

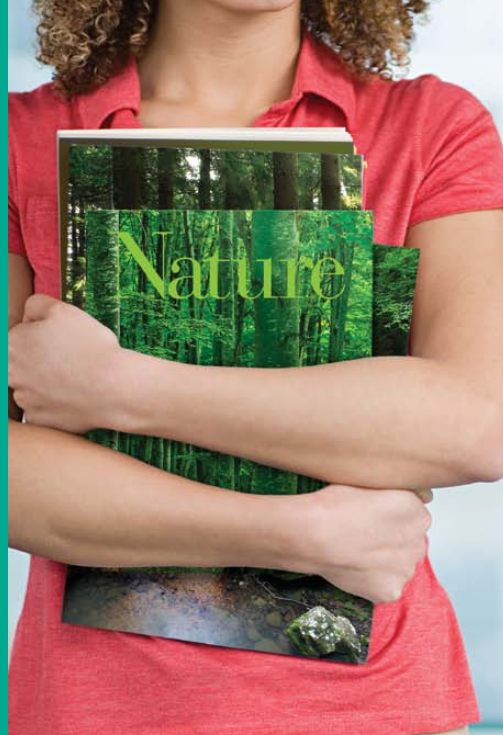
## Resins, Vehicles and Additives Product Guide

North America



Alkyds, vehicles and varnishes for offset, resins for offset, gravure and flexographic printing inks, wax products and additives for all printing inks.

**Lawter™** is a leading global supplier of quality raw materials for the printing ink industry. We provide ink manufacturers with specialty products including resins, alkyds, vehicles and varnishes, wax compounds and additives for offset and liquid inks.



*Resin, alkyd and wax compound for offset printing inks.*

## Brief description of test methods

### Viscosity

Viscosity is measured with a rotational rheometer using a cone and plate. Materials tested include hard resins, alkyds and varnishes. A solution of hard resin is first made in a specified solvent or vegetable oil by using a Thermotronic (Novomatics GmbH). The viscosity of alkyds and varnishes are measured neat.

Another method of measuring viscosity is the Gardner-Holdt bubble tube method. The Gardner-Holdt bubble tube viscosity is run by adding a quantity of alkyd or vehicle to a predetermined height and sealing to a specified level, leaving a volume of air. The tube is inverted and the air bubble is then timed from one end of the tube to the other (or from one line to another) at an agreed-upon temperature. Air bubble time is compared to standardized tubes (Byk-Gardner).

The flow time is time needed to empty the cup by flowing out the opening. The flow is the time (seconds) starting from the moment when the liquid flows out of the orifice of the cup to the point that the flow is interrupted, at a given temperature and concentration.

## Research and development:

We work in close cooperation with our customers to improve results and create value. History proves that this collaboration achieves the required performance. We have a proud history of creating innovative and successful solutions, meeting our customers' requirements. Our total organization is committed to supporting our customers' drive for success, and we believe that our combined strength is the most efficient method of advancing the industries we serve.



## Cloudpoint

Cloudpoint is measured in order to obtain an indication of the solubility of hard resins and varnishes based on a specified solvent. The resin or varnish is combined with a specified solvent and a solution is prepared using the Chemotronic (Novomatics GmbH). The solution is heated until the pre-set maximum temperature is reached. The solution is allowed to cool at a fixed rate. When clouding occurs, the temperature is recorded.

## Acid value

Acid value is the number of milliliters of potassium hydroxide (at 0.1N) required to neutralize one gram of material (including alkyd, resin and varnish). A solution of testing material is prepared in a mixture of xylenes/alcohol (2:1). The value is determined with a known normality KOH solution using phenolphthalein as indicator.

## Methanol value

Methanol compatibility is an indication of the polarity of material. Materials are first dissolved in toluene and then titrated with anhydrous methanol until the solution becomes just cloudy. The temperature (agreed upon between customer and supplier) should be maintained throughout the measurement.

## Tack

The tack of varnishes is measured on an inkometer or tack-oscope at 32.2°C. Tack is read after a specified time at a specified speed, agreed upon between customer and supplier.

## Softening point

There are two methods for measuring softening point, Mettler Drop and Ring and Ball. In both methods, softening point is measured by filling a cup with molten resin. The excess material is removed using a slightly heated metal spatula. For Mettler Drop determination, the cup is placed in the Mettler apparatus and the heating program is started. The softening point is registered automatically by means of an optical sensor. For Ring and Ball determination, the cup is suspended in a glass container of glycerin and a steel ball is placed on its surface and the heating program is started. The softening point is the temperature at which the ball passes through the resin.

## pH value

pH is measured with a glass/calomel electrode filled with 3M KCl.

## Solids

The solid content of an acrylic dispersion is measured by drying one hour at 125°C.

## Molecular weight

Molecular weight is measured by means of gel permeation chromatography (GPC), relative to polystyrene standards.

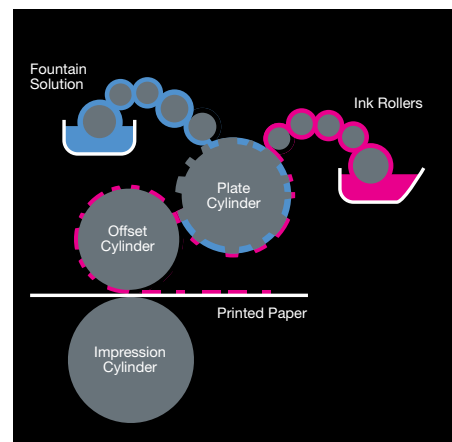
## Dilutability

The dilutability is the solvent (toluene) uptake (in percentage) of a varnish of certain concentration, diluted to a flow time in a special cup, at a given temperature.

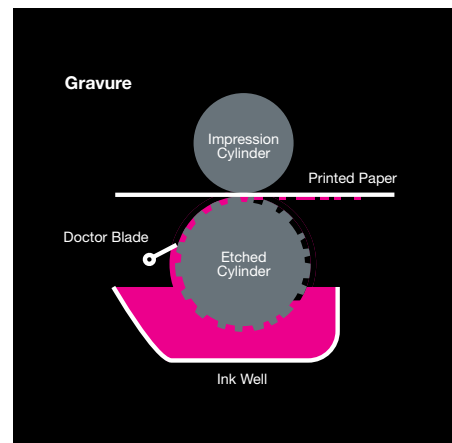
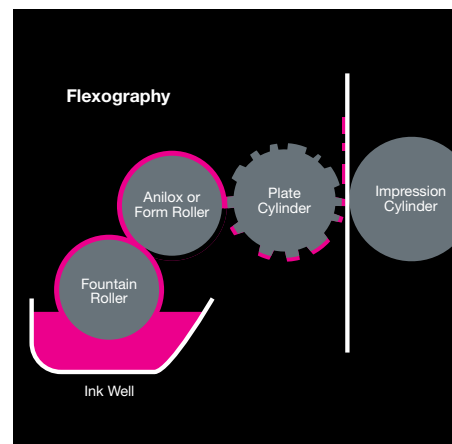
## Tg

The glass transition temperature (Tg) is measured by means of differential scanning calorimetry.

