NORTH AMERICA

# Product Guide

LAWTER™

# Better, Cleaner Chemistry

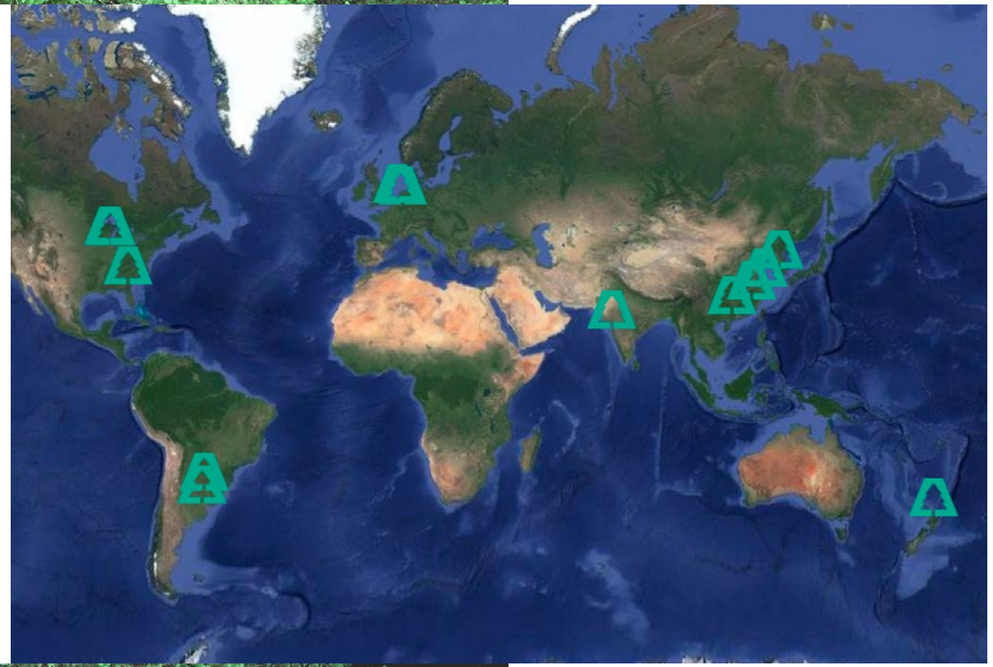
## Lawter™ has over 70 years of experience in creating innovative solutions

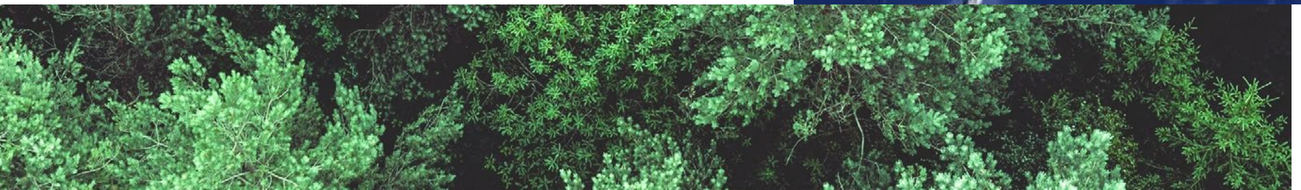
Our global network of manufacturing plants gives us the ability to serve customers around the world. And with products formulated to meet thousands of diverse end-use applications, we are experts in serving a wide variety of industries.

With so many customers counting on us, our sales and production teams are backed by technical service and support that sets the industry standard. In an increasingly competitive world, you can count on Lawter to find a cost-effective and innovative solution to your industrial bonding and binding needs.

# Lawter
# is a leading global supplier of resins and resin dispersions for adhesives.

Our resin derivatives are also used in applications such as pigments, rubber intermediates, aroma chemicals and road marking.





## Global presence

Lawter's customers enjoy the benefits of global manufacturing, paired with regional support. Our production sites are located in:

- United States
- The Netherlands
- Belgium
- South Korea
- China
- New Zealand
- Argentina

## Technical support

Your products are important to us. With technical service labs located in key regions of the world, Lawter is able to work closely with customers to achieve product excellence and value.

Our knowledge of resin chemistry paired with our customer's expertise has led to some exciting new products, including our latest waterborne tackifier systems.

## Renewable raw material sources

Many of our raw materials are derived from renewable sources such as the rosin tapped from pine trees or from the pulp-making process for the paper industry.




# Research and development

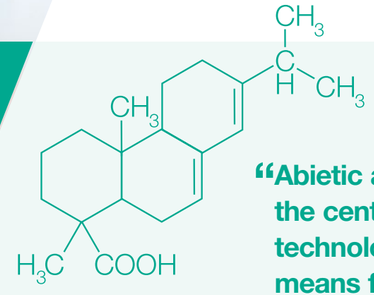
We work in close cooperation with our customers to improve their results and help create value. This collaboration achieves the required results.

