



WAX ADDITIVES PRODUCT GUIDE

Lubrizonl

Performance Coatings

www.lubrizonl.com/coatings

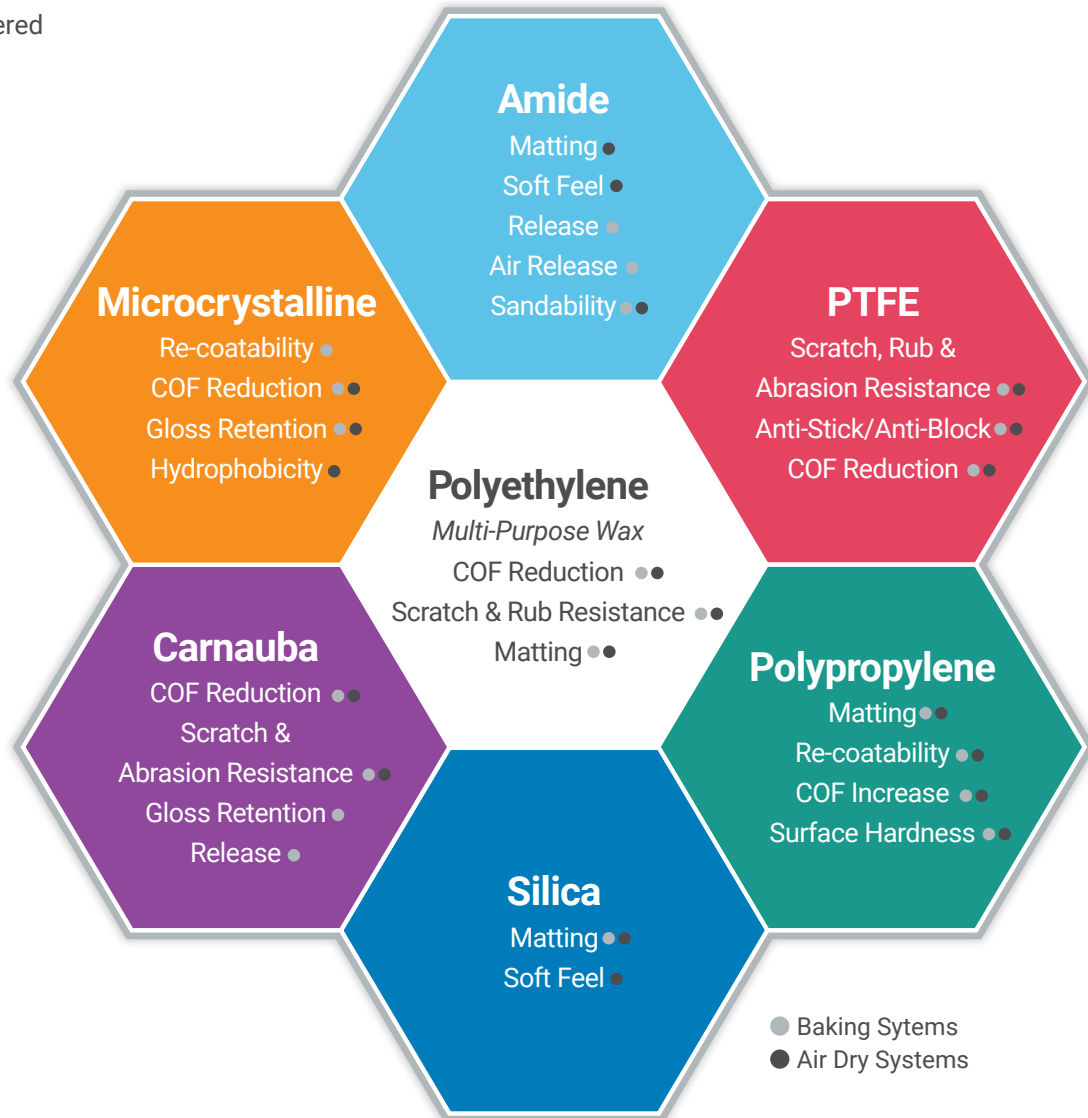
FUNCTIONS OF A SURFACE MODIFIER

Many factors must be considered when selecting the best surface modifier:

1. Surface modifier chemistry and particle size
2. Coating properties such as film thickness and resin chemistry
3. Application and cure methods

Additive performance is evaluated using a variety of quantitative and qualitative test methods.

Below is a representation of some of the major chemistries used in our surface modifiers, along with the general properties each chemistry can provide.



Typical particle size ranges/borders for Lubrizol's micronized waxes

Because Lubrizol believes in the importance of particle size distribution we have developed our own fineness grade specifications for specific applications to give the best performance.

Lanco, Pinnacle and PowderAdd Range

MF	fineness:	Dv50 ≤ 15µm,	Dv90 ≤ 30µm – powder coatings
F	fineness:	Dv50 ≤ 9µm,	Dv90 ≤ 22µm
LF	fineness:	Dv50 ≤ 9µm,	Dv90 ≤ 18µm – narrow distribution
SF	fineness:	Dv50 ≤ 6µm,	Dv90 ≤ 14µm
EF	fineness:	Dv50 ≤ 5µm,	Dv90 ≤ 9.5µm – very fine specialties

In addition to micronized products Lubrizol also provides solutions in dispersion or emulsion form. These can be used to improve ease of incorporation, stability and can be provided at lower particle size, and thus have less of an effect on gloss. Below is a simple chart which describes the differences and benefits of each.