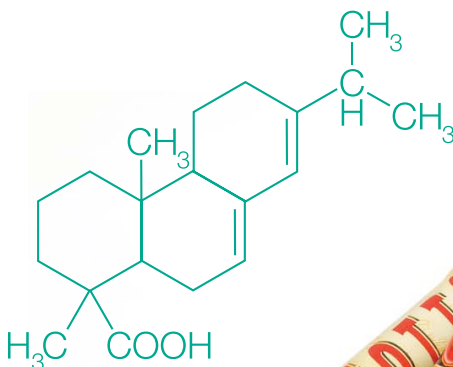
## The offset printing process



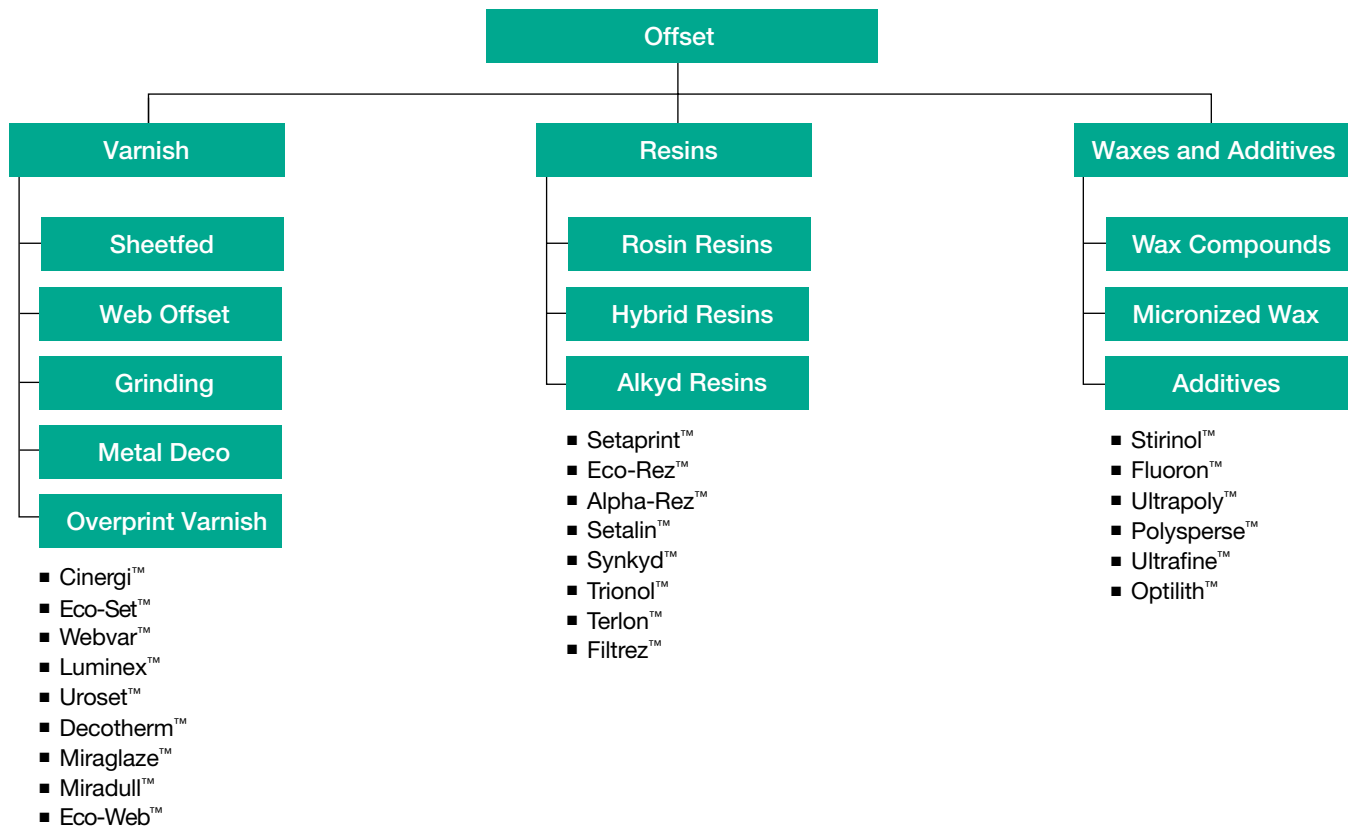
## The liquid inks printing process



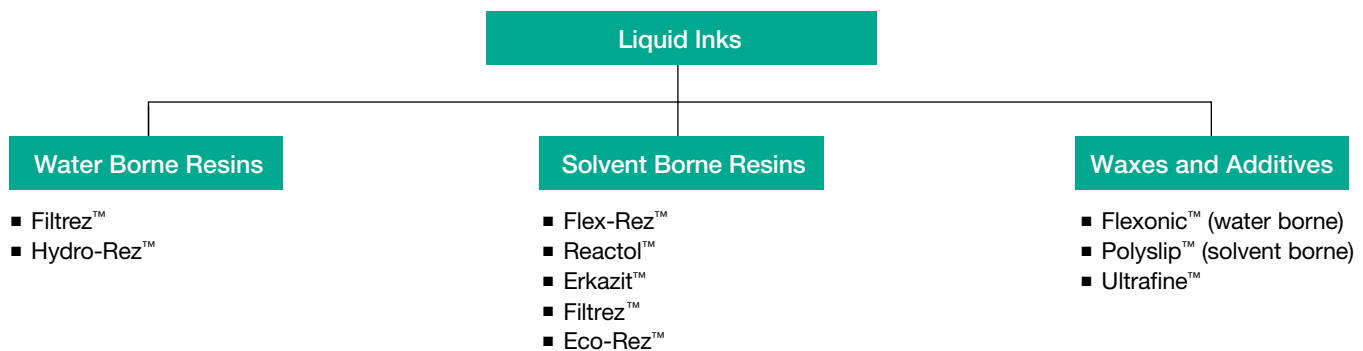
“Abietic acid is at the center of our technology and the means for creating valuable products.”



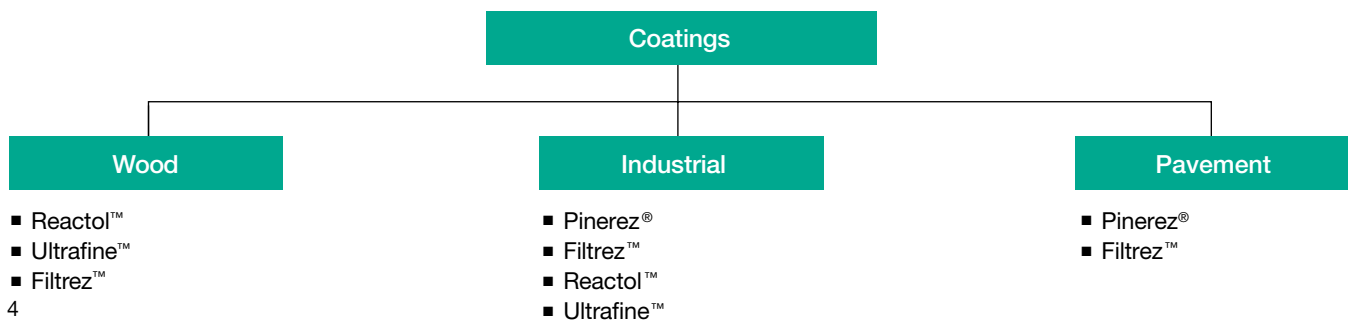
## Product Lines Offset



## Product Lines Liquid Inks



## Product Lines Coatings



**Product Selection for Offset Printing** Characterization Typical Properties

<b>Alkyds</b>						
<b>Linseed</b>						
<b>Product Description</b>	<b>Applications</b>	<b>Features</b>	<b>Bio-Renewable Content (+/- 2%)</b>	<b>Acid Value</b>	<b>TA Viscosity at 25C (Pa.s)</b>	<b>Bubble Tube Gardner (end to end) at 25C, seconds</b>
TERLON™ 303 A	Heatset, sheetfed, pigment dispersion vehicles. Metal decorating systems.	#3 Bodied High Performance yet Cost Effective.	77	7	5.5	70
TERLON™ 307 A	Heatset, sheetfed, pigment dispersion vehicles.	#7 Bodied High Performance yet Cost Effective.	72	7	80	930
TERLON™ 3010 A	Heatset, sheetfed, pigment dispersion vehicles.	#10 Bodied High Performance yet Cost Effective, Broad Resin Compatibility.	73	10	125	1700
TERLON™ 311 A	Heatset, sheetfed, pigment dispersion vehicles.	#1 Bodied High Performance yet Cost Effective, Broad Resin Compatibility.	84	7	2.4	28
<b>Soybean Oil</b>						
<b>Product Description</b>	<b>Applications</b>	<b>Features</b>	<b>Bio-Renewable Content (+/- 2%)</b>	<b>Acid Value</b>	<b>TA Viscosity at 25C (Pa.s)</b>	<b>Bubble Tube Gardner (end to end) at 25C, seconds</b>
TERLON™ 603 A	Heatset, sheetfed, pigment dispersion vehicles.	#3 Bodied High Performance yet Cost Effective.	78	7	5.5	70
TERLON™ 605 A	Heatset, sheetfed, pigment dispersion vehicles.	#4 Bodied High Performance yet Cost Effective.	75	7	12	150
TERLON™ 607 A	Heatset, sheetfed, pigment dispersion vehicles.	#7 Bodied High Performance yet Cost Effective.	72	7	80	930
TERLON™ 613 A	Heatset, sheetfed, pigment dispersion vehicles.	#3 Bodied High Performance yet Cost Effective, Broad Resin Compatibility.	81	7	5.5	70
<b>Specialty</b>						
<b>Product Description</b>	<b>Applications</b>	<b>Features</b>	<b>Bio-Renewable Content (+/- 2%)</b>	<b>Acid Value</b>	<b>TA Viscosity at 25C (Pa.s)</b>	<b>Bubble Tube Gardner (end to end) at 25C, seconds</b>
SOLVAR™ A	Additive for offset ink formulations.	#0 High molecular weight, low viscosity alkyd, unique wetting properties.	70	10	1	11
SYNKYD™ 50 E	Heatset, sheetfed, pigment dispersion vehicles.	#3 Soybean hybridized resin – superior hydrocarbon compatibility and water balance.	53	14	6	80
TERLON™ 1114 A	Recommended for metal decorating inks.	Contributes pale color, speed of dry, and a cohesive film build.	62	10	11	150
TERLON™ 1162 A	Metal decorating systems.	#9 Alkyd, very low color development - great for metal decorating.	60	10	115	1400
TERLON™ 1739 A	Heatset, sheetfed, pigment dispersion vehicles. Metal decorating systems.	#9 Alkyd, very low color development - great for metal decorating.	60	10	100	1300
TRIONOL™ 3 A	Heatset, sheetfed, pigment dispersion vehicles.	#4 High molecular weight alkyd, ultra hard film.	73	10	11	140
TRIONOL™ 7 A	Heatset, sheetfed, pigment dispersion vehicles.	#7 High molecular weight alkyd, ultra hard film.	63	10	80	930
TRIONOL™ 33 A	Heatset, sheetfed, pigment dispersion vehicles.	#4 High molecular weight alkyd, ultra hard film.	85	7	11	140

