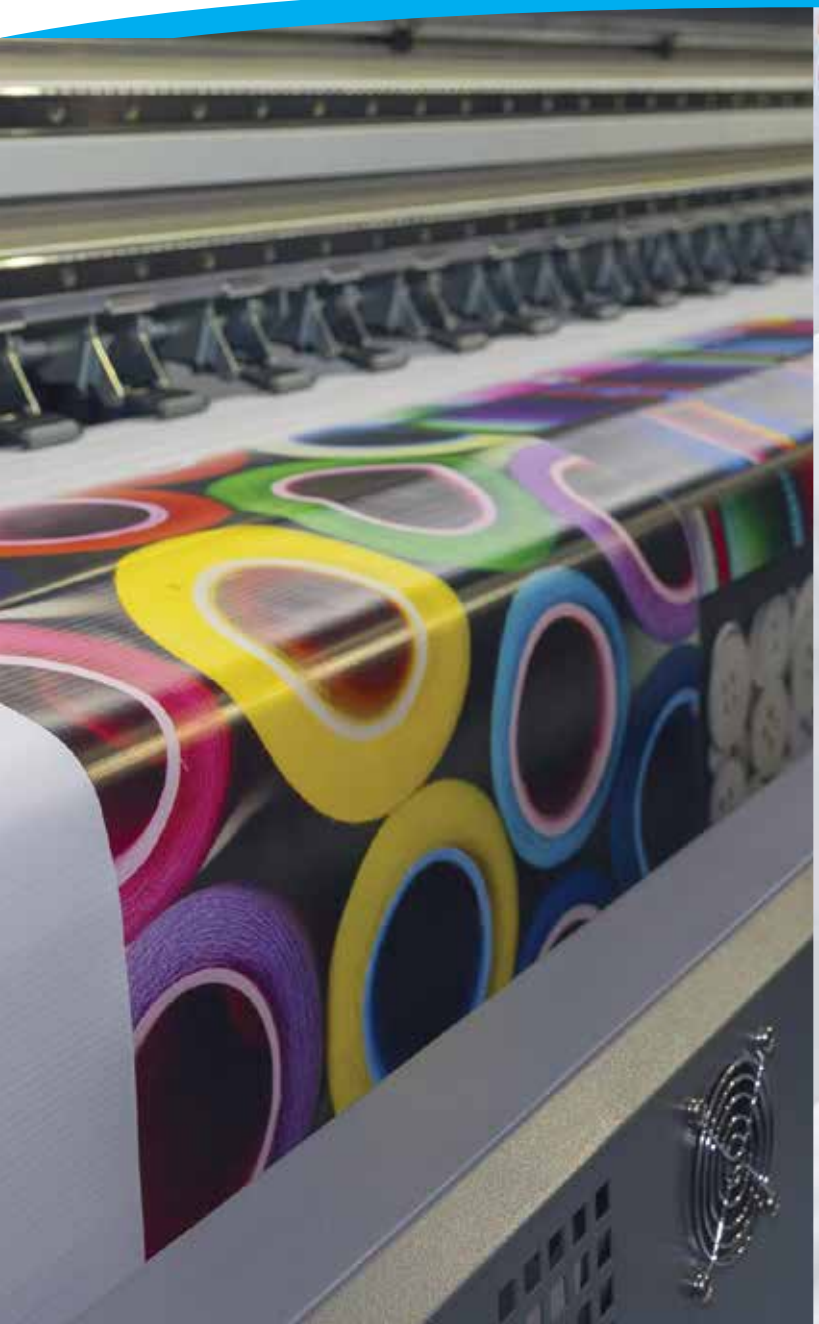
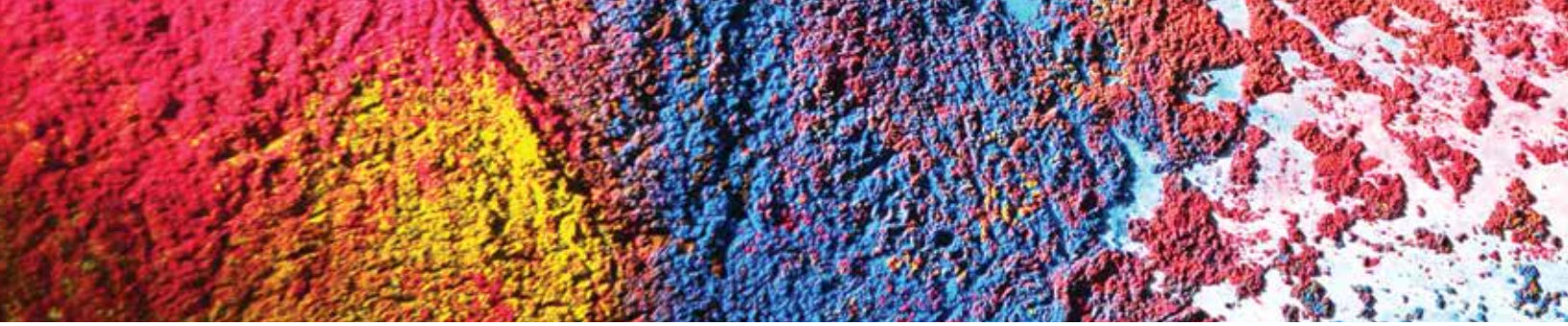
Lubrizol