Micronized

- Typically Dv50 ranges from 5-9 microns
- High efficiency (100% active)
- Most effective matting option
- Broadest compatibility
- Most cost effective solution



Dispersion

- Small particle size Dv50 ranges from 2-6 microns
- Wide range of liquid carriers
- Ease of incorporation/handling
- Limited effect on gloss
- Good in-can/formulated stability

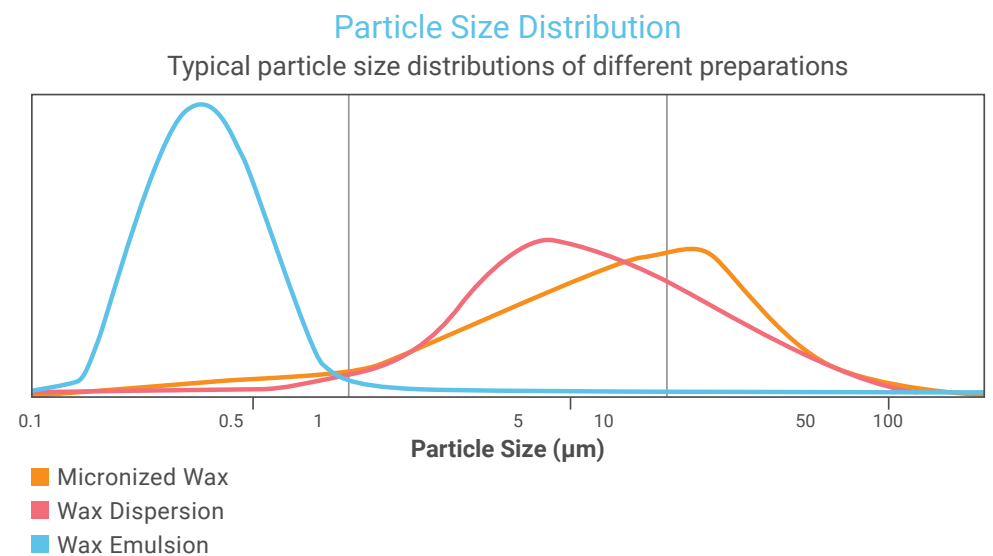


Emulsion

- Generally particle size Dv50 ≤ 1 micron
- Water-based applications only
- Ease of incorporation and handling
- Great gloss retention/highest clarity
- Good in-can/formulated stability

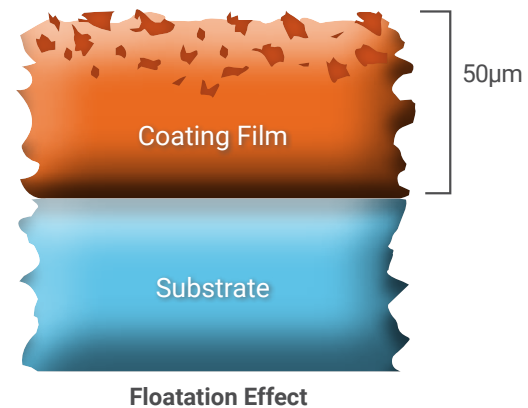


Waxy polymers used for surface modification are typically supplied in prilled or flaked forms. The particle size for surface modification is optimized to balance ease of incorporation, compatibility and performance without compromising secondary properties. The particle size can be controlled using micronization, dispersion and emulsification techniques. The chart to the right illustrates the average particle size range using these techniques.



Surface Modifier Curing Mechanisms

The performance of a surface modifier is dependent on the ability of the particle to be present at the coating-to-air interface. The two mechanisms to accomplish this are described on the right.



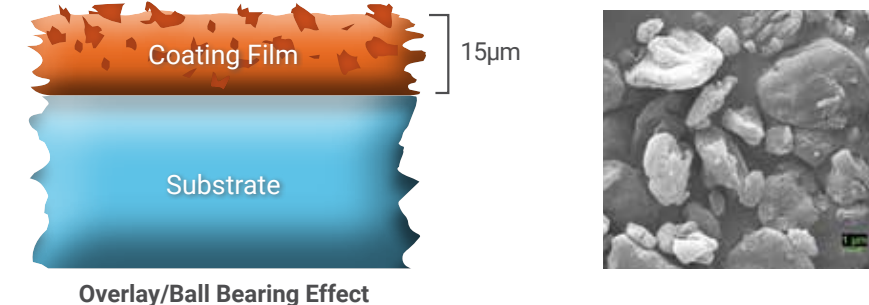
The curing mechanism affects the migration of the additive to the surface of the film and can also influence the performance of the finish itself.

Density differences between the wax and liquid enable the wax to migrate to the surface of air dried, solvent based or water based coatings or inks. Convection currents are generated during solvent evaporation, causing the additive to float to the coating-to-air interface. As solvent evaporates, the volume of coating or film decreases, causing film shrinkage which allows the formulator to take advantage of the ball bearing or the overlay effect.

In UV cured, high-solids or solvent-free systems, viscosity and degree of film shrinkage impact surface modifier performance. As a result, the mobility of the surface modifier and the ability

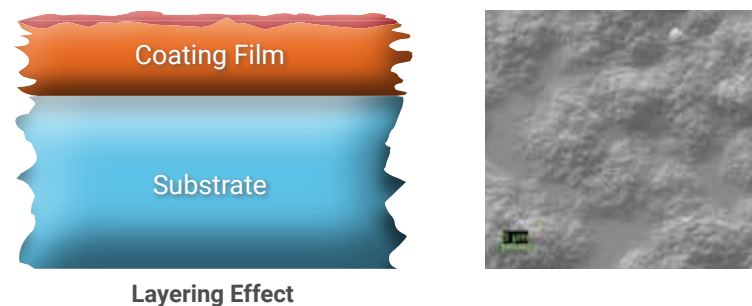


1. Surface modifiers float to the surface due to density differences or incompatibility between the additive and the bulk coating. This is referred to as the **floatation effect**.
2. The average particle size of the additive is larger than the dry film thickness of the coating/ink or the concentration of particles is high enough to facilitate stacking near the coating-to-air interface. This is referred to as the **ball bearing or overlay effect** respectively.



to float to the coating-to-air interface is limited. Rapid cure cycles constrain the mobility of a surface modifier to migrate to the surface in UV cured systems. Due to these constraints, the floatation effect is limited in these systems, and the overlay/ball bearing effect has a greater influence on performance. Therefore, selecting the correct particle size surface modifier is critical to achieving the targeted performance characteristics.