Offset Vehicles/Varnishes										
Heatset										
Product Description	Applications	Features	Bio-Renewable Content (+/- 2%)	Tack at 400rpm, 60"	% Non Volatiles	TA Viscosity @ 2.5 s <sup>-1</sup> and 25°C (Pa.s)	TA Tan Delta @ 10 rad/s and 25°C (Pa)	Major Oil Type	Distillate Boiling Range (°F)	Bubble Tube Gardner (end to end) at 25°C, seconds
ECO-WEB™ 5600 A	Heatset free flowing vehicle based on ECO-REZ™ technology.	Contains low polarity resins making ink water balance less of a problem during long press runs.	42	11.5	50	N/A	N/A	Mineral Distillate	475 - 575	100
ECO-WEB™ 5801 A	Commercial and publication heatset gel vehicle based on ECO-REZ™ technology.	Ink water balance, sharper print at lower tacks, and reduced tendency to mist.	33	8	51	1000	2.0	Mineral Distillate	475 - 575	N/A
ECO-WEB™ 5802 A	Performance heatset gel varnish based ECO-REZ™.	Technology enhanced for higher bio-renewable content.	57	7	67	900	2.0	Mineral Distillate	465 - 530	N/A
LUMINEX™ 70 A	Premium heatset vehicle for high speed web offset print.	Excellent solubility produces excellent transfer, gloss, and press stability.	20	15	50	1000	1.9	Mineral Distillate	465 - 610	N/A
WEBVAR™ 3102 A	Heatset web offset cover vehicle providing oxidative drying properties.	Excellent transfer and hard drying with 24 hour squalene resistance.	42	17	62	650	2.3	Mineral Distillate	435 - 600	N/A
WEBVAR™ 50 A	Heatset free flow varnish.	Rheology additive which imparts flow without compromising misting or press performance.	11	12	48	25	N/A	Mineral Distillate	475 - 575	85
WEBVAR™ 55 A	High speed heatset gel varnish.	Excellent transfer and structure allows for great press stability, sharp dot, and low misting.	29	11	55	1250	1.5	Mineral Distillate	475 - 575	N/A
WEBVAR™ 9700 A	High speed heatset gel varnish with outstanding gloss properties.	Good flow, excellent transfer and low misting produce an excellent ink for high speed presses.	31	16	61	950	2.2	Mineral Distillate	465 - 610	N/A
Pigment Dispersions and Flushing Vehicles										
Product Description	Applications	Features	Bio-Renewable Content (+/- 2%)	Tack at 400rpm, 60"	% Non Volatiles	TA Viscosity @ 2.5 s <sup>-1</sup> and 25°C (Pa.s)	TA Tan Delta @ 10 rad/s and 25°C (Pa)	Major Oil Type	Distillate Boiling Range (°F)	Bubble Tube Gardner (end to end) at 25°C, seconds
ECO-SET™ 4500 A	Sheetfed flushing and grinding vehicle.	Utilizing the ECO-REZ™ phenol formaldehyde-free resin system this vehicle provides a complete ECO-SET™ system.	92	8	100	N/A	N/A	Linseed	N/A	270
UROSET™ 100S A	Low viscosity vehicle designed to serve as the universal base for any offset or letterpress oil ink formulation.	Enables high pigment concentrations and continues to deliver gloss.	58	5.5	81	N/A	N/A	Linseed	465 - 585	100
UROSET™ 9305 A	Web offset heatset inks for cover and commercial print.	Excellent pigment wetting, flow properties and water balance.	45	35	69	125	N/A	Linseed/Mineral Distillate	435 - 530	N/A
UROSET™ FGV A	Dry grinding pigment dispersion.	Premium fast setting flushing/grinding vehicle for dry pigment dispersion including carbon black.	40	9	63	50	N/A	Linseed/Mineral Distillate	470 - 615	240

Sheetfed Varnishes										
Product Description	Applications	Features	Bio-Renewable Content (+/- 2%)	Tack at 400rpm, 60"	% Non Volatiles	TA Viscosity @ 2.5 s <sup>-1</sup> and 25°C (Pa.s)	TA Tan Delta @ 10 rad/s and 25°C (Pa)	Major Oil Type	Distillate Boiling Range (°F)	Bubble Tube Gardner (end to end) at 37.8C, seconds
CINERGI™ 100 A	Sheetfed printing inks.	Workhorse medium gel varnish.	79	12	91	575	2.0	Soybean	485 - 675	N/A
CINERGI™ 2034 A	Sheetfed printing inks.	100% NV medium fast setting gel.	81	11.5	100	230	2.4	Linseed/Ester	N/A	N/A
CINERGI™ 2035 A	Sheetfed printing inks.	100% NV fast setting free flow.	82	12	100	95	N/A	Linseed/Ester	N/A	310
CINERGI™ 45 A	Sheetfed printing inks.	Fast setting, ultra-compatible free flow - no oxidizables.	34	12.5	46	110	3.9	Mineral Distillate	515 - 585	300
CINERGI™ 80 A	Sheetfed printing inks.	Fast setting, non-yellowing free flow.	64	8	77	55	3.9	Soybean/Mineral Distillate	485 - 675	150
ECO-SET™ 4600 A	An eco-friendly, fast setting 100% nonvolatile free flowing vehicle composed of ECO-REZ™ resin technology.	The phenol formaldehyde-free and higher renewable content supports the increasing demand for phenol-free systems.	89	9.5	100	45		Linseed	N/A	750 (at 25°C)
ECO-SET™ 4801 A	Hard drying 100% nonvolatile gel vehicle composed of ECO-REZ™ resin technology.	The phenol formaldehyde-free and higher renewable content supports the increasing demand for cleaner and greener chemistry.	92	9	100	800	1.8	Linseed	N/A	N/A
ECO-SET™ 4802 A	Eco-friendly fast setting high solids gel vehicle composed of ECO-REZ™ resin technology.	The ECO-SET 4802 provides moderate gel structure and hard drying properties.	83	13	96	125	2.5	Blend	N/A	N/A
ECO-SET™ 4804 A	Sheetfed printing inks.	Phenol Formaldehyde-free heavy gel. Higher tack version of ECO-SET 4801.	90	13	100	1000	2.4	Linseed	N/A	N/A
Specialty Vehicles										
Product Description	Applications	Features	Bio-Renewable Content (+/- 2%)	Tack at 400rpm, 60"	% Non Volatiles	TA Viscosity @ 2.5 s <sup>-1</sup> and 25°C (Pa.s)	TA Tan Delta @ 10 rad/s and 25°C (Pa)	Major Oil Type	Distillate Boiling Range (°F)	Bubble Tube Gardner (end to end) at 55C, seconds
CINERGI™ 1407 A	Commercial sheetfed printing inks.	100% non-volatile combination of tung oil/linseed/phenolic varnish that provides extremely high water resistance and gloss.	85	35 at 30"	100	N/A	N/A	Tung Oil/Linseed	N/A	240
CINERGI™ 2018 A	Sheetfed printing inks.	Sheetfed metallic ink vehicle.	30	28	75	225	5.9	Tung Oil	485 - 585	N/A
CINERGI™ 2022 A	Sheetfed inks.	Soft gel body, 100% non-volatile.	85	15	100	170	3.0	Linseed	N/A	N/A
CINERGI™ 2084 A	Sheetfed printing inks.	Light gel, laser forms vehicle.	67	12	91	150	2.7	Ester	515 - 585	N/A
CINERGI™ 2085 A	Sheetfed printing inks.	Heavy gel, laser forms vehicle.	58	11	83	550	1.9	Ester	515 - 585	N/A
HALEX™ A	Sheetfed printing inks.	Ultimate water/alcohol resistance.	78	36 at 30"	100	310	N/A	Linseed	N/A	160
WEBVAR™ 110 A	A soya-based (approximately 63% soybean content) heavy gel designed for use in web offset news, forms, and sheetfed applications.	Promotes good wetting of pigments/flushes.	82	11	100	1350	1.4	Soybean	N/A	N/A
ECO-SET™ 4805 A	Sheetfed printing and web no-heat printing.	High structure, low tack Phenol Formaldehyde-free gel for laser resistant forms inks.	91	7	100	600	1.6	Soybean	N/A	N/A
Metal Decorating Vehicles										
Product Description	Applications	Features	Tack at 400rpm, 60"	% Non Volatiles	Viscosity	Major Oil Type	Distillate Boiling Range (°F)			
DECOTHERM™ 260 E	Two piece metal decorating.	#7 Bodied 2-piece metal decorating vehicle, especially for high bake white.	23	91	210" ee at 37.8°C	Glycol	520			
DECOTHERM™ 290 E	Two piece metal decorating.	Gelled 2-piece metal decorating vehicle, low misting, great for high bake white.	13	84	90 Pa.S (Physica Rheometer at 23°C)	Glycol	485 - 585			
DECOTHERM™ 100 A	Flat sheet metal decorating.	Fast cure rates for high bake pigmented systems.	12	75	550" ee at 25°C		500 - 585			
DECOTHERM™ 295 E	Two piece metal decorating.	Mineral oil free version of DECOTHERM 290E. Medium structured gel for reduced misting at high press speeds.	12	85	100 Pa.S (Physica Rheometer at 23°C)		485 - 510			