Imagined for Life. Enabled by Science.™

Wax Additives Product Guide





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 and stability. They 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

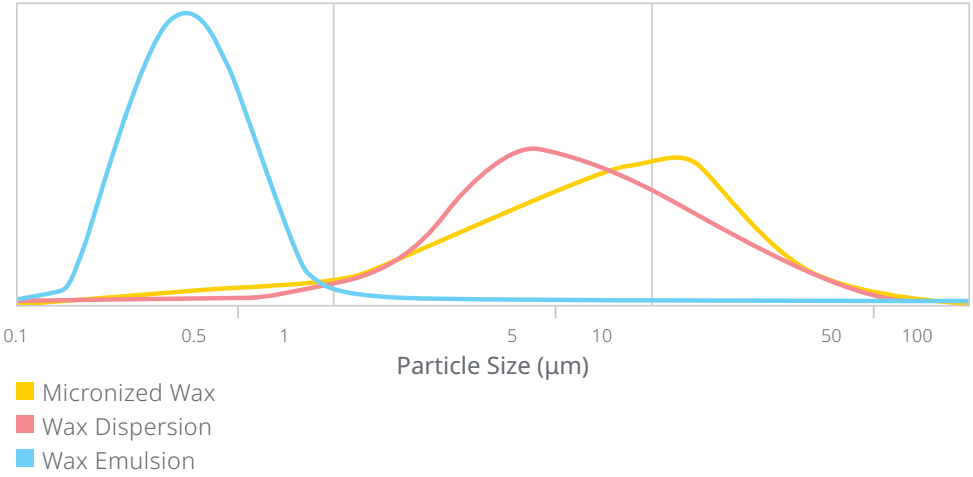
EMULSION

- 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.

Particle Size Distribution

Typical particle size distributions of different preparations



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.

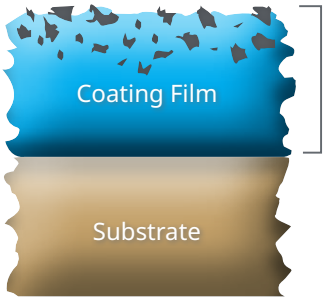
Density differences between the wax and liquid enable the wax to migrate to the surface of air-dried, solvent-based or water-based coatings or inks. Convection currents are generated during solvent evaporation, causing the additive to float to the coating-to-air interface. As solvent evaporates, the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

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**.

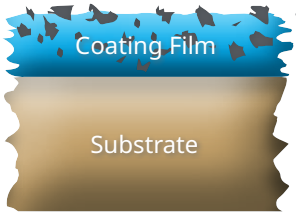
2. The average particle size of the additive is larger than the dry film thickness of the coating/ink or the concentration of particles is high enough to facilitate stacking near the coating-to-air interface. This is referred to as the **ball bearing or overlay effect** respectively.

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 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.

