

Tack-Free Top Coat Oligomer



Tack-free gel polish top coats are highly desired in the nail coating industry because they provide a durable, high-gloss finish to a manicure without an IPA wipe step. Removing this step from the process saves time and allows the coating to exhibit its natural gloss. Like all nail coatings, tack-free top coats require a gloss finish, superior hardness, and most importantly, low yellowing properties.

Bomar has developed a model formula using a new oligomer which provides exceptionally low color in a tack-free top coat. The model formula requires this new oligomer, a trifunctional methacrylate monomer, a difunctional methacrylate monomer, and photoinitiator. The formula performed exceptionally well when compared to competitor top coats in areas of yellowness, viscosity, and hardness.

Tack-free Starting Point Formula:

Formula	Weight
BR-581MT	65.0%
DEGDMA	17.5%
IBOMA	15.5%
TPO	2.5%

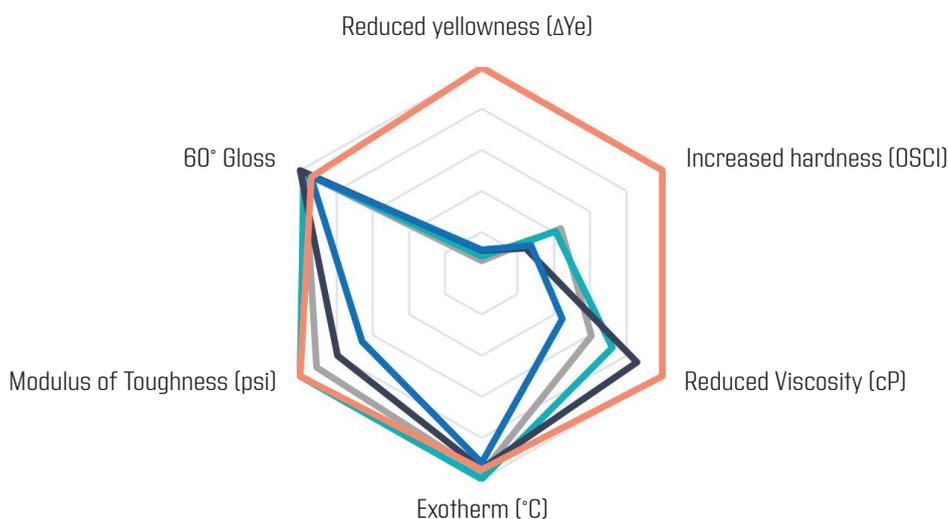
*All materials are INCI listed

- Superior hardness - durable and can withstand various conditions
- Excellent gloss - leaves nails with highly desired gloss finish
- Low yellowing - will not distort the color of the nail or polish underneath
- INCI listed ingredients - compliant with requirements for retail nail polishes
- Excellent shelf stability - shelf stable at temperatures up to 40°C

Formulators looking to develop a tack-free gel polish top coat should evaluate the model formula and BR-581MT. Below is a table providing test results of the model formulation, including BR-581MT, alongside several highly ranked competitive tack-free top coats for comparison. A normalized comparison is below with details for one competitor.

Competitor Comparison

- Bomar Model Formula
- Competitor A
- Competitor B
- Competitor C
- Competitor D



Product	Viscosity at 25°C, cP ASTM D4287	Yellowness, ΔYe* ASTM E313	Gloss at 60°*** ASTM D2457	Acetone Double Rubs	Pendulum Hardness*** ASTM D4366	Exotherm, °C ASTM E2160	Modulus of Toughness, psi ASTM D882
Bomar Tack-Free Formula	731	2.24 (30min) 0.43 (24h)	92	42	57 (30min) 66 (24h)	48.25	1250
Competitor A	1207	5.88 (30min) 3.57 (24h)	95	46	53 (30min) 27 (24h)	48.26	1390
Competitor B	1013	4.51 (30min) 2.52 (24h)	97	31	28 (30min) 16 (24h)	50.86	1098
Competitor C	1958	4.51 (30min) 2.46 (24h)	95	26	28 (30min) 18 (24h)	52.38	828
Competitor D	1433	8.50 (30min) 4.45 (24h)	95	14	54 (30min) 29 (24h)	49.75	1437

* Yellowness (ΔYe) calculated by BYK Spectro-guide. 10 mil wet drawdown done on BYK opacity card. Cured on Dymax® BlueWave® LED VisiCure® flood, 75 mW/cm² for 60 sec.

** Gloss calculated by BYK TriGloss meter. 10 mil wet drawdown done on BYK opacity card. Cured on Dymax BlueWave VisiCure flood, 75 mW/cm² for 60 sec.

*** Pendulum hardness completed on BYK pendulum hardness tester with Konig pendulum, 6° deflection, stop at 3° deflection, units in oscillations. 10 mil drawdown done on 4" x 3" glass slide. Cured on Dymax BlueWave LED VisiCure flood, 75 mW/cm² for 60 sec.

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