

WAX ADDITIVES & SURFACE MODIFIERS PRODUCT GUIDE

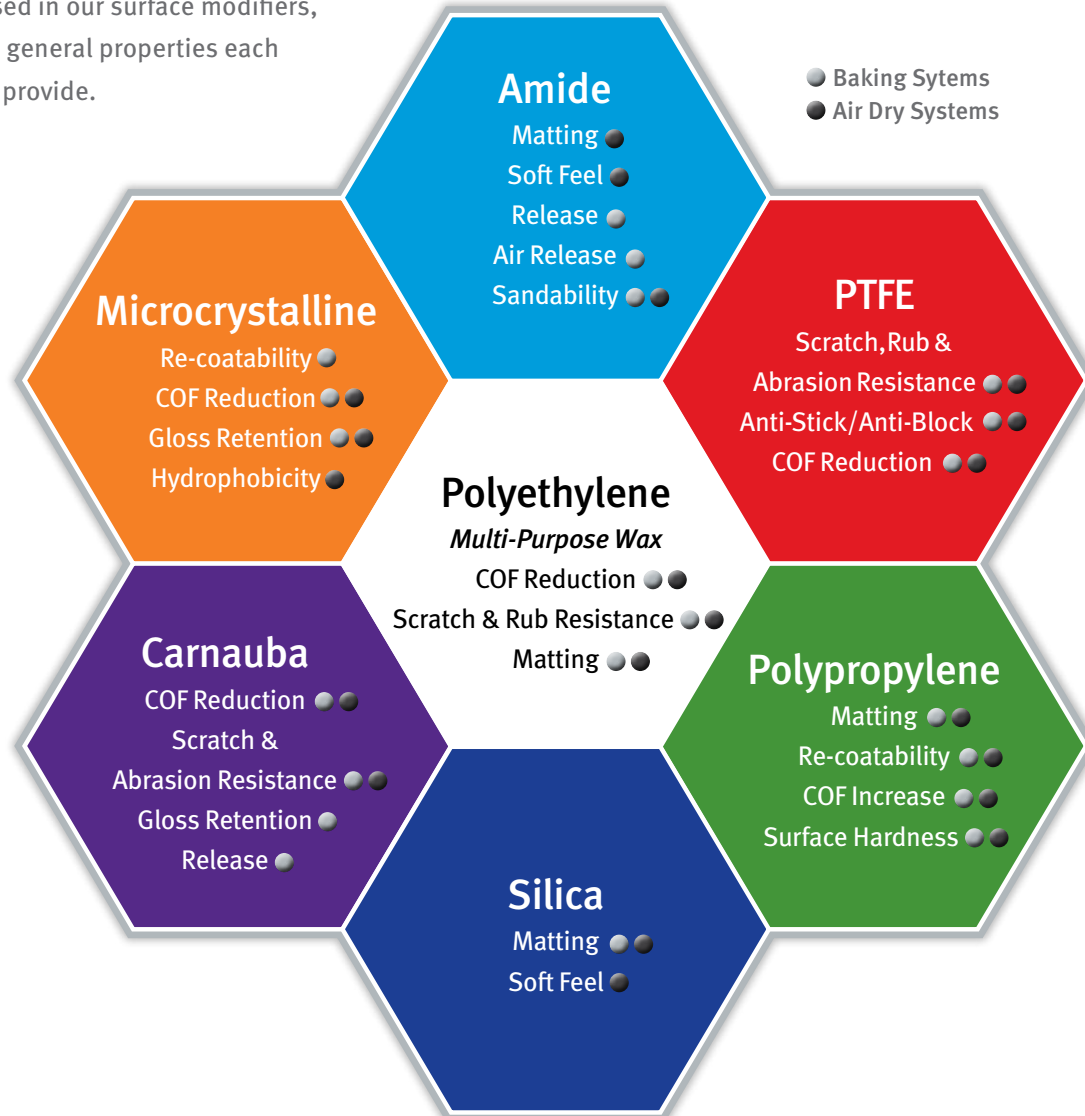
Functions of a Surface Modifier

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.

