SUBJECT: Metacrylics
San Jose, CA

OBJECTIVE: Evaluate Metacrylics' Acrylic White Roof Coating and its composite Metacrylics' Acrylic Base Coat for conformance to ASTM D6083.

BACKGROUND: Metacrylics submitted wet samples of Metacrylics Acrylic White Roof Coating (a topcoat) and Metacrylics' Acrylic Base Coat for evaluation per ASTM D6083. The Metacrylics Acrylic White Roof Coating was tested individually and, where appropriate, as a topcoat over Metacrylics' Acrylic Base Coat for physical properties, low temperature flexibility, mechanical properties, tear, water Permeance, and water swelling.

KEY RESULT: Metacrylics' Acrylic White Roof Coating and the composite of topcoat and basecoat meet the requirements of all the ASTM D6083 performance dimensions that were evaluated.

Summary of ASTM D6083 Requirements

Liquid Property Requirements

Physical Property	ASTM	Requirements
Viscosity	D562	85-141 KU
	D2196	12,000 – 85,000 cps
Volume Solids	D2697	Greater than 50%
Weight Solids	D1644	Greater than 60%

Film Physical Property Requirements for Acrylic Roof Coatings

Physical Property	ASTM	Requirements
Initial Percent Elongation (break)	D2370	100% 73° F (23° C), minimum
Initial Tensile Strength (maximum stress)	D2370	200 psi (1.38 Mpa) 73° F (23° C), minimum
Final Percent Elongation (break) After accelerated weathering for 1000 hr.	D2370	100% @ 73° F (23° C), minimum
Permeance	D1653A	50 perms (17.2x10-10Kg/s*M^2*Pa,1P)), maximum
Water Swelling	D471	20% (Mass), maximum
Accelerated Weathering, 1000 Hrs.	D4798	No cracking or checking
Adhesion	C794	
	D903	2.0 pli (350 N/m) wet, minimum
Fungi Resistance	G21	Zero rating
Tear Resistance	D624	>60 lbf/in (10.5 kN/m)
Low Temperature Flexibility After 1000 hrs. accelerated weathering	D522	Pass ½" mandrel bend at -15° F (26° C), minimum

DETAILED DATA

Coating ID	***Metacrylics Acrylic WHITE***	***Metacrylics Acrylic BASE***
Reference	MM2212A	MM2212B

Coating Properties

Appearance	white	gray
Viscosity, KU, initial	124	122
Viscosity, KU, 1 month @ 50° C	126	121
Stability @ 50° C, Weeks	>4	>4
PH, initial	9.1	9.1
PH, 1 month @ 50° C	8.9	9.0
Solids, weight	68.4	68.3
Solids, volume	51.2	51.0
Density, #/gal (dcacrated)	12.1	12.1

Film Properties

Low Temperature Flex, ° F On ½" Mandrel	.15	.15
	2 COATS OF Acrylic WHITE	***Metacrylics WHITE & BASE composite***
Mechanical Properties, 75° F, initial X-Head Speed=1.0"/min		
Tensile Strength, max psi	288	291
Elongation @ break, %	105	121
Mechanical Properties, 75° F, 1000 hours weathered X-Head Speed=1.0"/min		
Tensile Strength, max psi	380	362
Elongation @ break, %	128	116
Tear. Lb *f /in.*	66	64
Permeance, Perms, Face Down	38	37
Water Swelling, Max., %/hours		
@ max/HR	15/4	16/4
@ 7 days	10	9