We have a proud history of creating innovative and successful solutions to meet the exact requirements in all the industries we serve. Combining our knowledge of resin chemistry and our customers' expertise in their field of excellence has been the impulse for the creation of new resin types, like our latest waterborne tackifier systems. Customised products are developed by working under mutually confidential conditions. We also have product development centers located in all key regions.

# Ink resins, vehicles, and additives

# Lawter™ is a leading global supplier of quality raw materials for the printing ink industry.

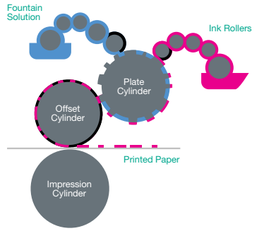
We provide ink manufacturers with specialty products including resins, alkyds, vehicles and varnishes, wax compounds and additives for offset and liquid inks.




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

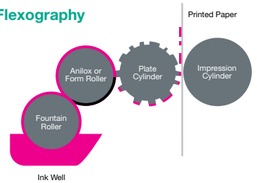
↓ Resin, alkyd and wax compound for offset printing inks.

## The offset printing process

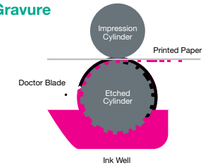



## The liquid inks printing process

**Flexography**




**Gravure**



# Product Lines: Offset

## Varnish

- Sheetfed
- Web Offset
- Grinding
- Metal Deco
- Overprint Varnish

- Cinergi™
- Webvar™
- Eco-Set™
- Eco-Web™
- Luminex™
- Uroset™
- Decotherm™
- Miraglaze™
- Miradull™

## Resins

- Rosin Resins
- Hybrid Resins
- Alkyd Resins

- Setaprint™
- Eco-Rez™
- Alpha-Rez™
- Setalin™
- Synkyd™
- Trionol™
- Terlon™
- Filtrez™

## Waxes and Additives

- Wax Compounds
- Micronized Wax
- Additives

- Stirinol™
- Fluoron™
- Ultrapoly™
- Polysperse™
- Ultrafine™
- Optilith™

# Product Lines: Liquid Inks

## Water Borne Resins

- Filtrez™
- Hydro-Rez

## Solvent Borne Resins

- Flex-Rez™
- Reactol™
- Erkazit™
- Filtrez ™
- Eco-Rez™

## Waxes and Additives

- Flexonic™ (water borne)
- Polyslip™ (solvent borne)
- Ultrafine™

# Product Lines: Coatings

## Wood

- Reactol™
- Ultrafine™
- Filtrez™

## Industrial

- Pinerez
- Filtrez ™
- Reactol™
- Ultrafine™

## Pavement

- Pinerez™
- Filtrez™

# Coating Resins, Adhesive Resins, and Tackifier Dispersions

# Snowtack® tackifier dispersions

Capitalizing upon technology that dates back to the first stable colloidal resin emulsions produced during the 1920s, Lawter has developed a wide range of tackifying dispersions which are specifically designed to serve the needs of the adhesive and surface coating Industries.

Snowtack® tackifier resin dispersions are aqueous, solvent-free dispersions for the manufacture of pressure-sensitive adhesives based on acrylic, natural rubber or SBR emulsions. When formulated correctly, they provide an excellent balance of adhesion and cohesion to a wide range of substrates. Snowtack® can run on industry standard coaters at high speed due to its excellent stability. Snowtack® is an environmentally friendly component for your adhesive. All Snowtack® grades are alkyl phenol ethoxylate (APE) free.