Overprint Varnishes							
Product Description	Applications	Features	Bio-Renewable Content (+/- 2%)	Tack at 400rpm, 30"	% Non Volatiles	Major Oil Type	Distillate Boiling Range (°F)
MIRAGLAZE™ 7017 A	Heatset cover printing inks.	High gloss, non-yellowing, fast setting, optimum slip and rub resistance OPV.	35	4 (7.5 at 1200rpm)	49	Mineral Distillate	465 - 536
MIRAGLAZE™ 8614 A	Sheetfed offset.	Non yellowing, low color, low tack.	50	6	68	Blend	465 - 585
MIRAGLAZE™ 8600 A	Sheetfed offset.	Light in color, non-yellowing, drier free.	84	8.5	92	Tung	465 - 536
MIRAGLAZE™ 2540 A	Sheetfed offset.	Highest gloss sheetfed OPV, very low tack.	54	4 (7.5 at 1200rpm)	70	Blend	515 - 585
MIRADULL™ 7060 A	Sheetfed offset.	Cost effective matte OPV.	55	3.6	81	Blend	465 - 585
MIRADULL™ 8689 A	Sheetfed offset.	Premium performance, ultra-dull OPV, resistant to polishing.	N/A	3.5 (6 at 1200rpm)	76	Blend	465 - 536

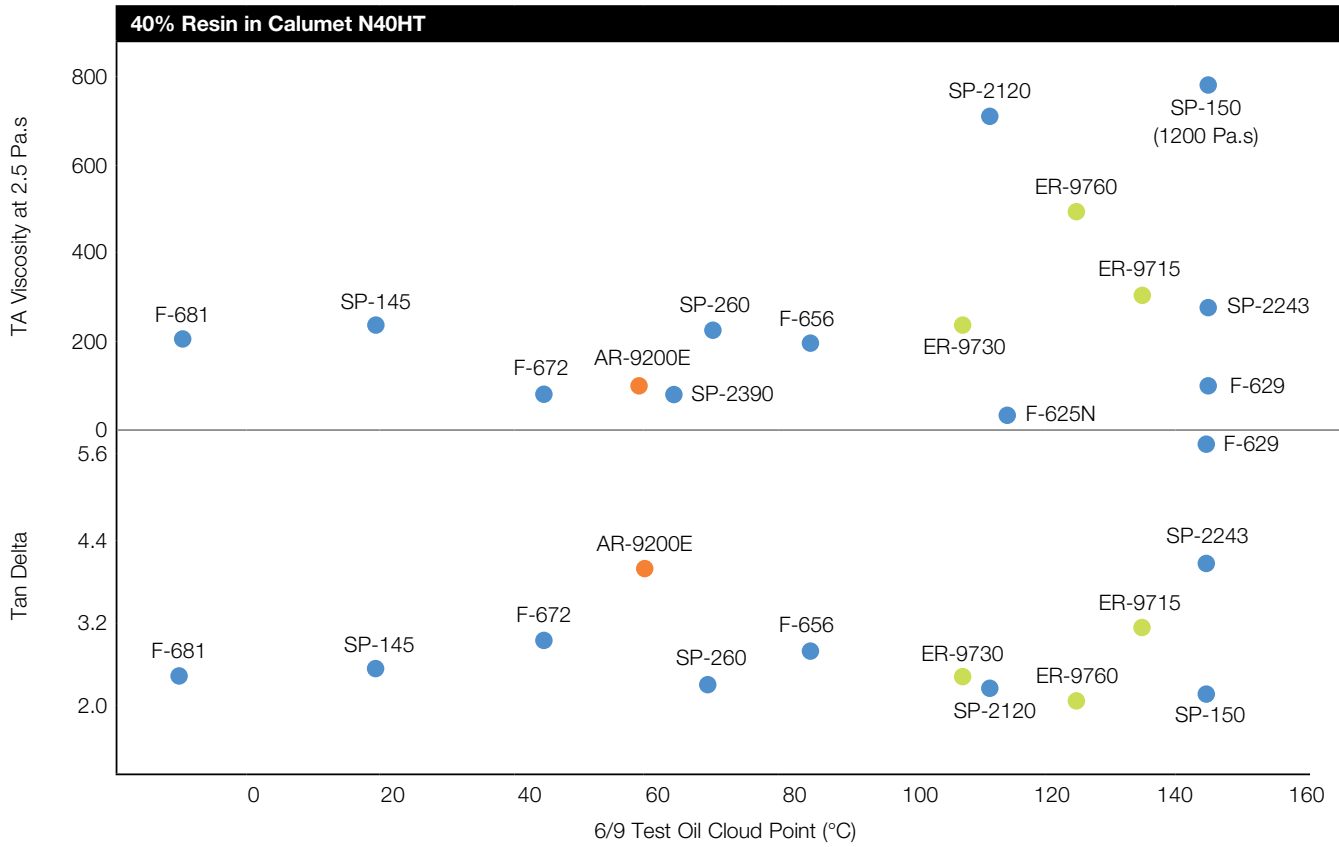
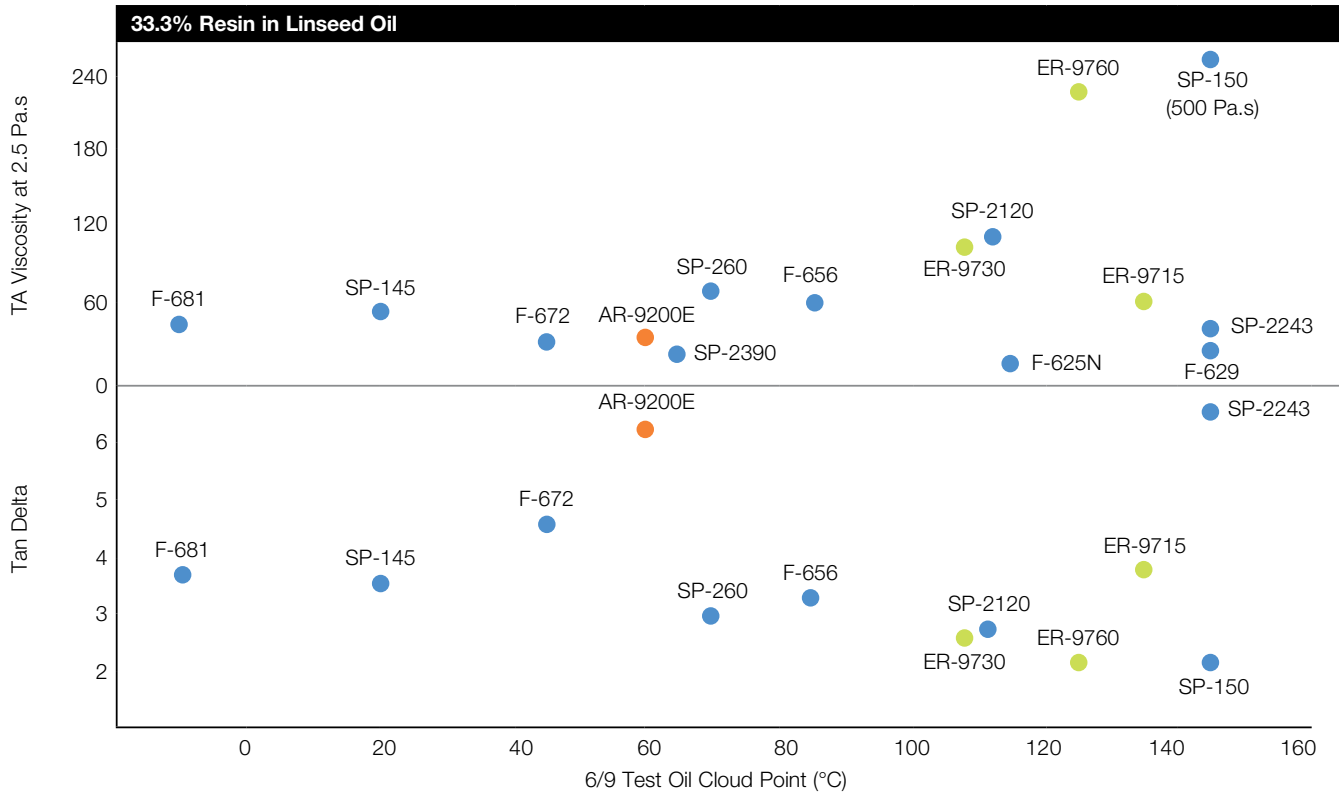
### Offset Resins