The curing temperature is important because it influences the viscosity and the mobility of the additive particles. If it is above the melting point of the additive, it can lead to significantly different performance because a microscopic wax layer can be formed at the coating-to-air interface. This is known as the layering effect.



HANDLING GUIDELINES

Incorporation

Dispersed and emulsified surface modifiers can be easily incorporated into inks and coatings using low speed mixers. Occasionally, high-speed mixing is required. Caution should be taken if using high-speed mixing to avoid foam generation and overgrinding.

Micronized waxes can be easily dispersed using mixers or dissolvers. Formulation variables such as viscosity, solvent package, resin type, selection of dispersant and pigment surface treatment can influence the ease of incorporation. Processing temperatures should be maintained below 40°C to prevent particle swelling in solvent based systems.

A pre-dispersion of micronized wax can be prepared to simplify incorporation into coatings or inks. As a guide, 15-30% micronized wax could be pre-dispersed in a blend of resin and solvent consistent with the ratios in the coating. Pre-dispersion of micronized wax into an aqueous system will require the use of wetting agents. Temperature control is important in solvent based systems to prevent particle swelling and viscosity drift.

Addition Rate

Typically, surface modifiers are used between 1-5% to achieve targeted performance properties.

Storage

Surface modifiers are stable under standard conditions (5-40°C). Product data sheets should always be referenced for specific storage recommendations. It is important to protect wax preparations from extreme temperature conditions such as frost and high heat. Solvent based dispersions should not be stored above 40°C to prevent swelling and viscosity drift. Aqueous dispersions should be protected from freezing.

Food Grade Applications

Many surface modifiers comply with FDA regulation 21 CFR § 175.300, 175.105, 176.170 and 176.180 in addition to other food content regulations. Additional regulatory compliance information on Swiss Annex, Nestle, EU 10/2011 and other regional food compliance requirements can be provided.



Micronized									
Product Name	Polymer Type	Particle Size		Melting Point °C (°F)	Density g/cm ³ @ 20 °C	Coating Types			
		dv50 µm	DV90 µm			Water-borne	Solvent-borne	Powder	Radiation Cured
Polypropylene									
Lanco™ 1370 LF	Modified Polypropylene Wax	≤9	≤18	150 (302)	0.93	○	●	○	●
Lanco™ 1380 F	Modified Polypropylene Wax	≤9	≤22	150 (302)	0.95	●	●	○	●
Lanco™ PP 1362 D	Modified Polypropylene Wax	≤9	≤22	140 (284)	0.94	●	●	○	●
Lanco™ PP 1362 SF	Modified Polypropylene Wax	≤6	≤14	140 (284)	0.94	●	●	○	●
Lanco™ 1390 F	Modified Polypropylene Wax	<11	≤22	165 (329)	1.03	●	○	○	●
Lanco™ 1394 F	Polypropylene Wax	≤13	≤25	140 (284)	0.9		●		●
Lanco™ 1394 LF	Polypropylene Wax	≤9	≤18	140 (284)	0.9		●		●
Lanco™ PP 1340 F	PP-Modified PE Wax	≤9	≤22	140 (284)	0.94	○	●	○	○
Lanco™ PP 1350 F	PP-Modified PE Wax	≤9	≤22	150 (302)	0.94	●	●	○	●
Polyethylene									
Lanco™ 1410 LF	Modified Polyethylene Wax	≤9	≤19	140 (284)	0.97	●	●	●	○
Lanco™ PE 1500 F	Modified Polyethylene Wax	≤9	≤22	102 (216)	0.96	●	●	○	○
Lanco™ PE 1500 SF	Modified Polyethylene Wax	≤6	≤14	102 (216)	0.96	●	●		○
Lanco™ 1511 LF	Polyethylene Wax	≤9	≤18	114 (237)	0.95	○	●	○	
Lanco™ 1511 F	Polyethylene Wax	≤10	≤22	114 (237)	0.95	○	●	○	
Lanco™ 1530 SF	Modified Polyethylene Wax	≤6	≤14	118(244)	0.97	○	●	○	○
Lanco™ PE 1544 F	Modified Polyethylene Wax	≤9	≤22	140 (284)	0.99	●	●	●	○
Lanco™ 1552 F	Modified Polyethylene Wax	≤10	≤20	111 (232)	0.96	●	○		○
Lanco™ 1580 LF	Polyethylene Wax	≤9	≤18	125 (257)	0.97	○	●	○	○
Polyolefin									
Lanco™ 1400 SF	Modified Polyolefin Wax	≤6	≤14	140 (284)	0.97	○	●	●	○
Lanco™ 1510 EF	Modified Polyolefin Wax	≤5	≤9.5	106 (223)	0.96	○	●		
Lanco™ 1561 LF	Polar Polyethylene Wax	≤9	≤22	104 (219)	0.96	●			
Lanco™ 1550	Unmicronized Polyolefin Wax		DV98 ≤ 150	117 (243)	0.95			●	
Lanco™ PEW 1555 N	Modified Polyolefin Wax	≤9	≤22	105 (221)	0.96	●			
Lanco™ PEW 1556	Hydrophilically Modified Polyethylene Wax	≤9	≤18	112 (234)	0.95	●			
Lanco™ 1588 LF	Polyolefin Wax	≤9	≤18	105 (221)	0.96	○	●		○
Lanco™ 1588 SF	Polyolefin Wax	≤7	≤15	105 (221)	0.96	○	●		○
Lanco™ SM 2003	Modified Polyolefin Wax	≤9	≤22	140 (284)	0.97	○	●	●	○
Lanco™ SM 2005	Polyolefin Wax	≤9	≤22	105 (221)	0.96	○	●	○	○

