

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.

- 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

Original Starting Point Formula:

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

*All materials are INCI listed

TPO-free Starting Point Formula:

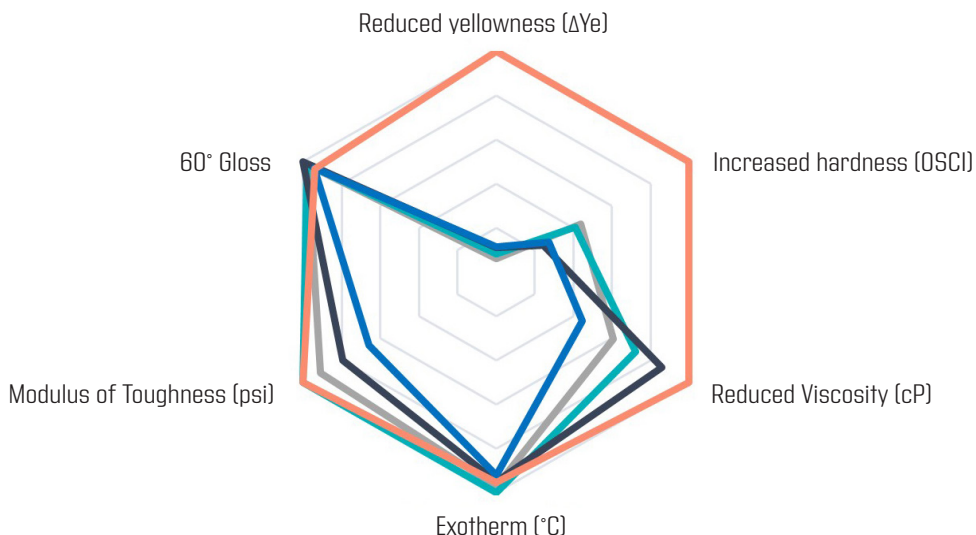
Formula	Weight
BR-581MT	58.8%
DEGDMA	27.0%
BR-5413MB	10.8%
Phenylisopropyl Dimethicone	2.0%
TPO-L	1.5%

*All materials are INCI listed

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 Original 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°C** ASTM D2457	Acetone Double Rubs	Pendulum Hardness*** ASTM D4366		Exotherm, °C ASTM E2160	Modulus of Toughness, psi ASTM D882
Bomar Original 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 König 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.

Global Headquarters: 51 Greenwood Road | Torrington, CT 06790 | USA | +1 860-626-7006

www.bomar-chem.com

© 2020–2023 Bomar. All rights reserved. All trademarks in this guide, except where noted, are the property of, or used under license by Bomar.

Technical data provided is of a general nature and is based on laboratory test conditions. Bomar does not warrant the data contained in this document. Any warranty applicable to the product is strictly limited to that contained in Bomar's standard Conditions of Sale. Bomar does not assume responsibility for test or performance results obtained by users. It is the user's responsibility to determine the suitability for the product application and the suitability for use in the user's intended manufacturing apparatus and methods. The user should adopt such precautions and use guidelines as may be reasonably advisable or necessary for the protection of property and persons. Nothing in this document shall act as a representation that the product use or application will not infringe a patent owned by someone other than Bomar or act as a grant of license under any Bomar Patent. Bomar recommends that each user adequately test its proposed use and application before actual repetitive use. BSS008 A4 12 March 2024