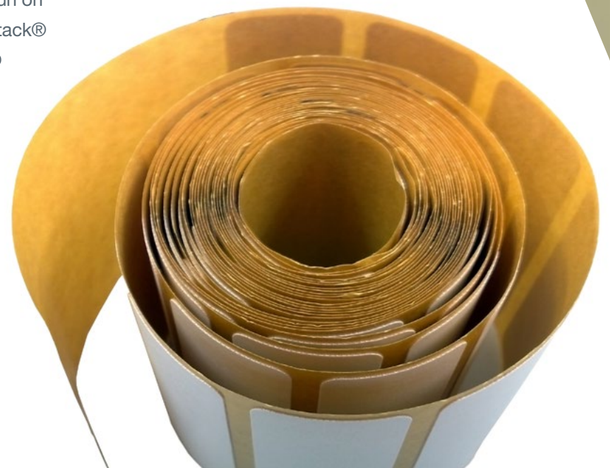
## Markets and applications

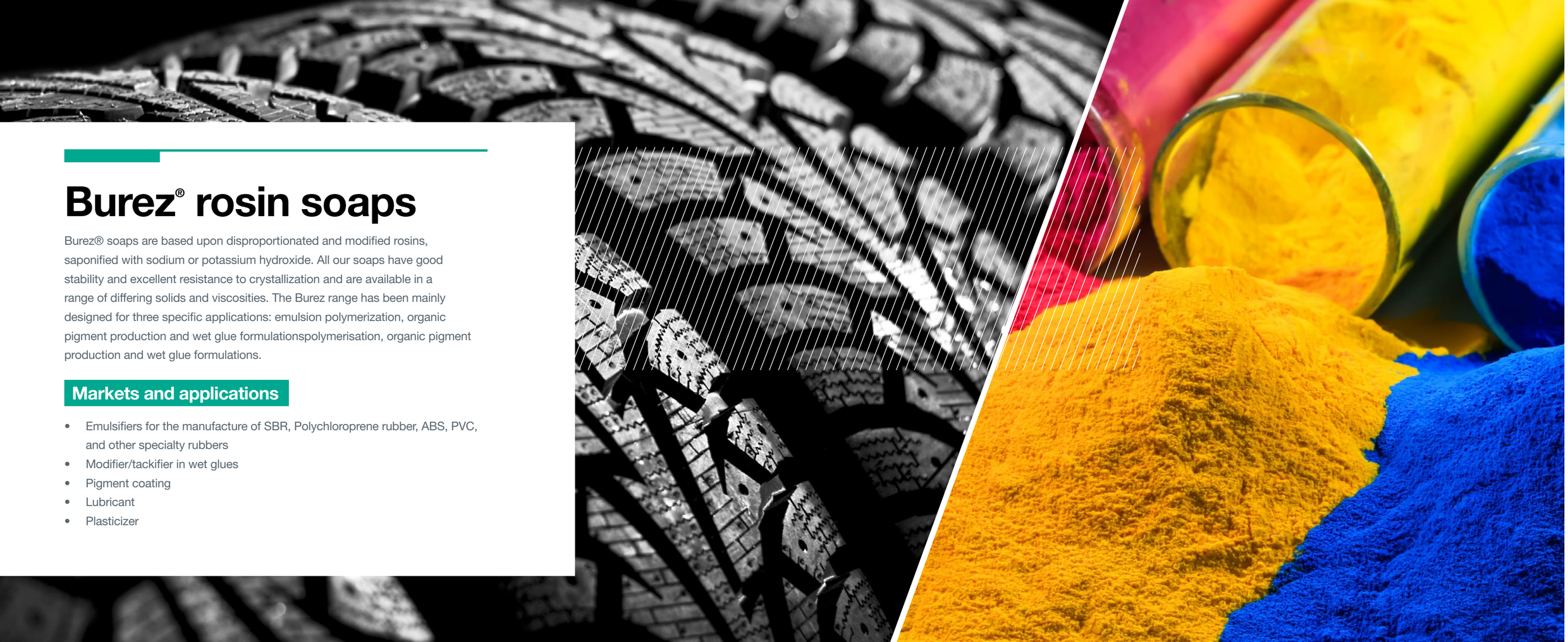
**Waterborne Pressure-Sensitive Adhesive:**

- Paper label, filmic label and tape

**Waterborne Adhesive:**

- Automotive
- Building and construction
- Bottle Labelling



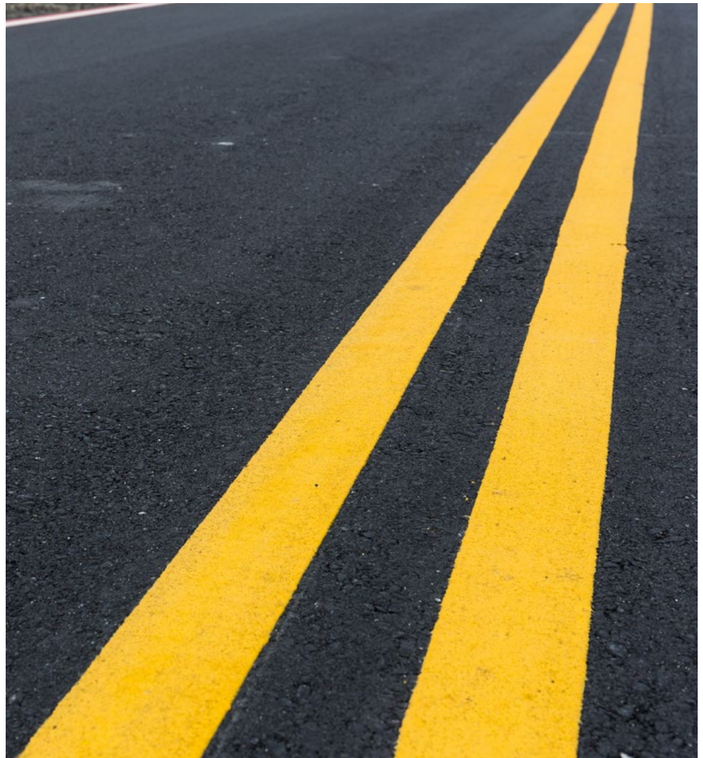


# Burez® rosin soaps

Burez® soaps are based upon disproportionated and modified rosins, saponified with sodium or potassium hydroxide. All our soaps have good stability and excellent resistance to crystallization and are available in a range of differing solids and viscosities. The Burez range has been mainly designed for three specific applications: emulsion polymerization, organic pigment production and wet glue formulationspolymerisation, organic pigment production and wet glue formulations.