○ Good Performance ● Premium Performance

Micronized						
Product name	Performance Benefits					Other Properties/Benefits
	COF Reduction (Slip)	Scratch & Abrasion Resistance	Matting	Silky Feel	Anti-Blocking	
Polypropylene						
Lanco™ 1370 LF	○	●	●	○	○	Burnish resistance. Designed for wood coatings.
Lanco™ 1380 F	○	●	●	○	●	Burnish resistance.
Lanco™ PP 1362 D	○	●	●	○	●	Excellent multi-purpose wax.
Lanco™ PP 1362 SF	○	○	○	●	●	For thin film applications.
Lanco™ 1390 F		●	●		●	Good stability in water-based coatings. Anti-slip control.
Lanco™ 1394 F		○	●		●	Anti-slip control.
Lanco™ 1394 LF		○	●	○	●	Anti-slip control. Designed for wood coatings.
Lanco™ PP 1340 F	○	●	○		●	
Lanco™ PP 1350 F	○	●	●	○	●	
Polyethylene						
Lanco™ 1410 LF	○	○	○	●	●	Good compatibility in water-based systems.
Lanco™ PE 1500 F	○	○	●		○	
Lanco™ PE 1500 SF	○	○	○	●	○	For thin film applications.
Lanco™ 1511 LF	○	●	○	○	○	Designed for wood coatings.
Lanco™ 1511 F	○	●	○	○	○	Designed for wood coatings.
Lanco™ 1530 SF	○	●		●	○	Designed for can and coil coatings. For thin film applications.
Lanco™ PE 1544 F	○	○	●		○	
Lanco™ 1552 F	●	●	○		○	Designed for aqueous coatings.
Lanco™ 1580 LF	○	●	●		○	
Polyolefin						
Lanco™ 1400 SF	●	○	○	●	○	Excellent surface feel.
Lanco™ 1510 EF	○	●			○	Excellent scratch resistance. Designed for can coatings.
Lanco™ 1561 LF	○	●	○	○	●	Designed for aqueous wood applications.
Lanco™ 1550	○	●	●			Designed for powder coatings.
Lanco™ PEW 1555 N	○	●	●		○	Designed for aqueous coatings.
Lanco™ PEW 1556	○	●	●	○		Designed for aqueous coatings.
Lanco™ 1588 LF	○	●	○	○	○	Designed for wood coatings.
Lanco™ 1588 SF	○	●	○	○	○	For thin film applications.
Lanco™ SM 2003	●	○	●	○	○	Good overall performance in wood coatings. Good degassing in powder coatings.
Lanco™ SM 2005	○	●	●		○	Designed for wood coatings.

○ Good Performance ● Premium Performance

Micronized									
Product Name	Polymer Type	Particle Size		Melting Point °C (°F)	Density g/cm ³ @ 20 °C	Coating Types			
		dv50 µm	dv90 µm			Water-borne	Solvent-borne	Powder	Radiation Cured
Amide									
Lanco™ A 1602	Fatty Acid Amide Wax	≤9	≤22	142 (288)	0.99	○	●	●	○
Lanco™ A 1603	Vegetable Based Amide Wax	≤6	≤14	142 (288)	0.99	○	●	●	○
Polytetrafluoroethylene (PTFE)									
Lanco™ TF 1720 C*	PTFE Modified PE Wax	≤8	≤18	125 (257)	1.02	○	●	●	●
Lanco™ TF 1725*	PTFE Modified PE Wax	≤6	≤14	125 (257)	1.01	○	●	○	●
Lanco™ TF 1725 LF*	PTFE Modified PE Wax	≤9	≤18	125 (257)	1.01	○	●	●	●
Lanco™ TFW 1765 NC*	Hydrophilic PTFE Modified PE Wax	≤6	≤14	105 (221)	1.08	●			
Lanco™ TF 1778 C*	PTFE Modified PE Wax	≤6	≤14	102 (216)	1.04	○	●	●	●
Lanco™ TF 1780 C*	PTFE Modified PE Wax	≤6	≤14	102 (216)	1.07	○	●	●	●
Lanco™ TF 1780 EFC*	PTFE Modified PE Wax	≤5	≤10	102 (216)	1.07	○	●	○	○
Lanco™ TF 1788 C*	PTFE Modified Polyolefin Wax	≤6	≤14	102 (216)	1.04	○	●	●	●
Lanco™ 1793*	Polytetrafluoroethylene	≤6		331 (628)	2.17		●	○	○
Lanco™ 1794*	Polytetrafluoroethylene	≤8		331 (628)	2.17		●	○	○
Lanco™ 1795*	Polytetrafluoroethylene	≤10		331 (628)	2.17		●	○	○
Lanco™ 5671*	Polytetrafluoroethylene	≤4		331 (628)	2.2	○	●	○	●
Lanco™ SM 2001 C*	PTFE Modified Polyolefin Wax	≤9	≤22	105 (221)	1.01	○	●	○	●
Specialty									
Lanco™ 1955 SF	Carnauba Wax	≤6	≤14	82 (190)	0.99	●	●	○	○
Lanco™ 2510 SF	Inorganically Modified Wax Compound	≤6	≤14	105 (221)	1.05	●	●	○	○
Lanco™ 2520 SF	Inorganically Modified Wax Compound	≤6	≤14	105 (221)	1.07	●	●	○	○
Lanco™ 2520 EF	Inorganically Modified Wax Compound	≤5	≤10	105 (221)	1.07	●	●	○	○
Lanco™ 2530 EF	Organically Modified Wax Compound	≤6	≤12	116 (241)	0.92	●	●	○	○
Lanco™ 2540 SF	Organically Modified Wax Compound	≤6	≤14	128 (262)	0.85	●	●	○	○
Lanco™ 2541 SF	Organically Modified Wax Compound	≤6	≤14	144 (291)	0.83	●	●	○	○
Lanco™ Matt 1100	Modified Silica	≤6.5			2.0	○	●		○
Lanco™ Matt 2000	Modified Silica	≤6.5			2.0	○	●		○

