

PTFE-Free Wax Additives for Powder Coatings

Outstanding Surface Protection without PTFE

Description

Lubrizol has developed a range of PTFE-free* wax additives for powder coatings that significantly improve scratch and mar resistance while reducing coefficient of friction (COF) comparable to traditional PTFE-based wax additives. PTFE-free* technologies include organically and inorganically modified waxes under the Lanco™ and PowderAdd™ Surface Modifiers brand.

Product Name	Product Type	Particle Size Dv50 [µm]	Melting Point [°C]
Lanco™ TF 1778 C	PTFE-Modified Polyethylene Wax	≤ 6	102
Lanco™ 2510 SF	Inorganically modified polyolefin wax	≤ 6	105
Lanco™ 2520 SF	Inorganically modified polyolefin wax	≤ 6	105
Lanco™ 2540 SF	Modified polyolefin wax	≤ 6	128
Lubrizol test product	Modified polyolefin wax	≤ 9	144

Technical Performance

Scratch resistance, gloss, and coefficient of friction (COF) were compared in a black polyester/HAA system using PTFE containing and PTFE-free* surface modifiers. Different scratch tests were performed. Chart 1 shows the benefits of a PTFE containing commercial benchmark (Lanco™ TF 1778 C) compared to a formulation without any wax. The PTFE-free* additives have lower impact on gloss, significantly reduce COF and provide outstanding surface protection comparable to PTFE as shown in chart 2.

Black Polyester/HAA formulation:

Raw Materials	Parts by weight	Procedure
Uralac® P 865	712.5	Addition rate of wax additives: 2 % Step 1: weigh all components and premix in Prism Pilot 3 (1500 rpm for 2 min) Step 2: extrude with APV 19 PC twin screw (zone 1: 60 °C, zone 2: 110 °C, 300 rpm) grind and classify (particle size of powder < 125 µm) Curing conditions: 180°C for 10 min 70-100 µm film thickness
Primid® XL 552	37.5	
Blanc Fixe™ F	226.0	
Special Black 6	8.0	
Benzoin	4.0	
Resiflow PV 88	12.0	
	1000.0	

Uralac® is a registered trademark of Covestro.

Primid® is a registered trademark of Ems-Chemie AG.

Blanc Fixe™ is a trademark of Venator Materials PLC.

* Not intentionally added to the composition of this product.

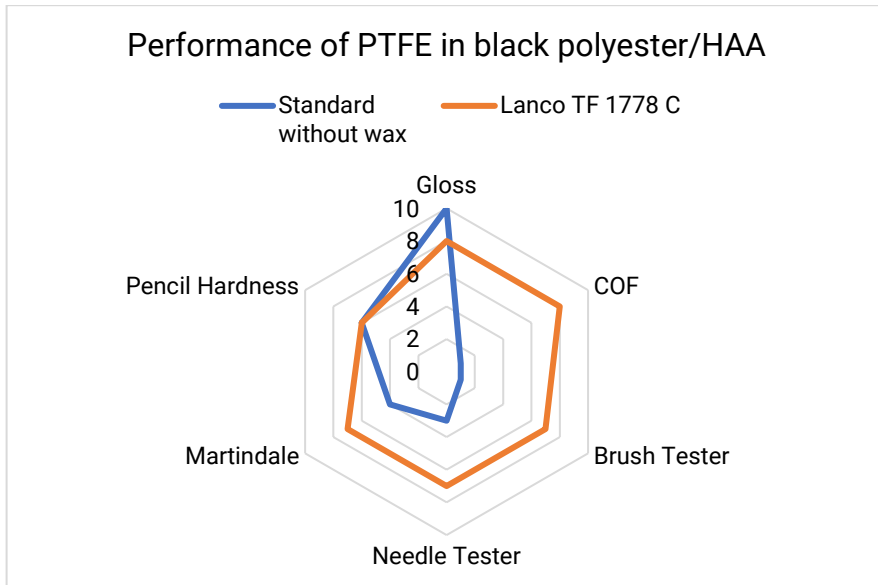


Chart 1 – Performance of PTFE containing wax additive in black polyester/HAA system compared to a standard formulation without wax.

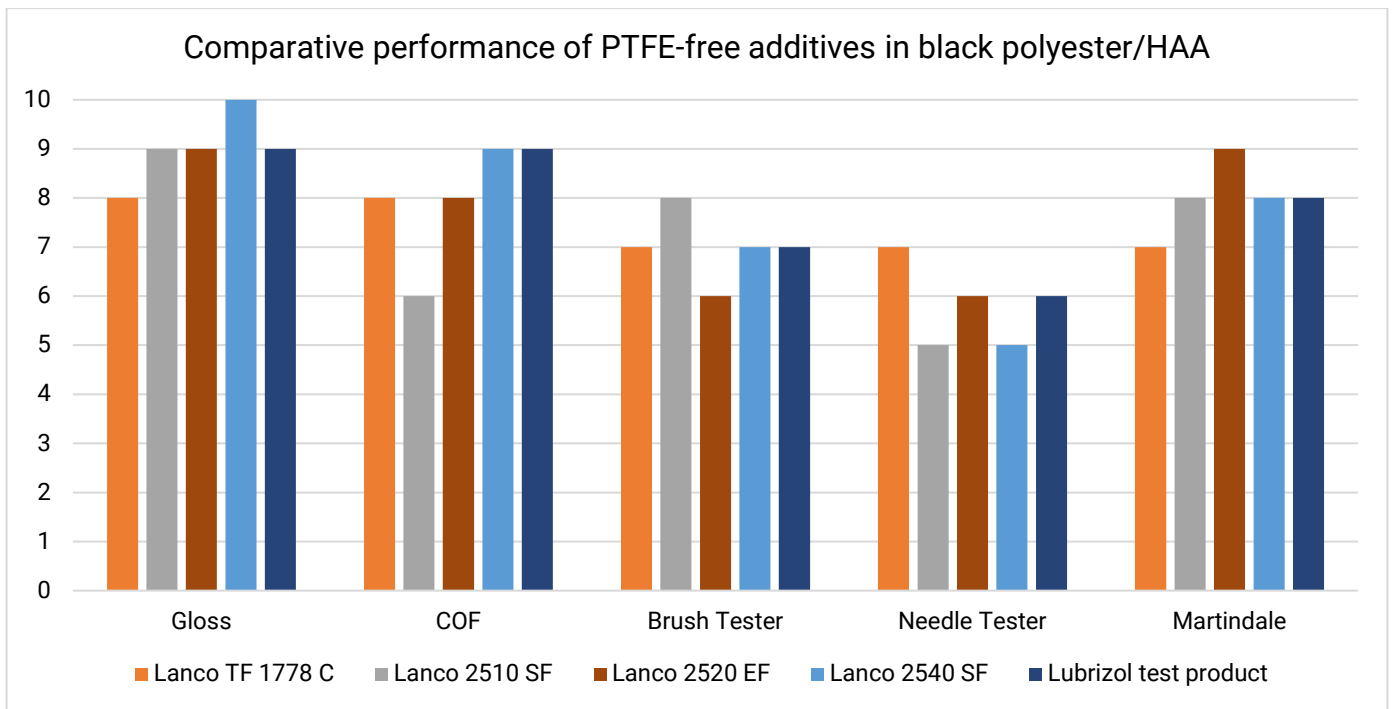


Chart 2 – Comparative performance of wax additives (2%) in black polyester/HAA system.

Rating: 10 = perfect, 1 = very poor