

Strong on Their Own.
Tougher with Light.

LumiSet™ Film Formers for Long-Wear Nail Coatings

Welcome to the future of simple, durable raw materials for long-wear and natural-light curable hybrid nail polishes! Building on the strengths of Bomar® oligomers for UV nail gels, Dymax's all-new LumiSet™ film-forming polyurethane and polyurethane methacrylate resins offer excellent adhesion, easy removal, inherent toughness, and fast dry times. Their superior flexibility over cellulose resins allows nail polish formulators to easily create 5-free formulations without suspect materials like TSF, DBP, or other plasticizers and adhesion promoters. LumiSet™ resins also have excellent compatibility with common organic solvents like butyl and ethyl acetate, and with common film formers like nitrocellulose.

Different material options are available for base/color coat formulations or top coat formulations, allowing either for improved adhesion to the nail bed or excellent intrinsic hydrophobicity built into the resin backbone. Both reactive and non-reactive versions of LumiSet™ resins are available.

- **Great adhesion to nails** – no base coat or adhesion promoters needed
- **Extreme toughness** for improved durability and wear
- **Inherent flexibility** – no leachable or toxic plasticizers needed
- **Easy to formulate** – compatible with organic solvents & common film formers
- **Fast, tack-free dry time** – excellent properties dried, superior properties cured
- **INCI registered & MeHQ free** – compliant with requirements for retail nail polishes

Available Products

Dymax currently offers LumiSet™ resins for color coats and top coats with methacrylate or non-reactive functionality. Color coat resins are sold in 50% butyl acetate. Topcoat resins are sold as a blend of Dymax patented urethane polymers and other cosmetic grade film formers dissolved in butyl and ethyl acetate. The table below lists the available products and properties that formulators may want to control during nail coating formulation. For more information on these products, please visit our website or download the full LumiSet™ Resin Technology Bulletin.



Properties	LumiSet™ Resins for Color Coats			LumiSet™ Resins for Top Coats		
	LSR-141		LSR-141N	LSR-241		LSR-241N
	Air Dried*	Sunlight Cured**	Air Dried*	Air Dried*	Sunlight Cured**	Air Dried*
Functionality	Methacrylate		Non-Reactive	Methacrylate		Non-Reactive
Viscosity (cP at 25°C) ASTM D4287	25,000		24,000	430		325
% Solids	50% in butyl acetate		50% in butyl acetate	24% in butyl/ethyl acetate blend		24% in butyl/ethyl acetate blend
	Resin diluted to 30% solids in butyl acetate for application testing			No further dilution required for application testing		
Tack-Free Time (min)*** ASTM D5895	9.2		9.6	1.3		2.6
Tensile Strength (psi) ASTM D882	370	3,100	130	4,500	5,200	4,400
Elongation (%) ASTM D882	410%	300%	300%	6%	6%	5%
Modulus (ksi) ASTM D882	17	43	4.3	190	205	165
Toughness (J) ASTM D882	0.530	1.750	0.030	0.070	0.083	0.040
Sward Hardness*** ASTM D2134	30 min	3	5	2	10	15
	24 hr	4	6	3	12	15
Contact Angle (°) ASTM D7490	81	81	75	94	99	92
Gloss (at 60°) ASTM D2457	N/A		N/A	86		86

* Air dry method: A ~3.5 mil film was drawn down and allowed to dry for 24 hours under yellow UV-filtered lights at ambient temperature and humidity.

** Sunlight cure method: A ~3.5 mil film was drawn down, initially dried for 10 minutes, then cured for 1 hour in a Q-Sun Xe-3 Xenon test chamber at an intensity of 0.19 W/m² and a temperature of 35°C with daylight filters. The sample was then removed and dried for an additional 23 hours under yellow UV-filtered lights at ambient temperature and humidity. Additional data is available with a 24 hr initial dry time followed by cure.

*** Dry times can be reduced and hardness can be increased by the addition of nitrocellulose or other film formers at 5-15% weight by solids



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