*<25 ppb PFOA ○ Good Performance ● Premium Performance

Micronized						
Product Name	Performance Benefits					Other Properties/Benefits
	COF Reduction (Slip)	Scratch & Abrasion Resistance	Matting	Silky Feel	Anti-Blocking	
Amide						
Lanco™ A 1602	○	○	●	○	●	Good sanding properties for wood coatings.
Lanco™ A 1603	○	○	○	●	●	Excellent release in can coatings.
Polytetrafluoroethylene (PTFE)						
Lanco™ TF 1720 C*	○	●	○	○		
Lanco™ TF 1725*	●	●		○	○	
Lanco™ TF 1725 LF*	●	○	○	●	●	
Lanco™ TFW 1765 NC*	●	●		○	●	Designed for aqueous coatings.
Lanco™ TF 1778 C*	●	●		○	○	Premium product for surface protection.
Lanco™ TF 1780 C*	●	●			●	Enhanced surface protection.
Lanco™ TF 1780 EFC*	●	●			●	For thin film applications.
Lanco™ TF 1788 C*	●	●		○	○	
Lanco™ 1793*	○	○			●	For thin film applications.
Lanco™ 1794*	○	○			●	
Lanco™ 1795*	○	○			●	
Lanco™ 5671*	●	●			●	For thin film applications.
Lanco™ SM 2001 C*	○	●	○	○	○	
Specialty						
Lanco™ 1955 SF	●	●			●	Good release properties. Acid value <15.
Lanco™ 2510 SF	○	●	○		○	Excellent abrasion resistance for PTFE-free formulations.
Lanco™ 2520 SF	○	●	○		○	Excellent abrasion resistance for PTFE-free formulations.
Lanco™ 2520 EF	●	●	○		○	Excellent abrasion resistance for PTFE-free thin film applications.
Lanco™ 2530 EF	●	●	○	○		Excellent abrasion resistance for PTFE-free thin film applications.
Lanco™ 2540 SF	○	●	○		○	Excellent abrasion resistance for PTFE-free applications.
Lanco™ 2541 SF	○	●	○		○	Excellent abrasion resistance for PTFE-free applications.
Lanco™ Matt 1100		○	○	○		Matting agent.
Lanco™ Matt 2000		○	●	●		Matting agent with excellent surface feel.

*<25 ppb PFOA ○ Good Performance ● Premium Performance

Dispersions										
Product Name	Polymer Type	Solids (%)	Solvent	ph	Hegman Grind	Grind Gauge (npiri)	Particle Size		Melting Point	Density
							DV50 μm	DV90 μm	$^{\circ}\text{C}$ ($^{\circ}\text{F}$)	
Water-Based										
Polyethylene										
Lanco™ Glidd 6068	Oxidized Polyethylene Wax	41	Water	8		≤ 6.0	≤ 12	≤ 22	132 (270)	1.01
Liquitron™ 461	Oxidized Polyethylene Wax	45	Water	4		≤ 6.0	≤ 12	≤ 22	137 (279)	0.95
Polyolefin										
Lanco™ Glidd 6067	Polyolefin Wax	42	Water	8		≤ 5.0	≤ 6	≤ 15	105 (221)	0.98
Lanco™ Glidd 6148	Polyolefin Wax	53	Water	8.7	≥ 5	≤ 12.0	≤ 9	≤ 22	105 (221)	0.96
Lanco™ Glidd 6546	Polyolefin Wax	64	Water	8.5	≥ 6	≤ 11.0	≤ 10	≤ 20	111 (232)	1.00
PTFE										
Lanco™ Glidd 3540*	PTFE Modified Polyethylene Wax	35	Water	8.2		< 5.0	≤ 9.5	≤ 20	111 (232)	1.10
Lanco™ Glidd 6646*	PTFE Modified Polyethylene Wax	52	Water				≤ 6	≤ 14	102	1.02
Lanco™ 9530 C*	PTFE Modified Polyethylene Wax	30	Water			< 5.0	≤ 5.5	≤ 14	102(216)	1
Other										
Lanco™ Liquimatt 6040	Modified Wax	40	Water	8.5	≥ 6.5	< 7.5	≤ 8	≤ 19	130 (266)	0.94
Lanco™ Liquimatt 6375 AF	Silica Modified Wax	50	Water	10.5	≥ 6	< 9.5	≤ 9	≤ 18	105 (221)	0.97
Water and Solvent Based										
Polyethylene										
Lanco™ Glidd 6502	Polyethylene/Carnauba Wax	27	Water, Butyl Glycol		≥ 7	≤ 5.0	≤ 4.5	≤ 9.5	112 (234)	0.97
Lanco™ Glidd TD	Polyethylene Wax	25	Isopropanol				≤ 9	≤ 22	111 (232)	0.82
Polyolefin										
Lanco™ Glidd 5118	Polyolefin Wax	18	Butyl Glycol		≥ 7	< 5.0	≤ 5	≤ 10	106 (223)	0.91
Lanco™ Glidd 5618	Polyolefin Wax	18	Isopropanol		≥ 7	< 5.0	≤ 4.5	≤ 9	106 (223)	0.82
Lanco™ Glidd 7678	Modified Polyolefin Wax	20	Butyl Glycol				≤ 3.5	≤ 7	104	0.91
PTFE										
Lanco™ Glidd 5342*	PTFE Modified Wax Compound	24.5	Butyl Glycol		≥ 6.5	< 6.5	≤ 3	≤ 6.5	93 (199)	0.93