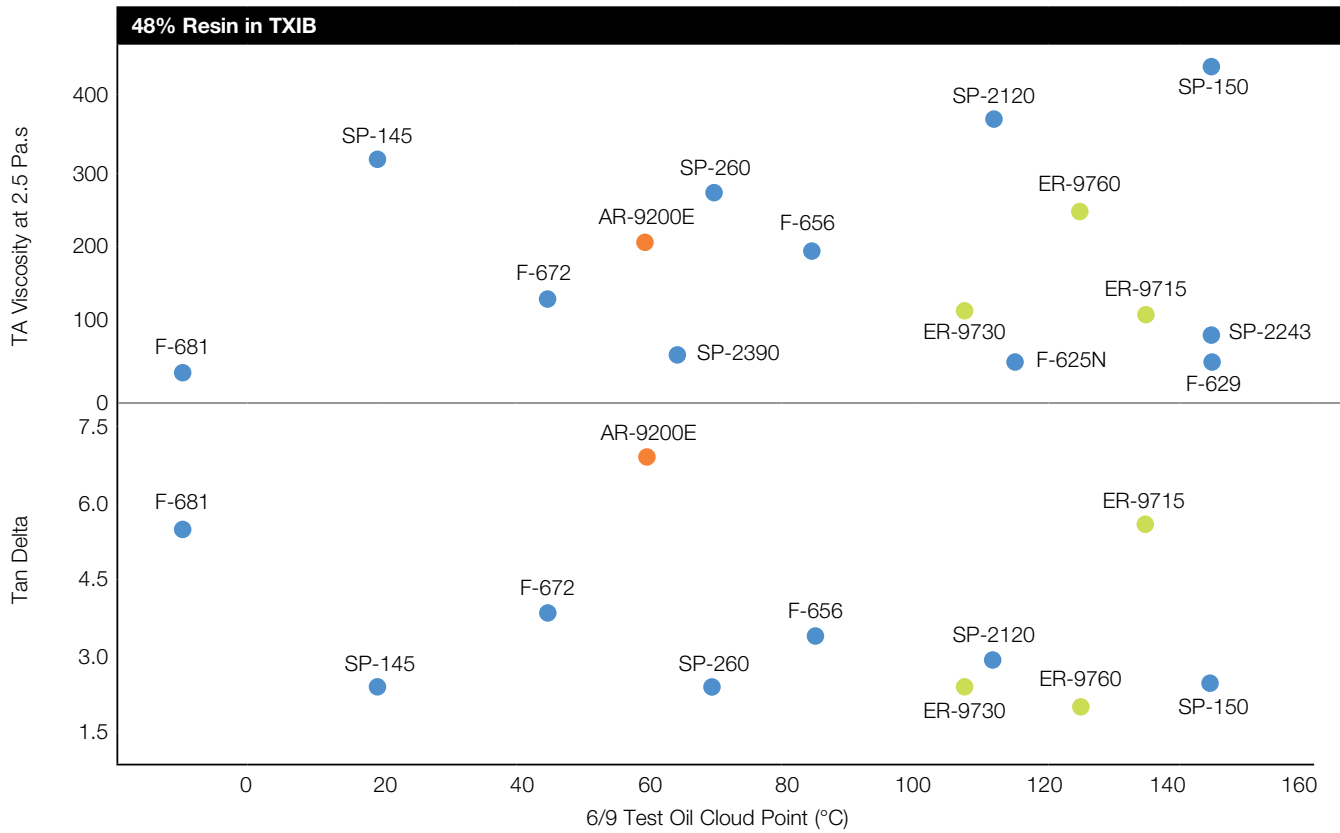
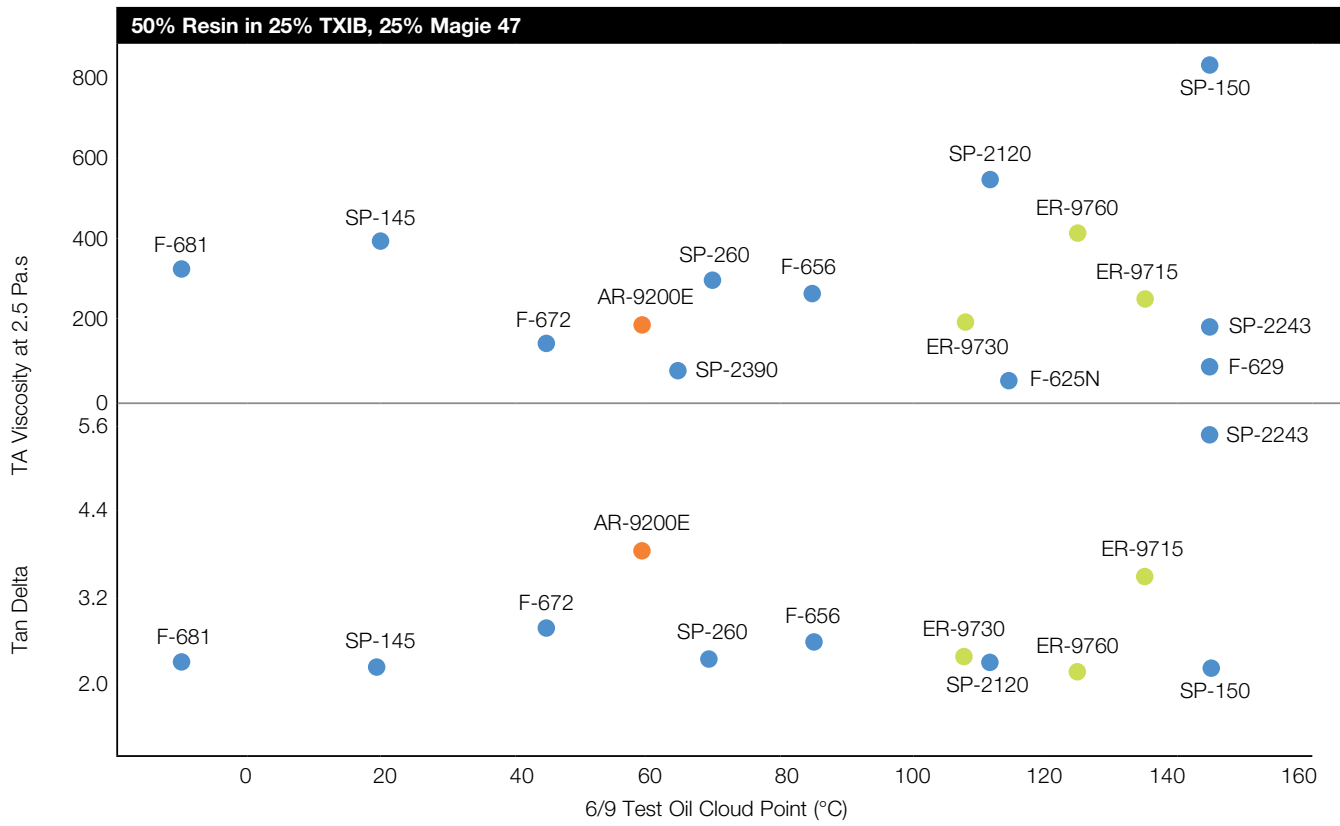
#### Phenolic Modified Rosin Resins