## Markets and applications

- Emulsifiers for the manufacture of SBR, Polychloroprene rubber, ABS, PVC, and other specialty rubbers
- Modifier/tackifier in wet glues
- Pigment coating
- Lubricant
- Plasticizer



# Pinerez® and Pineclear® stabilised rosin esters, modified rosin esters, rosin acids and liquid rosin esters

Pinerez® tackifier resins are recommended to enhance the adhesive performance in hot-melt and solvent-based adhesive applications. They are stabilized, light-colored resins with excellent viscosity stability, and have excellent compatibility with a range of polymers that are widely used in packaging and pressure-sensitive adhesives. These polymers include EVA, SIS, and SBS block copolymers, natural and synthetic rubber, and acrylics. Low VOC Pinerez products provide performance value in water-based, solvent-free flooring adhesives.

## Markets and applications

- Hot melt adhesives
- Solvent-based adhesives
- Reactive PUR adhesives
- Construction adhesives
- Rubber compounding
- Sealants
- Depilatory waxes
- Chewing gum
- Water-based flooring adhesives
- Coatings
- Pavement Markings

# Ink resins, vehicles, and additives

# 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.

## 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.

## 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 125ºC.

## 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.

## Molecular weight

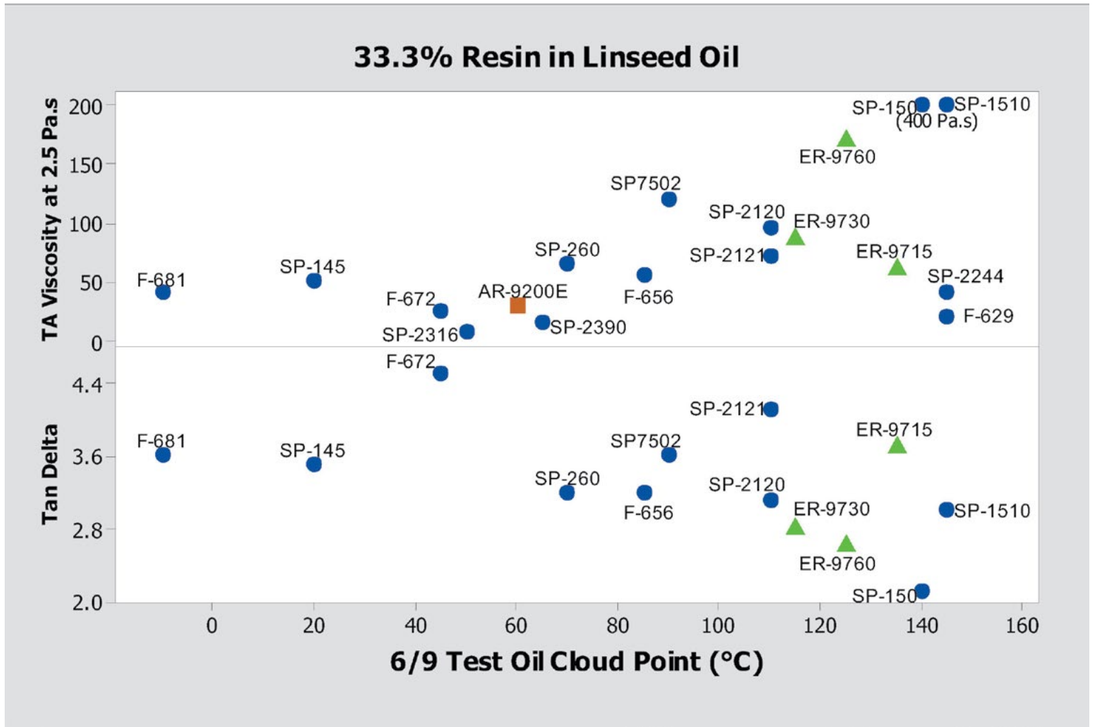
Molecular weight is measured by means of gel permeation chromatography (GPC), relative to polystyrene standards.