*<25 ppb PFOA ◯ Good Performance ● Premium Performance

Dispersions										
Product Name	Coating Types			Performance Benefits						Other Properties/Benefits
	Water-borne	solvent-borne	Radiation Cured	COF Reduction (slip)	Scratch & Abrasion Resistance	Matting	Silky feel	Rub Resistance	Anti-Blocking	
Water-Based										
Polyethylene										
Lanco™ Glidd 6068	●				●	●		●		
Liquitron™ 461	●			○	●	○		●	○	Designed for printing and packaging.
Polyolefin										
Lanco™ Glidd 6067	●			●	○		○	○		
Lanco™ Glidd 6148	●			○	●	●		○		Designed for wood coatings.
Lanco™ Glidd 6546	●			○	●	○	●			Maintains high clarity. Excellent scratch resistance.
PTFE										
Lanco™ Glidd 3540*	●			●	●	○		○	●	
Lanco™ Glidd 6646*	●			●	●		○	○	●	
Lanco™ 9530 C*	●			●	●		○	○	●	
Other										
Lanco™ Liquimatt 6040	●				○	●	○	○	○	Premium suspension stability. Good matting agent.
Lanco™ Liquimatt 6375 AF	●				○	●	○	○		
Water and Solvent Based										
Polyethylene										
Lanco™ Glidd 6502	●	○		●	●				●	Designed for high gloss can coatings.
Lanco™ Glidd TD	●	○		○	○	○		○	○	Versatile liquid matting agent.
Polyolefin										
Lanco™ Glidd 5118	●	●		○	○				○	Designed for can coatings.
Lanco™ Glidd 5618	●	○		○	○				○	
Lanco™ Glidd 7678	●	○		●	●			○		Slip improvement and abrasion resistance PTFE-free formulations.
PTFE										
Lanco™ Glidd 5342*	●	●		●	●				○	

*<25 ppb PFOA ◯ Good Performance ● Premium Performance

Dispersions										
Product Name	Polymer Type	Solids (%)	Solvent	ph	Hegman Grind	Grind Gauge (npiri)	Particle Size		Melting Point °C (°F)	Density g/cm ³ @ 20 °C
							DV50 μm	DV90 μm		
Water and Solvent-Based										
Carnauba										
Lanco™ Glidd 5350	Modified Carnauba Wax	30	Butyl Glycol		≥7	≤5.0	≤3.5	≤6.5	82 (180)	0.91
Lanco™ Glidd 5518	Modified Carnauba Wax	18	Butyl Glycol		≥6.5	≤6.5	≤3	≤7	82 (180)	0.92
Lanco™ Glidd 7610	Inorganically Modified Carnauba Wax	18.5	Butyl Glycol				≤4	≤8	82 (180)	0.93
Other										
Lanco™ Glidd 6602	Silica Modified Wax	30	Butyl Glycol				≤15		150 (302)	0.96
Lanco™ Glidd 6635	Wax Combination	30	Water, Butyl Glycol				≤6	≤12	124	0.96
Lanco™ Glidd 6692	Wax Combination	29	Water, Butyl Glycol				≤3	≤7	86	0.98
Lanco™ Glidd 7607	Inorganically Modified Polyolefin Wax	20	Water, Butyl Glycol				≤4	≤8	105 (221)	0.99
Lanco™ Glidd 7612	Inorganically Modified Wax Compound	27	Water, Butyl Glycol				≤6	≤12	106 (223)	0.98
Lanco™ Glidd PME	Microcrystalline Wax	22	Ethanol				≤3.5	≤10	88 (190)	0.84
Solvent-Based										
Polyethylene										
Lanco™ Glidd KX	Polyethylene Wax	20	Xylene				≤4	≤9	106 (223)	0.88
Liquitron™ 809	Polyethylene Wax	20	Isopropanol				≤6	≤14	102 (216)	0.81
Lanco™ Glidd PEC	Polyethylene/Carnauba Wax	15	PGME/Aromatic 150 ND			≤8.5	≤4	≤8.5	102 (216)	0.90
Polyolefin										
Lanco™ Glidd 5319	Polyolefin Wax	39	Xylene				≤5.5	≤13	105 (221)	0.87
Lanco™ Glidd 7605	Inorganically Modified Polyolefin Wax	20	Aromatic 100, Butyl Glycol				≤4	≤8	105 (221)	0.93
PTFE										
Lanco™ Glidd 3520*	PTFE Modified Polyethylene Wax	20	Aromatic 100, Butyl Glycol		≥7	≤5.0	3.5	≤7	102 (216)	0.92
Lanco™ Glidd 4830*	PTFE Modified Polyolefin Wax	32	Aromatic 150 ND, Butyl Glycol		≥6.0	≤10.0	≤6	≤10	125 (257)	0.83
Lanco™ Glidd 4832 LF*	PTFE Modified Wax	32	Aromatic 150 ND		≥6.0	≤10.0	≤5	≤9	104 (219)	0.91
Lanco™ Glidd 5361*	PTFE Modified Polyethylene Wax	29	Aromatic 150 ND		≥6.5	≤7.5	≤7	≤14	102 (216)	0.90
Carnauba										
Lanco™ Glidd 4415	Carnauba Wax	15	Alcohol, Glycol Ether, Aromatic 150 ND		≥7	≤5.0	≤3	≤6	82 (180)	0.91
Other										
Lanco™ Glidd 4370	Proprietary Wax and Oil Blend	60	Aliphatic Hydrocarbon		≥7	≤3.0			62 (144)	0.81
Lanco™ Glidd 5348	Polymeric Wax	10	Aromatic 150				≤9.5	≤20	130 (266)	4.5
Lanco™ Liquimatt 5730	Silica Modified Wax	24	Xylene/Butyl Acetate				≤5.5	≤10		0.94
Lanco™ Glidd PMS	Microcrystalline Wax	21	Aromatic 150 ND		N/A	N/A	≤4.5	≤9.5	88 (190)	0.89

