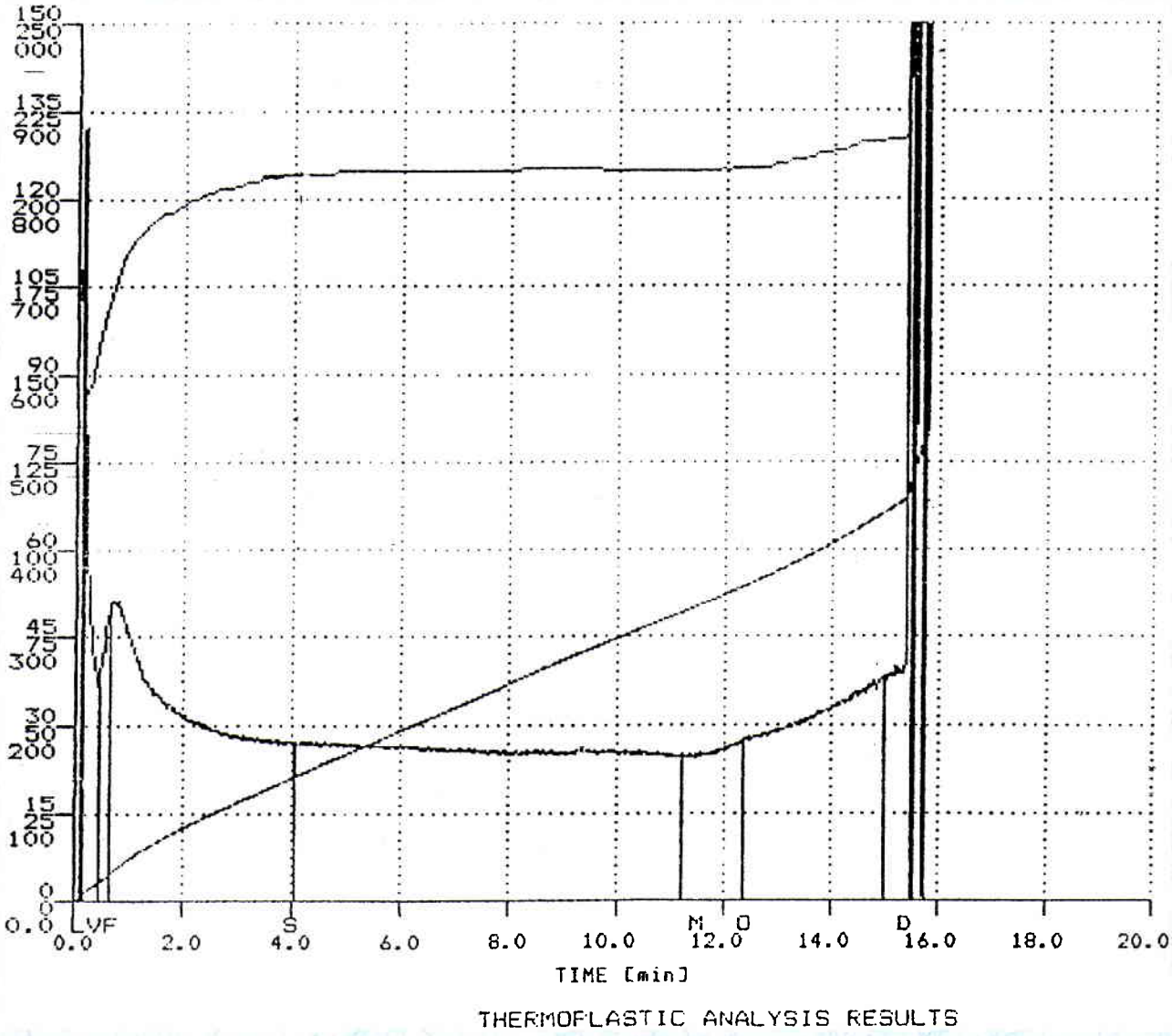
Product Name : INDOFIL KM-355	Accessory Name : Hydro 2000MU (A)	Analysis model : Single narrow mode	Sensitivity : Enhanced
Particle RI : 0.000	Absorption : 0	Size range : 0.020 to 2000.000 um	Obscuration : 9.09 %
Dispersant Name : Water	Dispersant RI : 1.330	Weighted Residual : 1.825 %	Result Emulation : Off
Concentration : 0.1010 % Vo.	Span : 0.806	Uniformity : 0.255	Result units : Volume
Specific Surface Area : 0.0804 m^2/g	Surface Weighted Mean D[3,2] : 74.671 um	Vol. Weighted Mean D[4,3] : 84.172	