Product Description	Applications	Features and Benefits	Bio-Renewable Content (+/- 2%)	Ring & Ball Melt Point - °C	Acid Value	TA Viscosity (1:2 ARL0) @ 2.5s <sup>-1</sup> and 25°C (Pa.s)	TA Tan Delta (1:2 ARL0) @ 2.5s <sup>-1</sup> and 25°C	1:2 ARL0: LTL@25°C (sec)	TA Viscosity (50:25:25, Resin:M47:TXIB) @ 2.5s <sup>-1</sup> and 25°C (Pa.s)	TA Tan Delta (50:25:25, Resin:M47:TXIB) @ 2.5s <sup>-1</sup> and 25°C	Cloud Point (10% in 6/9) °C	50% in Magie 47: LTL@25°C (sec)
FILTREZ™ 618 A	Sheetfed/heatset dispersion vehicles.	Excellent resin for wetting, pigment stabilization and system solubilizer.	62	140	25 max	4	N/A	35	N/A	N/A	N/A (45 in 6/9AFN)	375
FILTREZ™ 620 A	Sheetfed/heatset dispersion vehicles.	Excellent pigment wetting properties.	75	130	30 max	1	N/A	8	N/A	N/A	N/A (40 in 6/9AF)	11
FILTREZ™ 629 A	Sheetfed/heatset letdown vehicles.	Medium viscosity, medium to low dilution resin for improved transfer, gloss.	76	150	25 max	20	10	165	80	8	145	
FILTREZ™ 656 A	Sheetfed/heatset letdown vehicles.	Highly elastic medium viscosity, medium dilution resin for improved transfer, gloss, and low misting.	66	160	25 max	55	3.2	600	260	2.6	85	
FILTREZ™ 672 A	Sheetfed/heatset letdown vehicles.	Good solubility in aliphatic solvents. This resin can serve as a good foundation for building sheetfed and heatset systems, especially in high shear and temperature applications.	62	150	30 max	25	4.5	275	135	2.8	45 (115 in 6/9AFN)	
FILTREZ™ 681 A	Sheetfed/heatset letdown vehicles.	Highly elastic medium viscosity, high dilution resin for greatly improved transfer and gloss.	41	165	30 max	35		420	325	2.4	-10 (100 in 6/9AF)	
SETAPRINT™ 145 A	Sheetfed/heatset letdown vehicles.	The high viscosity of SETAPRINT 145A improves lithographic performance when modifying less soluble resin systems. Ideal for high speed, high performance ink vehicles.	50	170	25 max	50	3.5	550	400	2.3	20 (65 in Magie 47)	
SETAPRINT™ 150 A	Sheetfed/heatset letdown vehicles.	Elastic structure with low solubility allows for good press stability, tight dot structure, and greatly reduced gellant concentration.	71	170	25 max	500	2.1	6000	850	2.3	145	
SETAPRINT™ 2120 A	Sheetfed/heatset letdown vehicles.	Has good gel response to aluminum chelates in most printing ink systems. This backbone resin can provide fast solvent release, high gloss and superior holdout properties.	67	165	25 max	110	2.7	1600	550	2.4	110	
SETAPRINT™ 2243 A	Sheetfed/heatset letdown vehicles.	Medium to high viscosity, low dilution resin for fast set and improved press performance.	74	155	25 max	35	6.5	325	175	5.5	145	
SETAPRINT™ 2316 A	Sheetfed/heatset dispersion vehicles.	Low viscosity, middle to high dilution for improved transfer and gloss.	63	155	20 max	7	N/A	60	55	50	50 (115 in 6/9AFN)	
SETAPRINT™ 2390 A	Sheetfed/heatset letdown vehicles.	Medium to low viscosity, medium dilution resin for excellent transfer, good set, and good gloss.	66	150	25 max	15	40	130	70	11	65	
SETAPRINT™ 260 A	Sheetfed/heatset letdown vehicles.	Elastic structure and good solubility allows for good transfer, low misting, and reduced gellant concentration.	68	165	25 max	65	2.9	900	300	2.4	70	
SETAPRINT™ 999 A	Sheetfed/heatset dispersion vehicles.	Low viscosity phenolic modified rosin ester with high solubility in aliphatic solvents.	75	135	25 max	2	N/A	14	N/A	N/A	20 (100 in AFN)	170
SETAPRINT™ 1510 A	Sheetfed/heatset letdown vehicles.	BisPhenol A free resin; high structure and low solubility for low misting, improved dot structure, and fast set speed.	71	170	25 max	500	2.6	6000	850	3	145	
SETAPRINT™ 2244 A	Sheetfed/heatset letdown vehicles.	BisPhenol A free resin with medium to high viscosity and low solubility for fast set and improved press performance.	72	165	25 max	45	8	450	240	6	145	



Phenol Free Rosin Resins												
Product Description	Applications	Features and Benefits	Bio-Renewable Content (+/- 2%)	Ring & Ball Melt Point - °C	Acid Value	TA Viscosity (1:2 ARLO) @ 2.5s <sup>-1</sup> and 25°C (Pa.s)	TA Tan Delta (1:2 ARLO) @ 2.5s <sup>-1</sup> and 25°C	1:2 ARLO: LTL@25°C (sec)	TA Viscosity (50:25:25 Resin:M47:TXIB) @2.5s <sup>-1</sup> and 25°C (Pa.s)	TA Tan Delta (50:25:25, Resin:M47:TXIB) @ 2.5s <sup>-1</sup> and 25°C	Cloud Point (10% in 6/9) °C	50% in Magie 47: LTL@25°C (sec)
ECO-REZ™ 9710 A	Sheetfed/heatset dispersion vehicles.	The primary purpose of this resin is to provide good pigment wetting capability.	84	125	25 max	2	N/A	6	N/A	N/A	-10 (95 in 6/9AF)	15
ECO-REZ™ 9711 A	Sheetfed/heatset letdown vehicles.	Low structured rosin resin suitable for all offset inks, including heatset, sheetfed and coldset applications.	82	130	25 max	3	N/A	14	N/A	N/A	50 (130 in 6/9AFN)	150
ECO-REZ™ 9715 A	Sheetfed/heatset letdown vehicles.	A medium structured, low aliphatic soluble rosin resin suitable for all offset inks, including heatset, sheetfed and coldset applications.	77	165	25 max	60	3.7	400	250	3.5	135	
ECO-REZ™ 9730 A	Sheetfed/heatset letdown vehicles.	Structured rosin resin suitable for all offset inks, including heatset, sheetfed and coldset applications.	80	150	25 max	100	2.5	1200	180	2.4	110	
ECO-REZ™ 9760 A	Sheetfed/heatset letdown vehicles.	Highly structured rosin resin suitable for all offset inks, including heatset, sheetfed and coldset applications.	80	160	25 max	225	2.1	3000	380	2.2	125	
Hybrid Resins												
Product Description	Applications	Features and Benefits	Bio-Renewable Content (+/- 2%)	Ring & Ball Melt Point - °C	Acid Value	TA Viscosity (1:2 ARLO) @ 2.5s <sup>-1</sup> and 25°C (Pa.s)	TA Tan Delta (1:2 ARLO) @ 2.5s <sup>-1</sup> and 25°C	1:2 ARLO: LTL@25°C (sec)	TA Viscosity (50:25:25, Resin:M47:TXIB) @2.5s <sup>-1</sup> and 25°C (Pa.s)	TA Tan Delta (50:25:25, Resin:M47:TXIB) @ 2.5s <sup>-1</sup> and 25°C	Cloud point (10% in 6/9) °C	
ALPHA-REZ™ 9200 E	Perfect for heatset, sheetfed and waterless offset ink applications.	Enables low tack, low misting and outstanding water balance properties.	N/A	N/A	25 max	30	6.2	350	180	3.9	60	
ALPHA-REZ™ 9430 A	Heatset letdown vehicles.	Provides high viscosity and structure with superior water balance properties. Also, 40% in 6/9 AR Blend TA viscosity is 100 and tan delta is 3.1.	40	170	25 max				650	2.6	95	