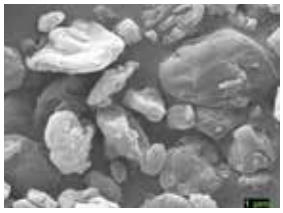
The curing temperature is important because it influences the viscosity and the mobility of the additive particles. If it is above the melting point of the additive, it can lead to significantly different performance because a microscopic wax layer can be formed at the coating-to-air interface. This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

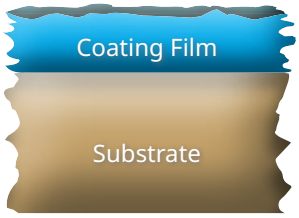


Floatation Effect

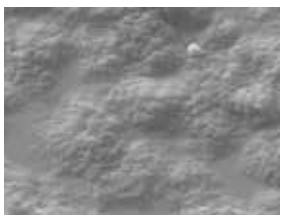


Overlay/Ball Bearing Effect





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

		Particle Size		Melting Point	Density	Coating Types			
Product Name	**Polymer Type**	**Dv50 µm**	**Dv90 µm**	**°C (°F)**	**g/cm³ @ 20 °C**	**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 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™ 1411 F	Modified Polyethylene Wax	≤9	≤22	142 (288)	0.95	○	•	•	○
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	•	•		○
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 1350 F	○	•	•	•	•	
Polyethylene						
Lanco™ 1410 LF	○	○	○	•	•	Good compatibility in water-based systems.
Lanco™ 1411 F	•	○	•	○	○	Good compatibility in water-based systems.
Lanco™ PE 1500 F	○	○	•		○	Good overall performance in wood coatings.
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.
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

		Particle Size		Melting Point	Density	Coating Types			
Product Name	**Polymer Type**	**Dv50 µm**	**Dv90 µm**	**°C (°F)**	**g/cm³ @ 20 °C**	**Water-Borne**	**Solvent-Borne**	**Powder**	**Radiation Cured**
Amide									
Lanco™ A 1602	Fatty Acid Amide Wax	≤9	≤22	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™ 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)	0.95	•	•	○	○
Lanco™ 2540 EF	Organically Modified Wax Compound	≤5.2	≤10	128 (262)	0.95	•	•	○	○
Lanco™ 2541 SF	Organically Modified Wax Compound	≤6	≤14	144 (291)	0.95	•	•	○	○
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

	Performance Benefits					
Product Name	**COF Reduction (Slip)**	**Scratch & Abrasion Resistance**	**Matting**	**Silky Feel**	**Anti-Blocking**	**Other Properties/Benefits**
Amide						
Lanco™ A 1602	○	○	•	○	•	Good sanding properties for wood 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™ 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™ 2540 EF	○	•	○		○	Excellent abrasion resistance for PTFE-free thin film applications.
Lanco™ 2541 SF	○	•	○		○	Excellent abrasion resistance for PTFE-free thin film applications.
Lanco™ Matt 1100		○	○	○		Matting agent.
Lanco™ Matt 2000		○	•	•		Matting agent with excellent surface feel.

*<25 ppb PFOA ○ Good Performance • Premium Performance

Dispersions

								Particle Size		Melting Point	Density
	Product Name	Polymer Type	Solids %	Solvent	pH	Hegman Grind	Grind Gauge (NPIRI)	Dv50 µm	Dv90 µm	°C (°F)	g/cm³ @ 20 °C
Water-Borne	**Polyethylene**										
	Lanco™ Glidd 6068	Oxidized Polyethylene Wax	41	Water	8		≤6.0	≤12	≤22	132 (270)	1.01
	Lanco™ Glidd 6734	Polyethylene Wax	50	Water	8.5			≤1	≤2	115 (239)	0.98
	Lanco™ Glidd 6735	Polyethylene Wax	65	Water	8.5			≤4	≤15	115 (239)	0.97
	Liquitron™ 461	Oxidized Polyethylene Wax	45	Water	4		≤6.0	≤12	≤22	137 (279)	0.95
	Polyolefin										
	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 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	Silica Modified Wax	50	Water	10	≥6	<9.5	≤9	≤18	105 (221)	0.97
	Lanco™ LiquiMatt 6375 AF	Silica Modified Wax	50	Water	10.5	≥6	<9.5	≤9	≤18	105 (221)	0.97
Water- and Solvent-Borne	**Polyethylene**										
	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 (219)	0.91