d(0.1) : 51.758 um d(0.5) : 82.906 um d(0.9) : 18.546 um



Graph B

HAAKE RHEOCORD 90 DATA SHEET



3.2 Performance Data :

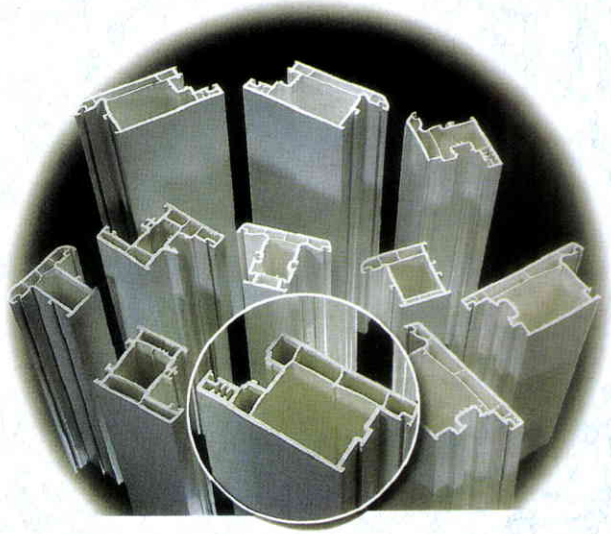
Property	Standard	Unit	Typical Value
Izod Impact Strength	ASTM D256	Kg cm / cm	36.5
Flexural Strength	ASTM D790	Kg / cm2	889
Flexural Modulus	ASTM D790	Kg / cm2	31323
Vicat Softening Point	ASTM D1525	Deg. C	110
Charpy Impact Strength	ASTM D256	J / m	67.8
Falling Dart Impact	ASTM D 4495		No cracks
Tensile Strength	ISO 527	Mpa	51.9
Tensile Elongation	ISO 527	%	13
Weather Resistance	ISO 4892, BS 2782 part 359	Retention of I.S.	More than 80%
Shrinkage		%	Max. 2.5

Recipe enclosed on next page

Recipe used :

PVC Resin (K 67)	100 phR
TBLS	4.5 phR
DBLS	1.0 phR
Calcium Stearate	0.5 phR
Calcium Carbonate	2.5 phR
INDOFIL K-120 ND	2.0 phR
GT-25 Internal lubricant	0.5 phR
G321 External lubricant	1.0 phR
INDOFIL KM-355	6.0 phR

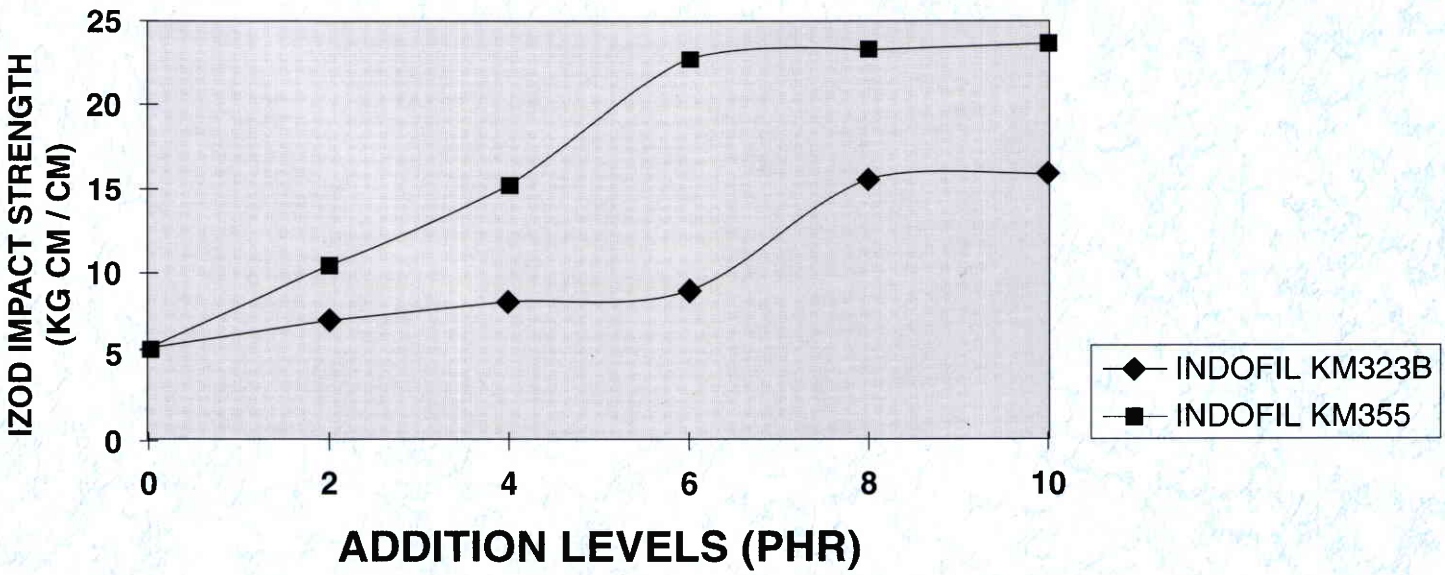
The results are obtained on compression moulded specimens.