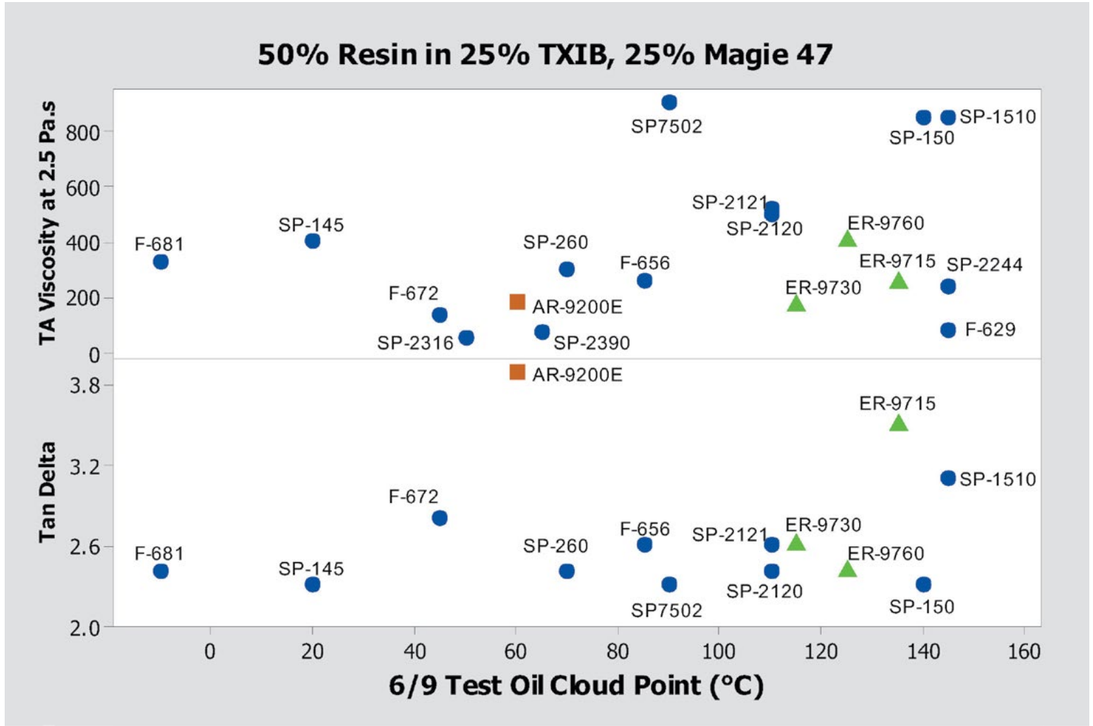
## Dilutability

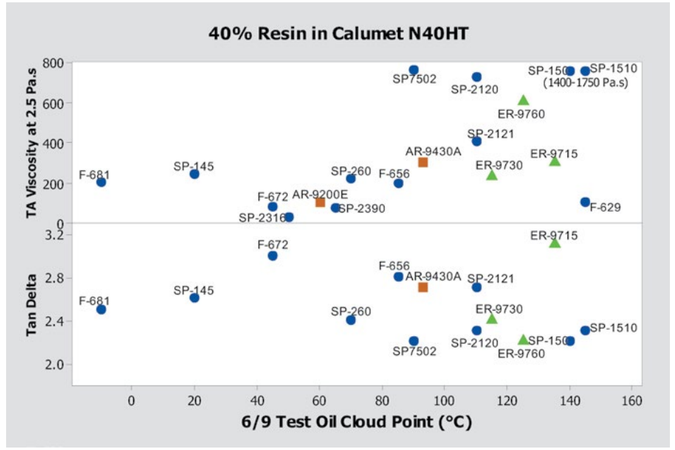
The dilutability is the solvent (toluene) uptake (in percentage) of a varnish of certain concentration, diluted to a flow time in a special cup, at a given temperature.

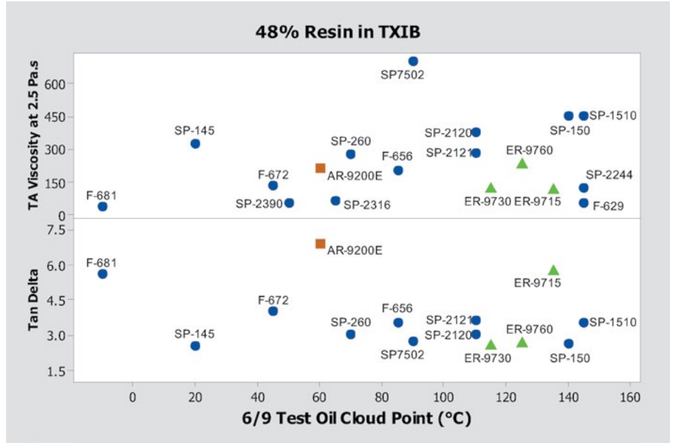
## Tg

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




50% Resin in 25% TXIB, 25% Magie 47
TA Viscosity at 2.5 Pa.s
Tan Delta
6/9 Test Oil Cloud Point (°C)
SP7502
SP-1510
SP-150
SP-145
F-681
SP-2121
SP-2120
ER-9760
SP-260
F-656
ER-9715
SP-2244
F-672
ER-9730
AR-9200E
SP-2316
SP-2390
F-629


40% Resin in Calumet N40HT
TA Viscosity at 2.5 Pa.s
Tan Delta
6/9 Test Oil Cloud Point (°C)
SP7502
SP-1510
(1400-1750 Pa.s)
SP-2120
ER-9760
SP-2121
AR-9430A
ER-9715
SP-145
SP-260
F-656
ER-9730
F-681
F-672
AR-9200E
SP-2316
SP-2390
F-629