*<25 ppb PFOA ○ Good Performance ● Premium Performance

Dispersions											
Product Name	Coating Types			Performance Benefits						Other Properties/Benefits	
	Water-borne	Solvent-Borne	Radiation Cured	COF Reduction (slip)	Scratch & Abrasion Resistance	Matting	Silky Feel	Rub Resistance	Anti-Blocking		
Water and Solvent-Based											
Carnauba											
Lanco™ Glidd 5350	●	●		●							Meat release effect in can coatings.
Lanco™ Glidd 5518	●	●		●	●			○			Good gloss retention.
Lanco™ Glidd 7610	●	●		○	●			○			Abrasion resistance without PTFE.
Other											
Lanco™ Glidd 6602	●	●		○	○	●	●				Excellent liquid matting agent.
Lanco™ Glidd 6635	●	○		○	●			○			Abrasion resistance PTFE-free formulations.
Lanco™ Glidd 6692	●	○		●	●			○			Slip improvement and abrasion resistance PTFE-free formulations.
Lanco™ Glidd 7607	●	○		○	●			○			Abrasion resistance for PTFE-free formulations.
Lanco™ Glidd 7612	●	○		○	●			○			Slip improvement and abrasion resistance PTFE-free formulations.
Lanco™ Glidd PME	●	○		○	●						Designed for can and coil coatings. Good over-printability.
Solvent-Based											
Polyethylene											
Lanco™ Glidd KX		●		○	●	○	○				Designed for general industrial.
Liquitron™ 809	●	●		○	●	○		●			Designed for printing and packaging.
Lanco™ Glidd PEC		●		●	●						Designed for can and coil coatings.
Polyolefin											
Lanco™ Glidd 5319		●		○	●				●		Designed for can and coil coatings. Good adhesion to PU foam.
Lanco™ Glidd 7605		●		○	●						Abrasion resistance without PTFE.
PTFE											
Lanco™ Glidd 3520*		●		○	●						Designed for can and coil coatings.
Lanco™ Glidd 4830*		●		●	●						Designed for can and coil coatings.
Lanco™ Glidd 4832 LF*		●		●	●						Designed for can and coil coatings.
Lanco™ Glidd 5361*		●		○	●						Designed for can and coil coatings. Supports flow and leveling.
Carnauba											
Lanco™ Glidd 4415		●		●	●				●		Good gloss retention.
Other											
Lanco™ Glidd 4370		●						○			Good water beading. Improves dirt pick-up resistance.
Lanco™ Glidd 5348		●		○	○						Improves adhesion between TPU gaskets and crown cork coatings.
Lanco™ Liquimatt 5730		●			○	●	○	○			
Lanco™ Glidd PMS		●		○	○						Designed for can and coil coatings. Good over-printability.

*<25 ppb PFOA ○ Good Performance ● Premium Performance

Emulsions											
Product Name	Product Type	Solids (%)	pH	Melting Point °C (°F)	Ionic Character	APEO-Free	COF Reduction (Slip)	Anti-Blocking	Silky Feel	Scratch & Abrasion Resistance	Other Properties/Benefits
Polypropylene											
Aquaslip™ 662	Polypropylene Wax	40	8.5	140 (284)	Non-Ionic	Yes		•	•	○	
Liquilube™ 414	Polypropylene Wax	40	8.5	157 (315)	Nonionic	No		•	○	○	
Polyethylene											
Aquaslip™ 656	Polyethylene Wax	35	9	130 (266)	Non-Ionic	Yes	○	○	○	○	
Aquaslip™ 671	Polyethylene Wax	40	3.5	125 (257)	Non-Ionic	Yes	○	○	•	•	
Aquaslip™ 682	Polyethylene Wax	40	6.5	118 (244)	Non-Ionic	Yes	○	○	•	•	
Liquilube™ 404 E	Polyethylene Wax	35	9.5	136(277)	Non-Ionic	Yes	•	•		•	Designed for printing and packaging applications.
Liquilube™ 504	Polyethylene Wax	40	6	112 (234)	Anionic	Yes	•	•		•	Designed for printing and packaging applications.
Polyolefin											
Liquilube™ 405	Synthetic Wax	40	7	105 (221)	Nonionic	Yes	○	•		•	Designed for printing and packaging applications.
Paraffin											
Aquaslip™ 677	Modified Paraffin Wax	55	9	64 (147)	Anionic, Non-ionic	Yes	•	•	•	○	Water beading.
Aquaslip™ 678	Modified Paraffin Wax	30	9.5	57 (135)	Anionic	Yes	•	○	○	○	Early water resistance.
Liquilube™ 448	Modified Paraffin Wax	35	9	60 (140)	Anionic	Yes	○	○		○	Designed for printing and packaging and water repellency.
Liquilube™ 454	Paraffin Wax	32	7	60 (140)	Nonionic	Yes	○	○		○	Designed for printing and packaging and water repellency.
Carnauba											
Aquaslip™ 912	T1 Carnauba Wax	25	6	81 (178)	Anionic	Yes	•	○		•	
Aquaslip™ 942	T3 Carnauba Wax	25	8.4	81 (178)	Non-Ionic	Yes	•	○		•	
Aquaslip™ 952	T1 Carnauba Wax	25	9	81 (178)	Non-Ionic	Yes	•	○		•	
Other											
Aquaslip™ 658	Montan Ester Wax	30	5	82 (180)	Non-Ionic	Yes	•	○	○	○	