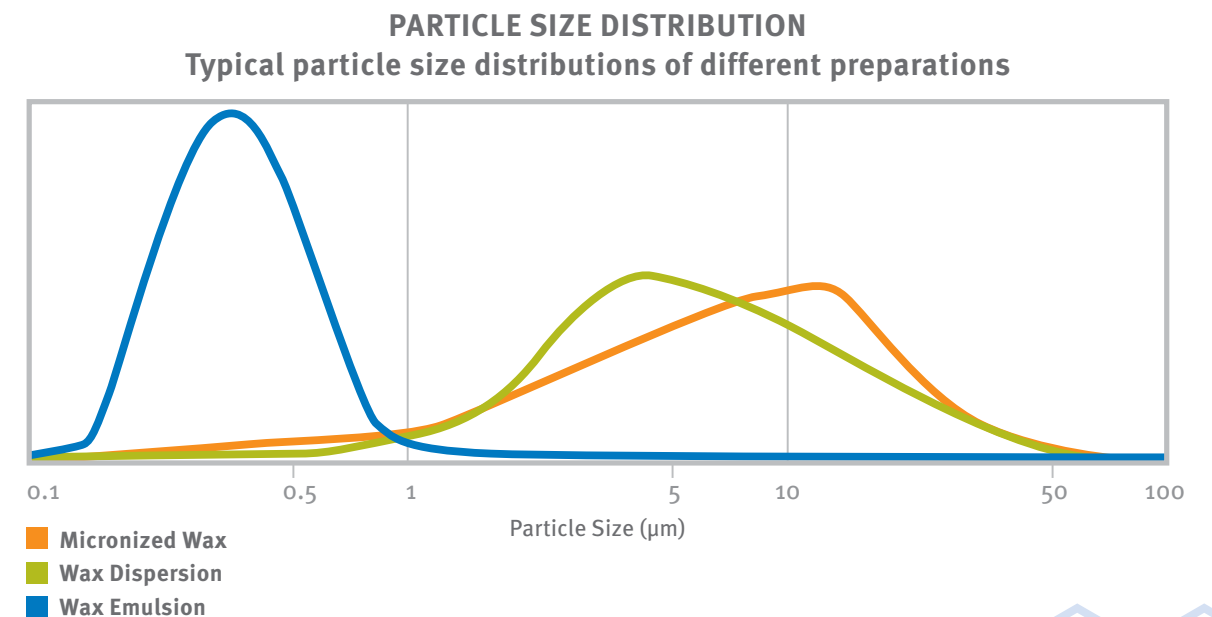
Lanco, Pinnacle and PowderAdd Range

- MF** – fineness: $Dv_{50} \leq 15\mu\text{m}$, $Dv_{90} \leq 30\mu\text{m}$ – powder coatings
- F** – fineness: $Dv_{50} \leq 9\mu\text{m}$, $Dv_{90} \leq 22\mu\text{m}$
- LF** – fineness: $Dv_{50} \leq 9\mu\text{m}$, $Dv_{90} \leq 18\mu\text{m}$ – narrow distribution
- SF** – fineness: $Dv_{50} \leq 6\mu\text{m}$, $Dv_{90} \leq 14\mu\text{m}$
- EF** – fineness: $Dv_{50} \leq 5\mu\text{m}$, $Dv_{90} \leq 9.5\mu\text{m}$ – 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	Dispersion	Emulsion
<ul style="list-style-type: none"> • Typically Dv_{50} ranges from 5-9 microns • High efficiency (100% active) • Most effective matting option • Broadest compatibility • Most cost effective solution 	<ul style="list-style-type: none"> • Small particle size Dv_{50} ranges from 2-6 microns • Wide range of liquid carriers • Ease of incorporation/handling • Limited effect on gloss • Good in-can/formulated stability 	<ul style="list-style-type: none"> • Generally particle size $Dv_{50} \leq 1$ micron • Water-based applications only • Ease of incorporation and handling • Great gloss retention/highest clarity • Good in-can/formulated stability

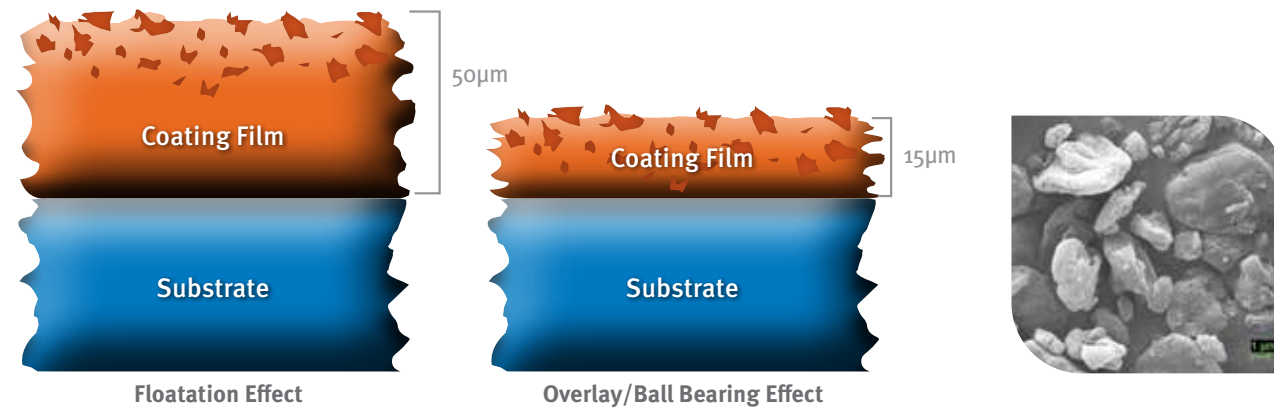
Waxy polymers used for surface modification are typically supplied in prilled or flaked forms. The particle size for surface modification is optimized to balance ease of incorporation, compatibility and performance without compromising secondary properties. The particle size can be controlled using micronization,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