48% Resin in TXIB
TA Viscosity at 2.5 Pa.s
Tan Delta
6/9 Test Oil Cloud Point (°C)
SP7502
SP-1510
SP-150
SP-145
SP-260
SP-2120
F-656
SP-2121
ER-9760
F-672
AR-9200E
SP-2244
F-681
SP-2390
SP-2316
ER-9730
ER-9715
F-629

# Offset Resins

## Phenolic Modified Rosin Resins

| Product Description | Application | Features and Benefits | Bio-Renewable Content (+/- 2%) | Ring & Ball Melt Point - °C | Acid Value | TA Viscosity (1:2 ARLO)@ 2.5s-1 and 25°C (Pa.s) | TA Tan Delta (1:2 ARLO)@ 2.5s-1 and 25°C | 1:2 ARLO: LTL@25°C (sec) | TA Viscosity (50:25:25,Resin:M47:TXI-B)@2.5s-1 and 25°C (Pa.s) | TA Tan Delta (50:25:25,Resin:M47:TXIB)@ 2.5s-1 and 25°C | Cloud Point(10% in 6/9) °C | 50% in Magie 47:LTL@25°C (sec) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| FILTREZ™ 618 | Sheetfed/ heatset disper-sion vehicles. | Excellent resin for wetting, pigment stabilization and system solubilizer. | 62 | 140 | 25 Max | 3.5 | N/A | 30 | N/A | N/A | N/A (55 in 6/9AFN) | 355 |
| FILTREZ™ 629 | Sheetfed/ heatset letdown vehicles. | Medium viscosity, medium to low dilution resin for improved transfer, gloss. | 76 | 150 | 25 Max | 20 | 10 | 170 | 80 | 8 | 145 | |
| FILTREZ™ 656 | 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 | 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 | 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 6/9AFN) | |
| 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 | 450 | 2.1 | 6000 | 850 | 2.3 | 145 | |
| 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 | |

## Phenolic Modified Rosin Resins (continued)

| Product Description | Application | Features and Benefits | Bio-Renewable Content (+/- 2%) | Ring & Ball Melt Point - °C | Acid Value | TA Viscosity (1:2 ARLO)@ 2.5s-1 and 25°C (Pa.s) | TA Tan Delta (1:2 ARLO)@ 2.5s-1 and 25°C | 1:2 ARLO: LTL@25°C (sec) | TA Viscosity (50:25:25 Resin:M47:TXI-B)@2.5s-1 and 25°C (Pa.s) | TA Tan Delta (50:25:25,Resin:M47:TXIB)@ 2.5s-1 and 25°C | Cloud Point(10% in 6/9) °C | 50% in Magie 47:LTL@25°C (sec) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 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 version of Setaprint 150. | 71 | 170 | 25 Max | 450 | 2.6 | 6000 | 850 | 3 | 145 | |
| SETAPRINT™ 2120 A | Sheetfed/ heatset letdown vehicles. | Good gel response to aluminum chelates. Provides fast solvent release, high gloss and superior holdout properties. | 67 | 165 | 25 Max | 95 | 190 | 1100 | 550 | 2.4 | 110 | |
| SETAPRINT™ 2121 A | Sheetfed/ heatset letdown vehicles. | Bisphenol A free version of Setaprint 2120. | 66 | 165 | 25 Max | 75 | 4.1 | 1000 | 500 | 2.6 | 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™ 2244 A | Sheetfed/ heatset dispersion vehicles. | Bisphenol A free version of Setaprint 2243. | 72 | 165 | 25 Max | 40 | 8 | 450 | 240 | 6 | 145 | |
| SETAPRINT™ 2316 A | Sheetfed/ heatset letdown vehicles. | Low viscosity, middle to high dilutioan for improved transfer and gloss. | 63 | 155 | 20 Max | 7 | N/A | 60 | 55 | 50 | 50( 115 in 6/9 AFN) | |
| 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™ 7502 A | Sheetfed/ heatset letdown vehicles. | Ultrahigh viscosity and structure with good solubility. | 60 | 170 | 25 Max | 120 | 3.6 | 1800 | 900 | 2.3 | 90 | |