Liquid Ink and Coating Resins							
Maleic Modified Rosin Resins							
Product Description	Applications	Features and Benefits	Bio-Renewable Content (+/- 2%)	Ring & Ball Melt Point -°C	Acid Value	Viscosity	
FILTREZ™ 339 A	Lacquer coatings, specialty coatings, thermoplastic applications.	Soluble in low aromatic solvents.	90	135	42 max	J (3.3") Gardner Holdt EE at 25°C, (60% NV Toluene)	
FILTREZ™ 3305 A	Lacquer coatings, specialty coatings, thermoplastic applications.	Requires less liquid plasticizer in finished applications.	94	105	45 max	95 centipoise - Neat, Brookfield Thermocell @ 410°F	
FILTREZ™ 3310 A	Lacquer coatings, specialty coatings, thermoplastic applications.	High viscosity for more viscous applications such as thermoplastic.	92	118	42 max	320 centipoise - Neat, Brookfield Thermocell @ 410°F	
FILTREZ™ 3320 A	Lacquer coatings, specialty coatings, thermoplastic applications.	Soluble in low aromatic solvents.	91	122	60	D (1.6") Gardner Holdt EE at 25°C, (60% NV Toluene)	
Fumaric Modified Rosin Resins							
Product Description	Applications	Features and Benefits	Bio-Renewable Content (+/- 2%)	Ring & Ball Melt Point -°C	Acid Value	Tg (°C)	Gardner Holdt EE at 25°C, (60% NV Ethanol)
FILTREZ™ 521 A	Water based flexo and gravure inks for commercial and packaging.	High acid value, high softening point and broad range of compatibility and solubility.	76	150	220	98.5	F (2.0")
FILTREZ™ 526 A	Water based flexo and gravure inks for commercial and packaging.	Generates higher viscosity in water therefore allowing lower resin solids.	71	115	125	72	D (1.7")
FILTREZ™ 530 A	Water based flexo and gravure inks for commercial and packaging.	Alcohol soluble fumaric with high softening point.	75	150	190	105.8	F (2.1")
FILTREZ™ 531 A	Water based flexo and gravure inks for commercial and packaging.	Alcohol soluble fumaric with high softening point.	79	155	170	105	J (3.4")
FILTREZ™ 567 A	Water based flexo and gravure inks for commercial and packaging.	Characteristics paralleling acrylic resins with regards to drying, transfer, gloss and water resistance of the dry film.	78	130	175	67	D (1.7")
FILTREZ™ 591 A	Water based flexo and gravure inks for commercial and packaging.	High acid value and low molecular weight.	80	140	300	108	B (1.3")
FILTREZ™ 5014 A	Water based flexo and gravure inks for commercial and packaging.	Excellent pigment wetter, enhances viscosity stability, provides excellent wet and dry rub and strength.	71	140	170	85°C	H (2.8")
HYDRO-REZ™ 5614 A	Water based flexo and gravure inks for commercial and packaging.	Alcohol soluble fumaric with high softening point.	77	165	180	N/A	24" (50% in ethanol #4 Ford Cup)
HYDRO-REZ™ 5626 A	Water based flexo and gravure inks for commercial and packaging.	Alcohol soluble fumaric with high softening point.	79	165	195	N/A	20" (50% in ethanol #4 Ford Cup)
Polyamide Resins							
Product Description	Applications	Features and Benefits	Bio-Renewable Content (+/- 2%)	Acid Value	Amine Number		Ring & Ball Melt Point -°C
FLEX-REZ™ 1074 CS	Flexo, gravure and lacquers for polyolefin films. Cold seal release lacquers.	Good solvent release. High gloss. Excellent adhesion to treated films. Excellent cold seal release properties.	91	<6	<6		110
FLEX-REZ™ 3370 CS	Flexo, gravure and lacquers for polyolefin films.	Improved gel resistance.	90	<6	<6		100
FLEX-REZ™ 2433 AD	Flexo, gravure and lacquers for polyolefin films.	Very high gloss.	78	<6	<6		120
FLEX-REZ™ 4584 AD	Flexo, gravure and lacquers for polyolefin films.	Good gel resistance and recovery. Very good water and nice crinkle resistance.	82	<6	<6		115
FLEX-REZ™ 1084 AS	Flexo, gravure and lacquers for polyolefin films.	Very high heat resistance. No gel formation. Non-film forming.	60	<15	<6		185
FLEX-REZ™ 1155 AS	Flexo, gravure and lacquers for polyolefin films. Cold seal release lacquers.	Rapid solvent release. Very good NC compatibility. Very good gel resistance. High gloss. Good cold seal release lacquer properties.	80	<6	<6		115

