TECHNICAL BULLETIN

PRODUCT: POLYRAD FM12-25

POLYRAD FM12-25 is a lower viscosity multifunctional urethane acrylate/methacrylate oligomer designed to be used in many radcure applications. POLYRAD FM12-25 is a hard oligomer that exhibits fast cure. It provides excellent adhesion to a variety of substrates, including porcelain, glass, polycarbonate, stainless steel, titanium, and most metal alloys. Excellent chemical resistance, high clarity and excellent scratch resistance characterize formulations based on POLYRAD FM12-25.

FEATURES:

- Low viscosity
- Fast cure response
- High hardness
- Excellent scratch resistance
- Excellent optical properties
- Good exterior durability
- Resistant to yellowing and other degradative effects from exposure to sunlight
- Excellent color retention
- Excellent adhesion properties

RECOMMENDED USES:

POLYRAD FM12-25 is a unique radcure oligomer recommended for abrasion-resistant protective coatings, adhesives, and inks. Applications include abrasion resistant protective finishes, automotive/transportation finishes, optical, and decorative applications. It is also recommended for any hard surface requiring abrasion resistance and chemical resistance.

PHYSICAL PROPERTIES:

Density (g/cm³)	1.1310 ± 0.0125
Non-volatile, by weight	>99.9%
Molecular weight	930 ± 30
Viscosity (Haake RT20, 10 rpm @ 40°C)	14000 ± 500 centipoise
Shrinkage (TGA @ 300°C)	< 1.0%
Color (APHA)	< 100
Appearance	Clear, colorless
Free NCO (ppm on solids)	<0.1 max.

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TYPICAL FILM PROPERTIES:

Clear films were prepared by initiating with 0.5 parts by weight methylbenzylformate (MBF) and irradiating with UV energy at 1400-1500 millijoules/cm^2:

Tensile Strength	9500 ± 250 psi.	
% Elongation	10.0 ± 0.5%	
Pencil Hardness	4H min.	
60º Gloss	>88 min.	
MEK Double Rubs	>300	
Cross-Hatch Adhesion:		Scale: 0 = total adhesion failure
Porcelain	5	1 = more than 75% failure
Stainless Steel	5	2 = more than 50% failure
Copper	5	3 = more than 25% failure
Titanium	5	4 = up to 25% failure
Brass	5	5 = no adhesion failure
Glass	5	
Polycarbonate	5	

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