# Offset Resins (continued)

## Phenol Free Rosin Resins

| Product Description | Application | Features and Benefits | Bio-Renewable Content (+/- 2%) | Ring & Ball Melt Point - °C | Acid Value | TA Viscosity (1:2 ARLO)@ 2.5s-1 and 25°C (Pa.s) | TA Tan Delta (1:2 ARLO)@ 2.5s-1 and 25°C | 1:2 ARLO: LTL@25°C (sec) | TA Viscosity (50:25:25,Resin:M47:TXI-B)@2.5s-1 and 25°C (Pa.s) | TA Tan Delta (50:25:25,Resin:M47:TXIB)@ 2.5s-1 and 25°C | Cloud Point(10% in 6/9) °C | 50% in Magie 47:LTL@25°C (sec) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ECO-REZ™ 303 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 (85 in 6/9AF) | 12 |
| ECO-REZ™ 468 A | Sheetfed/ heatset letdown vehicles. | Low structured rosin resin suitable for all offset inks, including heatset, sheetfed and coldset applications. | 77 | 135 | 25 Max | 5 | N/A | 24 | N/A | N/A | 95 | |
| 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™ 9720 A | Sheetfed/ heatset letdown / Dispersion vehicles | Low structured rosin resin suitable for all offset inks, including heatset, sheetfed and coldset applications. | 67 | 120 | 25 Max | 6 | N/A | 25 | N/A | N/A | 0 (115 in 6/9AF) | 300 |
| 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 | Application | Features and Benefits | Bio-Renewable Content (+/- 2%) | Ring & Ball Melt Point - °C | Acid Value | TA Viscosity (1:2 ARLO)@ 2.5s-1 and 25°C (Pa.s) | TA Tan Delta (40% in N40HT)@ 2.5s-1 and 25°C | TA Viscosity (50:25:25,Resin:M47:TXI-B)@2.5s-1 and 25°C (Pa.s) | TA Tan Delta (50:25:25,Resin:M47:TXIB)@ 2.5s-1 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. | 29 | N/A | 25 Max | 100 | 4 | 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 | 300 | 3 | 650 | 2.6 | 95 |

# 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) | Mineral Oil | 485 - 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) | Glycol | 485 - 510 |
| DECOTHERM™ 100 E | Flat sheet metal decorating. | Fast cure rates for high bake pigmented systems. | 12 | 86 | 600" ee at 25°C | | 500 - 585 |

| Product Description | Applications | Features | Bio-Renewable Content (+/- 2%) | Acid Value | TA Viscosity at 25C (Pa.s) | Bubble Tube Gardner (end to end) at 25C, seconds |
|---|---|---|---|---|---|---|
| TERLON™ 1114A | Flat sheet metal decorating. | #4 Alkyd, contributes pale color, speed of dry, and a cohesive film build. | 62 | 10 | 11 | 150 |
| TERLON™ 1162A | Flat sheet metal decorating. | #9 Alkyd, very low color development great for metal decorating. | 60 | 10 | 115 | 1400 |
| TRIONOL™ 1739A | Flat sheet metal decorating. | #9 Alkyd, very low color development great for metal decorating. | 60 | 10 | 100 | 1300 |

# Liquid Ink and Coating Resins

## Maleic Modified Rosin Resins

| Product Description | Application | Features | Bio-Renewable Content (+/- 2%) | Ring & Ball Melt Point -°C | Acid Value | Viscocity |
|---|---|---|---|---|---|---|
| FILTREZ™ 339 | 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 | 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 | 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 | 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) |

## Polyamide Resins

| Product Description | Applications | Features | Bio-Renewable Content (+/- 2%) | Ring & Ball Melt Point -°C | Gardner Viscosity (50% Ethanol) | Ford #4 Viscosity, 50% in Ethanol |
|---|---|---|---|---|---|---|
| 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 | 110 | F (40% N.V. in Toluene/Isopropanol 70/30) | |
| FLEX-REZ™ 3370 CS | Flexo, gravure and lacquers for polyolefin films. | Improved gel resistance. | 90 | 100 | D (40% N.V. in Toluene/Isopropanol 70/30) | |
| FLEX-REZ™ 2433 AD | Flexo, gravure and lacquers for polyolefin films. | Very high gloss. | 78 | 120 | D | 46 |
| FLEX-REZ™ 4584 AD | Flexo, gravure and lacquers for polyolefin films. | Good gel resistance and recovery. Very good water and nice crinkle resistance. | 82 | 115 | G | 83 |
| FLEX-REZ™ 1084 AS | Flexo, gravure and lacquers for polyolefin films. | Very high heat resistance. No gel formation. Non-film forming. | 60 | 185 | | 130 |
| 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 | 115 | D | 45 |