*<25 ppb PFOA ○ Good Performance • Premium Performance

Dispersions

		Coating Types			Performance Benefits						
	Product Name	Water-Borne	Solvent-Borne	Radiation Cured	COF Reduction (Slip)	Scratch & Abrasion Resistance	Matting	Silky feel	Rub Resistance	Anti-Blocking	Other Properties/Benefits
Water-Borne	**Polyethylene**										
	Lanco™ Glidd 6068	•				•	•		•		
	Lanco™ Glidd 6734	•			○	•	•		•	• (thin film)	
	Lanco™ Glidd 6735	•			○	•	•	•	•		
	Liquitron™ 461	•			○	•	○		•	○	Designed for printing and packaging.
	Polyolefin										
	Lanco™ Glidd 6148	•			○	•	•		○		Designed for wood coatings.
	Lanco™ Glidd 6546	•			○	•	○	•			Maintains high clarity. Excellent scratch resistance.
	PTFE										
	Lanco™ Glidd 9530 C*	•			•	•		○	○	•	
	Other										
	Lanco™ LiquiMatt 6040	•				○	•	○	○	○	Premium suspension stability. Good matting agent.
	Lanco™ LiquiMatt 6375	•				○	•	○	○		
	Lanco™ LiquiMatt 6375 AF	•				○	•	○	○		
Water- and Solvent-Borne	**Polyethylene**										
	Lanco™ Glidd TD	•	○		○	○	○		○	○	Versatile liquid matting agent.
	Polyolefin										
	Lanco™ Glidd 5118	•	•		○	○				○	Designed for can coatings.
	Lanco™ Glidd 5618	•	○		○	○				○	
	Lanco™ Glidd 7678	•	○		•	•			○		Slip improvment and abrasion resistance PTFE-free formulations.

*<25 ppb PFOA ○ Good Performance • Premium Performance

Dispersions

								Particle Size		Melting Point	Density
	Product Name	Polymer Type	Solids %	Solvent	pH	Hegman Grind	Grind Gauge (NPIRI)	Dv50 µm	Dv90 µm	°C (°F)	g/cm³ @ 20 °C
Water- and Solvent-Borne	**Carnauba**										
	Lanco™ Glidd 5350	Modified Carnauba Wax	30	Butyl Glycol		≥7	≤5.0	≤3.5	≤6.5	82 (180)	0.91
	Lanco™ Glidd 7610	Inorganically Modified Carnauba Wax	18.5	Butyl Glycol				≤4	≤8	82 (180)	0.93
	Other										
	Lanco™ Glidd 6635	Wax Combination	30	Water, Butyl Glycol				≤6	≤12	124 (255)	0.96
	Lanco™ Glidd 6692 E	Wax Combination	29	Water, Butyl Glycol				≤3	≤7	86 (187)	0.98
Solvent-Borne	**Polyethylene**										
	Lanco™ Glidd KX	Polyethylene Wax	20	Xylene				≤4	≤9	106 (223)	0.88
	Lanco™ Glidd PEC	Polyethylene/ Carnauba Wax	15	PGME/Aromatic 150 ND			≤8.5	≤4	≤8.5	102 (216)	0.90
	Liquitron™ 809	Polyethylene Wax	20	Isopropanol				≤6	≤14	102 (216)	0.81
	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
	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 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

*<25 ppb PFOA ○ Good Performance • Premium Performance

Dispersions

		Coating Types			Performance Benefits						
	Product Name	Water-Borne	Solvent-Borne	Radiation Cured	COF Reduction (Slip)	Scratch & Abrasion Resistance	Matting	Silky Feel	Rub Resistance	Anti-Blocking	Other Properties/Benefits
Water- and Solvent-Borne	**Carnauba**										
	Lanco™ Glidd 5350	•	•		•						Meat release effect in can coatings.
	Lanco™ Glidd 7610	•	•		○	•			○		Abrasion resistance without PTFE.
	Other										
	Lanco™ Glidd 6635	•	○		○	•			○		Abrasion resistance PTFE-free formulations.
	Lanco™ Glidd 6692 E	•	○		•	•			○		Slip improvment and abrasion resistance PTFE-free formulations.
Solvent-Borne	**Polyethylene**										
	Lanco™ Glidd KX		•		○	•	○	○			Designed for general industrial.
	Lanco™ Glidd PEC		•		•	•					Designed for can and coil coatings.
	Liquitron™ 809	•	•		○	•	○		•		Designed for printing and packaging.
	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.
	Carnauba										
	Lanco™ Glidd 4415		•		•	•				•	Good gloss retention.
	Other										
	Lanco™ Glidd 5348		•		○	○					Improves adhesion between TPU gaskets and crown cork coatings.
	Lanco™ LiquiMatt 5730		•			○	•	○	○		