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.

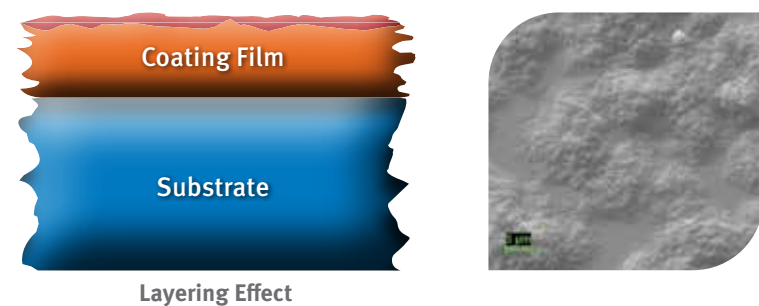


The curing mechanism affects the migration of the additive to the surface of the film and can also influence the performance of the finish itself.

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 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	DENSITY	COATING TYPES			
		DV50 µm	DV90 µm	°C (°F)		g/cm ³ @ 20 °C	WATER-BORNE	SOLVENT-BORNE	POWDER
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™ 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™ 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™ 1510 EF *	Modified Polyolefin Wax	≤5	≤9.5	106 (223)	0.96	○	●		
Lanco™ 1560 LF	Modified Polyolefin Wax	≤9	≤22	95 (203)	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™ 1588 LF	Polyolefin Wax	≤9	≤18	105 (221)	0.96	○	●		○
Lanco™ 1588 SF	Polyolefin Wax	≤7	≤15	105 (221)	0.96	○	●		○
Lanco™ SM 2005	Polyolefin Wax	≤9	≤22	105 (221)	0.96	○	●	○	○

○ Good Performance ● Premium Performance * Indicates a new product

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™ PE 1500 F	○	○	●		○	
Lanco™ PE 1500 SF	○	○	○	●	○	For thin film applications.
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™ 1510 EF *	○	●			○	Excellent scratch resistance. Designed for can coatings.
Lanco™ 1560 LF	○	●	○	○	●	Designed for aqueous wood applications.
Lanco™ 1550	○	●	●			Designed for powder coatings.
Lanco™ PEW 1555 N	○	●	●		○	Designed for aqueous coatings.
Lanco™ 1588 LF	○	●	○	○	○	Designed for wood coatings.
Lanco™ 1588 SF	○	●	○	○	○	For thin film applications.
Lanco™ SM 2005	○	●	●		○	Designed for wood coatings.

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MICRONIZED

PRODUCT NAME	POLYMER TYPE	PARTICLE SIZE		MELTING POINT	DENSITY g/cm ³ @ 20 °C	COATING TYPES			
		DV50 µm	DV90 µm	°C (°F)		WATER-BORNE	SOLVENT-BORNE	POWDER	RADIATION CURED
Amide									
Lanco™ 1400 SF	Modified Amide Wax	≤6	≤14	140 (284)	0.97	○	●	●	○
Lanco™ 1410 LF	Modified Amide Wax	≤9	≤19	140 (284)	0.97	●	●	●	○
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	○	●	●	○
Lanco™ SM 2003	Modified Amide Wax	≤9	≤22	140 (284)	0.97	○	●	●	○
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™ Matt 1100	Matting Agent	≤6.5			2.0	○	●		○
Lanco™ Matt 2000	Matting Agent	≤6.5			2.0	○	●		○

*<25 ppb PFOA ○ Good Performance ● Premium Performance * Indicates a new product

MICRONIZED

PRODUCT NAME	PERFORMANCE BENEFITS					OTHER PROPERTIES/BENEFITS
	COF REDUCTION (SLIP)	SCRATCH & ABRASION RESISTANCE	MATTING	SILKY FEEL	ANTI-BLOCKING	
Amide						
Lanco™ 1400 SF	●	○	○	●	○	Excellent surface feel.
Lanco™ 1410 LF	○	○	○	●	●	Good compatibility in water-based systems.
Lanco™ A 1602	○	○	●	○	●	Good sanding properties for wood coatings.
Lanco™ A 1603	○	○	○	●	●	Excellent release in can coatings.
Lanco™ SM 2003	●	○	●	○	○	Good overall performance in wood coatings. Good degassing in powder 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™ Matt 1100		○	○	○		Matting agent.
Lanco™ Matt 2000		○	●	●		Matting agent with excellent surface feel.

