TECHNICAL BULLETIN

PRODUCT: POLYRAD FM12-55

POLYRAD FM12-55 is a unique multifunctional urethane acrylate/methacrylate oligomer designed to be used in many radcure applications. POLYRAD FM12-55 combines acrylate and methacrylate functionality to yield a medium hardness 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 FM12-55.

FEATURES:

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

RECOMMENDED USES:

POLYRAD FM12-55 is a semi-solid oligomer and it should be blended with typical reactive diluents to reduce application viscosity. It is a unique radcure oligomer recommended for abrasion-resistant protective coatings, adhesives, and inks. Applications include abrasion resistant protective finishes, automotive/transportation finishes and decorative applications. It is also recommended for any hard surface requiring abrasion resistance and chemical resistance.

PHYSICAL PROPERTIES:

Density (g/cm^3)	1.1200 ± 0.0125
Non-volatile, by weight	>99.9%
Molecular weight	990 ± 30
Viscosity (Haake RT20, 10 rpm @ 40°C)	200000 ± 10000 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/cm²:

Tensile Strength	10000 ± 250 psi.
% Elongation	12.5 ± 0.5%
Pencil Hardness	3H 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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