*<25 ppb PFOA ○ Good Performance • Premium Performance

Emulsions

Product Name	Product Type	Solids %	pH	Melting Point °C (°F)	Ionic Character	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		•	•	○	
Polyethylene										
Aquaslip™ 656	Polyethylene Wax	35	9	130 (266)	Non-Ionic	○	○	○	○	
Aquaslip™ 5071	Polyethylene Wax	37	8	125 (257)	Non-Ionic	○	○	•	•	
Liquilube™ 404 E	Polyethylene Wax	35	9.5	136 (277)	Non-Ionic	•	•		•	Designed for printing and packaging applications.
Liquilube™ 504	Polyethylene Wax	40	6	112 (234)	Anionic	•	•		•	Designed for printing and packaging applications.
Polyolefin										
Liquilube™ 405	Synthetic Wax	40	7	105 (221)	Nonionic	○	•		•	Designed for printing and packaging applications.
Paraffin										
Aquaslip™ 677	Modified Paraffin Wax	55	9	64 (147)	Anionic, Non-ionic	•	•	•	○	Water beading.
Aquaslip™ 678	Modified Paraffin Wax	30	9.5	57 (135)	Anionic	•	○	○	○	Early water resistance.
Liquilube™ 448	Modified Paraffin Wax	35	9	60 (140)	Anionic	○	○		○	Designed for printing and packaging and water repellency.
Liquilube™ 454	Paraffin Wax	32	7	60 (140)	Nonionic	○	○		○	Designed for printing and packaging and water repellency.
Carnauba										
Aquaslip™ 912	T1 Carnauba Wax	25	6	81 (178)	Anionic	•	○		•	
Aquaslip™ 942	T3 Carnauba Wax	25	8.4	81 (178)	Non-Ionic	•	○		•	
Aquaslip™ 952	T1 Carnauba Wax	25	9	81 (178)	Non-Ionic	•	○		•	
Other										
Aquaslip™ 658	Montan Ester Wax	30	5	82 (180)	Non-Ionic	•	○	○	○	

○ Good Performance • Premium Performance

Powder Coating Additives

		Particle Size									
Product Name	**Product Type**	**Dv50 µm**	**Dv90 µm**	**Melting Point °C (°F)**	**Density g/cm³ @ 20°F**	**COF Reduction (Slip)**	**Scratch & Abrasion Resistance**	**Matting**	**Degassing**	**Texturing**	**Other Properties/Benefits**
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™ 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™ 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 conjuration with acrylic flow promoters.
PowderAdd™ 9060	Amide Wax	≤9	≤22	142 (288)	0.99	○			•		Degassing.
PowderAdd™ 9063	Polymer compound wax	≤9	≤22	140 (284)	0.97	○			•		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™ 9780	PTFE-Free	15			1.3	○	○	•		•	Fine texturing; Strong Matting.
PowderAdd™ 9781	PTFE-Free	≤30			1.6	○	○	•		•	Fine texturing; Strong Matting.
PowderAdd™ G 130	Modified Silica	5.5			2.1						Fluidization agent.

*<25 ppb PFOA ○ 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 is an innovative, collaborative and trusted partner to the Coatings industry, bringing high-performing dispersant, resin, wax additive, color dispersions, and specialty additive technologies for a wide range of coatings, inks, paper, textiles/ nonwovens, composites and other formulated products. We apply world-class materials science to real-world challenges and collaborate with our customers to enhance the performance, productivity and sustainability capabilities of their products.

www.lubrizol.com/coatings

Lubrizol