Specialty Resins					
Product Description	Applications	Features and Benefits	Acid Value	Hydroxyl Number (mg KOH/g substance)	Ring & Ball Melt Point -°C
HYDRO-REZ™ 3886 A	Flexographic inks, carton inks, specialty inks, ink jet.	Promotes gloss and adhesion.	150	N/A	130
REACTOL™ 1111 E	Flexo and gravure inks and lacquers. Water / alcohol soluble inks, ink jet.	Non reactive pure phenolic. Improves toughness, gloss adhesion and hardness.	75	N/A	145
REACTOL™ 1717	Lamination inks, flexographic inks, rotogravure inks, heat seal coatings, primer coatings, ink jet.	Polyketone resins provide unique properties making them excellent additive resins. Polyketone resins provide adhesion properties.	<1	270	100
REACTOL™ 1717 H	Lamination inks, flexographic inks, rotogravure inks, heat seal coatings, primer coatings, ink jet.	Broad compatibility with solvents and other resins. Very good pigment wetting and high gloss. Improved heat resistance.	<1	270	115
REACTOL™ 1979 A	Flexo and gravure and paper and wood coatings, ink jet.	Low molecular weight hydroxyl functional polyester. Outstanding color retention.	8	280	85
REACTOL™ 5145 A	Flexo and gravure inks and lacquers. Water / alcohol soluble inks, ink jet.	Improves gloss and adhesion. Cross linkable. Excellent compatibility with cellulose resins (NC, CAP, CAB). Very good heat, product, water, alkali, oil and block resistance when cured.	130	130	120
Wax Products					
Micronized Wax Powders					
Product Description	Applications	Features and Benefits	Melt Point (°F)	Average Particle Size (Microns)	Particle Size (NPIRI - Grind)
ULTRAFINE™ 1000 A	Solvent/w/b flexo and gravure, HS, SF, UV, OPV, paints & coatings.	Workhorse polyethylene for rub and mar resistance and enhanced slip. UV & AQ coatable.	235-245	7	N-2
ULTRAFINE™ 1W A	Inks, UV, metal deco, OPV, coatings, laser imprinting, AQ & UV coatable.	Premium PTFE grade with narrow particle distribution. Enhances lubricity, abrasion and heat resistance.	> 600	4.5	N-2
ULTRAFINE™ 1W-LS A	Inks, UV, metal deco, OPV, coatings, laser imprinting, AQ & UV coatable.	Premium PTFE grade with narrow particle distribution. Enhances lubricity, abrasion, and heat resistance.	> 600	3.5	N-1
ULTRAFINE™ 5W A	Inks, UV, metal deco, OPV, coatings, laser imprinting, AQ & UV coatable.	Premium PTFE grade with larger particle distribution. Enhances lubricity, abrasion, and heat resistance.	> 600	8	N-4
OPTIRUB™ OP	W/B flexo & gravure, offset inks, paints and coatings.	Water dispersible oxidized polyethylene. Enhances rub, mar resistance, slip, anti-blocking, and flattening.	220-250	11	N-5
OPTIRUB™ PC	Solvent/w/b flexo and gravure, HS, SF, UV, OPV, paints & coatings.	Blend of PE and carnauba waxes for improved rub and mar resistance. Recommended where gloss retention and clarity are vital.	181-240	7	N-3
OPTIRUB™ SP1	Solvent/w/b flexo and gravure, HS, SF, UV, OPV, paints & coatings.	Blend of PE and PTFE for improved slip and mar resistance while enhancing heat resistance.	235-245	6	N-2
POLYSPERSE™ A	Solvent/w/b flexo and gravure, HS, SF, UV, OPV, paints & coatings.	Fischer-Tropsch wax for rub and mar resistance and enhanced slip.	205-220	7	N-3
Sheetfed Compounds					
Product Description	Applications	Features and Benefits	Vegetable Oil (Alkyd) Type	% Non Volatiles	Particle Size (NPIRI - Peppering)
ULTRAPOLY™ 210 A	SF & UV ink, OPV, metal deco, AQ & UV coatable, hot-foil stampable.	Workhorse polyethylene for improved rub, slip and gloss. Enhanced slip without the use of PTFE.	Linseed	100	N-6
ULTRAPOLY™ 211 A	SF & UV ink, OPV, metal deco, AQ & UV coatable, laser, hot-foil stampable.	Workhorse PE/PTFE for a higher degree of slip, rub and heat resistance versus Ultrapoly 210.	Linseed	100	N-5
ULTRAPOLY™ 213 A	SF & UV ink, OPV, metal deco, AQ & UV coatable, hot-foil stampable.	A fine particle size PE/PTFE with a high degree of slip, rub and heat resistance.	Linseed	100	N-4
ULTRAPOLY™ 215 A	SF & UV ink, OPV, metal deco, AQ & UV coatable, hot-foil stampable.	Softer version of Ultrapoly 211 A. Workhorse PE/PTFE for a higher degree of slip, rub and heat resistance versus UP2300 A.	Linseed	100	
ULTRAPOLY™ 2300 A	SF & UV ink, OPV, metal deco, AQ & UV coatable, hot-foil stampable.	Softer version of Ultrapoly 210 A. Workhorse Polyethylene for improved rub, slip and gloss.	Linseed	100	N-6

Heatset Compounds					
Product Description	Applications	Features and Benefits	% Non Volatiles	Distillate Boiling Range (°F)	Particle Size (NPRI - Peppering)
STIRINOL™ 350 A	HS inks, OPV, UV coatable, hot-foil stampable.	UV coatable polyethylene/PTFE yielding a high degree of rub and slip.	45	465 - 530	N-5
STIRINOL™ 97 A	HS inks, OPV, hot-foil stampable, non-imprintable.	Workhorse microcrystalline wax for rub, slip, gloss. Excellent on low grade substrates. Non-recrystallizing.	100	N/A	N-2
STIRINOL™ 98 A	HS inks, OPV, hot-foil stampable, non-imprintable.	Softer version of Stirinol 97. Workhorse for rub, slip, gloss. Excellent on low grade substrates. Non-recrystallizing.	85	475 - 575	N-2
PTFE Dispersions					
Product Description	Applications	Features and Benefits	% Non Volatiles	Distillate Boiling Range (°F)	Particle Size (NPRI - Peppering)
FLUORON™ 672 A	Inks, UV, metal deco, OPV, coatings, laser imprinting, AQ & UV coatable.	Workhorse PTFE concentrate. Excellent for slip, abrasion, and heat resistance.	100	N/A	N-4
FLUORON™ 735 A	Inks, UV, metal deco, OPV, coatings, laser imprinting, AQ & UV coatable.	Premium PTFE concentrate, 100% active system. Excellent slip, abrasion and heat resistance, economical.	100	N/A	N-4
FLUORON™ 960 A	Inks, UV, metal deco, OPV, coatings, laser imprinting, AQ & UV coatable.	Workhorse pourable PTFE concentrate. Excellent for slip, abrasion, and heat resistance.	50	465 - 530	N-4
Water Based Dispersions / Emulsions					
Product Description	Applications	Features and Benefits	% Non Volatiles	Distillate Boiling Range (°F)	Average Particle Size (Microns)
FLEXONIC™ 37 A	AQ inks and coatings.	PE emulsion for enhanced gloss, mar resistance, and hardness.	35	212	< 1
FLEXONIC™ 4104 A	AQ inks and coatings.	PTFE dispersion for ultimate mar resistance and slip enhancement.	44	212	4.5
FLEXONIC™ 601 A	AQ inks and coatings.	PE modified microcrystalline dispersion for enhanced heat resistance. Excellent mar and scuff resistance.	42	212	2
FLEXONIC™ 902 A	AQ flexo & gravure ink and coatings, for use over all inks and substrates.	PE/Paraffin dispersion for high rub and low COF, water beading.	44	212	2.5

Additives					
Specialty Additives					
Product Description	Applications	Features and Benefits	Form	% Non Volatiles	Particle Size (NPRI - Peppering)
OPTILITH™ AM	Heatset and sheetfed inks, OPV, metal decorating.	Inhibits misting while having a minimal effect on gloss and ink rheology.	Paste	95	N-4
OPTILITH™ 3094 A	Heatset ink, sheetfed (at low levels).	Economical anti-oxidant yielding long stay-open times. Low viscosity for easy dispersement. Bubble Tube Gardner (end to end) at 25C, seconds: 2	Solution	18	N/A
OPTILITH™ 1486 A	Heatset and sheetfed inks.	High performance anti-oxidant, pourable. Yields high stay-open times but maintains fast dry times. Bubble Tube Gardner (end to end) at 25C, seconds: 130	Solution	49	N/A
OPTILITH™ TRG	Heatset and sheetfed inks, web no-heat inks.	Reduces tack while maintaining ink rheology. Also improves transfer.	Light gel	100	N/A
OPTILITH™ 3A	Heatset and sheetfed, flushing vehicles.	Reduces water-pick-up with minimal impact on tack and rheology. Bubble Tube Gardner (end to end) at 25C, seconds: 100	Solution	60	N/A
OPTILITH™ 4A	Heatset and sheetfed, flushing vehicles.	Reduces water-pick-up with minimal impact on tack and rheology. High solids.	Paste	94	N/A
OPTILITH™ 4920	Heatset and sheetfed, flushing vehicles.	Reduces water pick-up in a low viscosity, easily pourable and dispersable form. Bubble Tube Gardner (end to end) at 25C, seconds: 3	Solution	92	N/A

**Lawter Asia Pacific****Customer Service**

+86 21 2329 5201

4information.ap@lawter.com

**Technical Inquiries**

4techinfo.ap@lawter.com

**Lawter EMEA****Customer Service**

+32 3570 9494

+32 3570 9490 fax

4information.eu@lawter.com

**Technical Inquiries**

+32 3570 9494

+32 3570 9490 fax

4techinfo.eu@lawter.com

**Lawter New Zealand****Customer Service**

+ 64 7 572 7381

+ 64 7 572 7396 fax

4information.anz@lawter.com

**Technical Service**

4techinfo.anz@lawter.com

**Lawter North America****Customer Service**

+1 912 366 4322

+1 912 366 4271 fax

4information.na@lawter.com

**Technical Inquiries**

Resins, Vehicles and Additives

+1 847 649 9500

Adhesive Resins

+1 804 387 6822

4techinfo.na@lawter.com

**Lawter South America****Customer Service**

+54 11 4717 8900

+54 11 4717 9040 fax

4information.sa@lawter.com

**Technical Inquiries**

4techinfo.sa@lawter.com

**EHS Inquiries**

4EHSinfo@lawter.com

**REACH Inquiries**

reach02@lawter.com

**Lawter, Inc.**

200 North LaSalle Street

Suite 2600

Chicago, IL 60601

+1 312 662 5700

For worldwide locations visit [lawter.com](http://lawter.com)

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