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DISPERSIONS

PRODUCT NAME	POLYMER TYPE	SOLIDS (%)	SOLVENT	pH	HEGMAN GRIND	GRIND GAUGE (NPIRI)	PARTICLE SIZE		MELTING POINT	DENSITY
							DV50 μm	DV90 μm	$^{\circ}\text{C}$ ($^{\circ}\text{F}$)	
Polyethylene										
Lanco™ Glidd 6068	Oxidized Polyethylene Wax	41	Water	8		≤ 6.0	12	22	132 (270)	1.01
Liquitron™ 380	Oxidized Polyethylene Wax	42	Water	8.5		≤ 5.0	7.0	24	125 (257)	0.97
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
Fluotron™ 109*	PTFE	42	Water	8		< 5.0	4	7	331 (628)	1.48
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
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
PTFE										
Lanco™ Glidd 5342*	PTFE Modified Wax Compound	24.5	Butyl Glycol		≥ 6.5	< 6.5	3	6.5	93 (199)	0.93

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DISPERSIONS

PRODUCT NAME	COATING TYPES			PERFORMANCE BENEFITS						OTHER PROPERTIES/BENEFITS
	WATER-BORNE	SOLVENT-BORNE	RADIATION CURE D	COF REDUCTION (SLIP)	SCRATCH & ABRASION RESISTANCE	MATTING	SILKY FEEL	RUB RESISTANCE	ANTI-BLOCKING	
Polyethylene										
Lanco™ Glidd 6068	●				●	●		●		
Liquitron™ 380	●			○	●	○		●	○	Designed for printing and packaging.
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*	●			●	●	○		○	●	
Fluotron™ 109*	●			●	●			●	●	Designed for printing and packaging.
Other										
Lanco™ Liquimatt 6040	●				○	●	○	○	○	Premium suspension stability. Good matting agent.
Lanco™ Liquimatt 6375 AF	●				○	●	○	○		
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	●	○		○	○				○	
PTFE										
Lanco™ Glidd 5342	●	●		●	●				○	

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	PRODUCT NAME	POLYMER TYPE	SOLIDS (%)	SOLVENT	pH	HEGMAN GRIND	GRIND GAUGE (NPIRI)	PARTICLE SIZE		MELTING POINT	DENSITY g/cm ³ @ 20 °C	
								DV50 µm	DV90 µm	°C (°F)		
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 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	
	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												
Liquitron™ 808	Polyolefin Wax	40	Isopropanol				8	17	105 (221)	0.84		
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	10	Aliphatic Hydrocarbon		≥7	≤3.0			62 (144)	0.81		
Lanco™ Glidd 5348	Polymeric Wax	10	Aromatic 150				9.5	20	130 (266)	0.88		
Lanco™ Glidd PMS	Microcrystalline Wax	21	Aromatic 150 ND		N/A	N/A	4.5	9.5	88 (190)	0.89		

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DISPERSIONS

PRODUCT NAME	COATING TYPES			PERFORMANCE BENEFITS						OTHER PROPERTIES/BENEFITS
	WATER-BORNE	SOLVENT-BORNE	RADIATION CURE D	COF REDUCTION (SLIP)	SCRATCH & ABRASION RESISTANCE	MATTING	SILKY FEEL	RUB RESISTANCE	ANTI-BLOCKING	
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 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.
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										
Liquitron™ 808	●	●		○	●	○		●		Designed for printing and packaging.
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™ Glidd PMS		●		○	○					Designed for can and coil coatings. Good over-printability.

*<25 ppb PFOA ○ Good Performance ● Premium Performance * Indicates a new product

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™ 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	80		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™ 9086* *	PTFE	≤25		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.
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™ 9420 *	Proprietary Chemistry	9	22	80 (176)	0.94	○			●		Efficient Degassing; Suitable for low bake systems.
PowderAdd™ 9423	Proprietary Polymer	7.5	16	140 (284)	0.94	○			●		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 * Indicates a new product



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