3.3 Following data shows superiority of INDOFIL KM-355 over conventional impact modifier INDOFIL KM323B

IMPACT STRENGTH VARIATION		
PHR	IMPACT MODIFIER	
	INDOFIL KM-323B	INDOFIL KM-355
0	5.5	5.5
2	7.2	10.4
4	8.3	15.1
6	8.9	22.7
8	15.4	23.3
10	15.8	23.6

RECIPE	
INGREDIANT	phR
PVC RESIN (K67)	100.0
IMPACT MODIFIER	AS STATED
PROCESSING AID	2.0
CALCIUM CARBONATE	6.0
TiO2	4.0
ONE PACK	4.0
STEARIC ACID	2.0
CALCIUM STEARATE	1.0
DOP	0.5



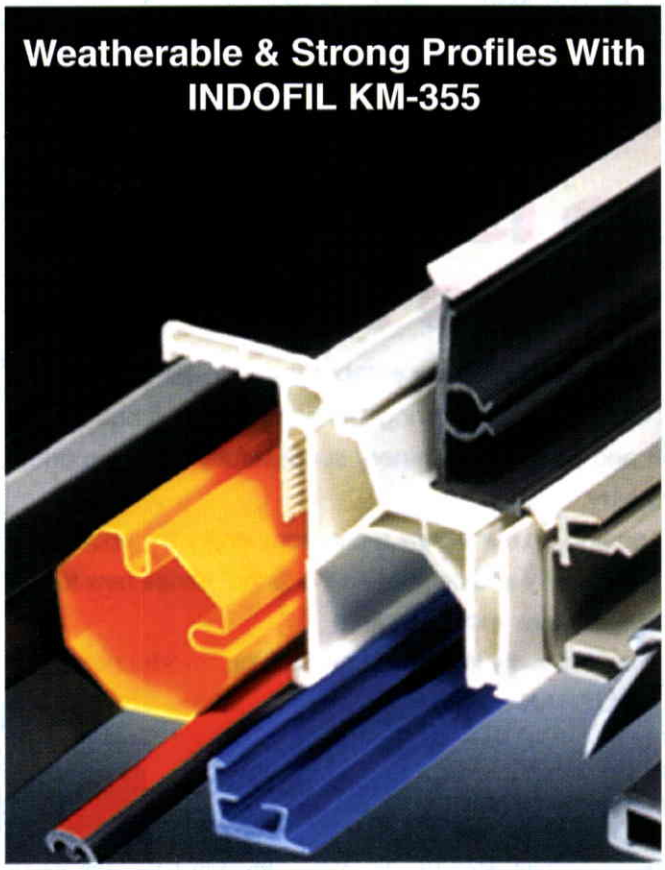
4 APPLICATIONS

Because of its above advantages it is especially suitable for the following-

- Window frames, sills & sidings
- Door panels
- Fencing, gutters & ducts
- Pipes & fittings
- Rollers & shutters
- Corrugated roofings & sheets
- Foam profiles

The specific advantages related to end use are :

- It can be used in wide range of machines in extrusion and injection.
- Due to its rubbery nature you get strength at critical corners free of cracks which is essential in complex profiles.
- The processing is required to be done at lower temperatures thus saving energy input.
- Lower dosages are required to get the same impact strength.
- Better replica of die design for etruded products due to lower shrinkage & better homogenity.
- The finished articles last for longer life.



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