○ Good Performance • Premium Performance

Powder Coating Additives												
Product Name	Product Type	Particle Size		Melting Point °C (°F)	Density (g/cm³) @ 20°F	COF Reduction (Slip)	Scratch & Abrasion Resistance	Matting	Degassing	Texturing	Other Properties/Benefits	
		DV50 µm	DV90 µm									
Polypropylene												
PowderAdd™ 9094	Polypropylene Wax	≤13	≤25	140 (284)	0.9		○	•	○		Supports adhesion, produces anti-slip.	
Polyethylene												
PowderAdd™ 9016	Polyethylene Wax	500		109 (229)	0.93	○	○				Process aid.	
Polyolefin												
Lanco™ 1550	Unmicronized Polyolefin Wax		DV98 ≤150	117 (243)	0.95	○	○	•			Matting.	
PowderAdd™ 9025	Polyolefin Wax	≤15		105 (221)	0.96	○	○	•			Matting.	
PowderAdd™ 9027	Polyolefin Wax	<500		105 (221)	0.95	○	○	•			Matting.	
PowderAdd™ 9062	Modified Polyolefin Wax	≤25		140 (284)	0.97	○	○		•		Degassing.	
Polytetrafluoroethylene (PTFE)												
Lanco™ 1890 C*	PTFE	≤43		340 (644)	2.2	○	○	•		•	Fine texturing, Strong Matting.	
Lanco™ TF 1830 N*	PTFE Modified PE Wax	≤9	≤22	125 (257)	1.04	○	○	○		•	Fine texturing.	
PowderAdd™ 9078 C*	PTFE Modified PE Wax	≤90		115 (239)	1.01	•	•				Mar and scratch resistance.	
PowderAdd™ 9082*	PTFE	≤600		340 (644)	2.2	○	○	•		•	Fine texturing; Strong Matting.	
PowderAdd™ 9083*	PTFE Modified PE Wax	≤100		110 (230)	1.02	○	•	•		•	Fine texturing; Matting.	
PowderAdd™ 9084*	PTFE Modified PE Wax	≤15		125 (257)	1.04	○	•	○		•	Fine texturing; Matting.	
PowderAdd™ 9085*	Modified PTFE	≤30			1.9	○	○	•		•	Fine texturing; Strong Matting; Soft surface feel.	
PowderAdd™ 9567*	Modified PTFE	≤30			2.6	○	○	•		•	Fine texturing; Strong Matting.	
PowderAdd™ 9680	PTFE	≤15		340 (644)	2.2	○	○	•		•	Fine texturing; Strong Matting.	
Other												
Lanco™ 1900 MF	Proprietary Polymer	≤15	-	60 (140)	1.12	•	•				Designed for high gloss powder coatings.	
Lanco™ Flow P 30	Oleo-Based Modified Wax	20		90 (194)	0.9						Flow and Leveling. A co-additive to be used in conjunction with acrylic flow promoters.	
PowderAdd™ 9060	Amide Wax	≤9	≤22	142 (288)	0.99	○			•		Degassing.	
PowderAdd™ 9080	Modified synthetic Wax	prills		155 (311)	1.11					•	Coarse structuring (hammertone).	
PowderAdd™ 9081	Modified synthetic Wax	≤140		109 (228)	1.4					•	Coarse structuring (hammertone), re-extrudible.	
PowderAdd™ 9421	Proprietary Chemistry	≤9	≤14	80 (176)	0.94	○			•		Efficient degassing; Suitable for low bake systems.	
PowderAdd™ 9423	Proprietary Polymer	≤7.5	≤16	140 (284)	0.97	○			•		Efficient degassing.	
PowderAdd™ 9553	Proprietary Polymer	**		140 (284)	1.2			○			Post addable matting agent.	
PowderAdd™ G 130	Modified Silica	5.5			2.1						Fluidization agent.	

*<25 ppb PFOA **85% is less than 63 microns ○ Good Performance • Premium Performance

Lubrizol Locations

NORTH AMERICA

Lubrizol Advanced Materials, Inc.
9911 Brecksville Road
Brecksville, OH 44141 USA
+1.888.234.2436

EUROPE

Lubrizol Deutschland GmbH
Max-Planck-Str. 6
27721 Ritterhude Germany
+49.421.69333

ASIA-PACIFIC

Lubrizol Specialty Chemicals
(Shanghai) Co., Ltd
10/F, Park Center International
No. 1088 Fang Dian Road
Shanghai 201204, PR China
+8621.3866.0366

SOUTH AMERICA

Lubrizol do Brasil Aditivos Ltda
Avenida Nove de Julho, 3653
Jardim Paulista
Sao Paulo – SP
01407-000
+55.11.4097.0250

Lubrizol Performance Coatings is a market-driven innovator of specialty chemicals for coatings, inks and composites. Our portfolio of resin, binder, dispersant, wax additive, and specialty additive technologies solves challenges across a wide range of markets and applications. Formulators choose Lubrizol to benefit from our innovative technologies, customer collaboration and global reliability. More than just a supplier, we are a valued partner with extensive experience in surface protection, dispersion, adhesion and barrier properties. We work closely with customers to enhance the performance, productivity and sustainability benefits of their products and drive new opportunities for market success.

Lubrizol | **Performance Coatings**

Lubrizol Advanced Materials, Inc. ("Lubrizol") hopes that you have found the information provided helpful, but you are cautioned that this material, including any prototype formulas, is for informational purposes only and you are solely responsible for making your own assessment of appropriate use of the information. TO THE MAXIMUM EXTENT PERMITTED BY APPLICABLE LAWS, LUBRIZOL MAKES NO REPRESENTATIONS, GUARANTEES, OR WARRANTIES (WHETHER EXPRESS, IMPLIED, STATUTORY, OR OTHERWISE), INCLUDING ANY IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, OR REGARDING THE COMPLETENESS, ACCURACY, OR TIMELINESS OF ANY INFORMATION. Lubrizol does not guarantee how the materials referenced herein will perform in combination with other substances, in any methods, conditions, or processes, with any equipment, or in non-laboratory environments. BEFORE COMMERCIALIZATION OF ANY PRODUCT CONTAINING THESE MATERIALS, YOU SHOULD THOROUGHLY TEST SUCH PRODUCT, INCLUDING HOW THE PRODUCT IS PACKAGED, TO DETERMINE ITS PERFORMANCE, EFFICACY, AND SAFETY. You are solely responsible for the performance, efficacy, and safety of any products you manufacture. Lubrizol shall not be liable, and you shall assume all risk and responsibility for, any use or handling of any material. Any claims may not be approved in all jurisdictions. Any entity making claims related to these products is responsible for complying with local laws and regulations. Nothing contained herein is to be considered as permission, recommendation, or inducement to practice any patented invention without permission of the patent owner, and it is your sole responsibility to determine if any issues related to patent infringement of any component or combination of components relating to the information provided exists. You acknowledge and agree that you are using the information provided herein at your own risk. If you are dissatisfied with the information provided by Lubrizol, your exclusive remedy shall be to not use the information.