# Liquid Ink and Coating Resins (continued)

## Fumaric Modified Rosin Resins

| Product Description | Applications | Features | Bio-Renewable Content (+/- 2%) | Ring & Ball Melt Point -°C | Acid Value | Tg(°C) | Gardner Holdt EE at 25°C, (60% NV Ethanol) | Brookfield LV3/40 rpm/25C (34% in water/ammonia) |
|---|---|---|---|---|---|---|---|---|
| FILTREZ™ 521 | Water based flexo and gravure inks for commercial and packaging. | High acid value, high softening point and broad range of compatibility and solubility. | 76 | 155 | 220 | 98.5 | F (2.0") | 175 |
| FILTREZ™ 526 | Water based flexo and gravure inks for commercial and packaging. | Generates higher viscosity in water therefore allowing lower resin solids. | 71 | 120 | 125 | 72 | D (1.7") | 9500 |
| FILTREZ™ 530 | Water based flexo and gravure inks for commercial and packaging. | Alcohol soluble fumaric with high softening point. | 75 | 150 | 195 | 105.8 | F (2.1") | 425 |
| FILTREZ™ 531 | Water based flexo and gravure inks for commercial and packaging. | Alcohol soluble fumaric with high softening point. | 79 | 155 | 175 | 105 | K (3.4") | 3600 |
| FILTREZ™ 575 | 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. | 71 | 150 | 195 | 67 | D (1.7") | 375 |
| FILTREZ™ 591 | Water based flexo and gravure inks for commercial and packaging. | High acid value and low molecular weight. | 80 | 140 | 300 | 108 | B (1.3") | 15 (140 at 44% solids) |
| FILTREZ™ 5014 | 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 | 175 | 85° C | H (2.8") | 500 |
| HYDRO-REZ™ 5614 A | Water based flexo and gravure inks for commercial and packaging. | Alcohol soluble fumaric with high softening point. | 77 | 165 | 190 | N/A | 21" at 50%, #4 Ford Cup | 850 |
| HYDRO-REZ™ 5626 A | Water based flexo and gravure inks for commercial and packaging. | Alcohol soluble fumaric with high softening point. | 79 | 165 | 200 | N/A | 20" at 50%, #4 Ford Cup | 1500 (at 28% solids) |

## Specialty Resins

| Product Description | Resin Type | Application | Features | Acid Value | Hydroxyl Number (mg KOH/g substance) | Ring & Ball Melt Point -°C |
|---|---|---|---|---|---|---|
| HYDRO-REZ™ 3886 A | Fumaric Modified Rosin Ester | Flexographic inks, carton inks, specialty inks, ink jet. | Promotes gloss and adhesion. | 150 | N/A | 130 |
| REACTOL™ 1111 E | Pure Phenolic Resin, Unreactive (Novolac) | 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 | Polyketone | Lamination inks, flexographic inks, rotogravure inks, heat seal coatings, primer coatings, ink jet. | Provides excellent adhesion to difficult substrates; low viscosity; can be used to increase solids. Excellent intercoat adhesion properties. | <1 | 270 | 100 |
| REACTOL™ 1717 H | Polyketone | Lamination inks, flexographic inks, rotogravure inks, heat seal coatings, primer coatings, ink jet. | Higher melting point version of Reactol 1717. | <1 | 270 | 115 |
| REACTOL™ 1979 A | Polyester | Flexo and gravure and paper and wood coatings, ink jet. | Low molecular weight hydroxyl functional polyester. Outstanding color retention. Excellent adhesion properties. | 8 | 280 | 85 |
| REACTOL™ 5145 A | Polyester | 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 | Application | Features | 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 |
| OPTIRUB™ OP | W/B flexo & gravure, offset inks, paints and coatings. | Water dispersible oxidized polyethylene. Enhances rub, mar resistance, slip, anti-blocking, and flatting. | 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 |

## PTFE Dispersions

| Product Description | Application | Features | % Non Volatiles | Distillate Boiling Range (°F) | Particle Size (NPIRI - 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 |

## Sheetfed Compounds

| Product Description | Application | Features | 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 |

# Wax Products (continued)

## Heatset Compounds

| Product Description | Application | Features | % Non Volatiles | Distillate Boiling Range (°F) | Particle Size (NPIRI - 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™ 92 A | HS inks, OPV, hot-foil stampable, non-imprintable. | Workhorse microcrystalline wax for rub, slip, gloss. Excellent on low grade substrates. Non-recrystallizing. | 60 | 475-575 | N-2 |
| 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 |

## Water Based Dispersions / Emulsions

| Product Description | Application | Features | % Non Volatiles | Distillate Boiling Range (°F) | Average Particle Size (Microns) |
|---|---|---|---|---|---|
| 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

## Specality Additives

| Product Description | Application | Features | Form | Distillate Boiling Range (°F) | Particle Size (NPIRI - 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 M | 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 dispersible form. Bubble Tube Gardner (end to end) at 25C, seconds: 3 | Solution | 92 | N/A |

# Alkyds

## Linseed

| Product Description | Application | Features | Bio-Renewable Content (+/- 2%) | Acid Value | TA Viscosity at 25C (Pa.s) | Bubble Tube Gardner (end to end) at 25C, seconds |
|---|---|---|---|---|---|---|
| TERLON™ 1143 A | Heatset, sheetfed, pigment dispersion vehicles. Metal decorating systems. | #3 Bodied workhorse. | 75 | 10 | 5.5 | 70 |
| TERLON™ 1147 A | Heatset, sheetfed, pigment dispersion vehicles. | #7 Bodied workhorse. | 70 | 10 | 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 |
| SETALIN™ V406 E | Heatset, sheetfed, pigment dispersion vehicles. | #3 Bodied workhorse. | 68 | 10 | 6 | 75 |
| SETALIN™ V701 E | Heatset, sheetfed, pigment dispersion vehicles. | #7 Bodied workhorse. | 61 | 10 | 80 | 930 |

## Soybean Oil

| Product Description | Applications | Features | Bio-Renewable Content (+/- 2%) | Acid Value | TA Viscosity at 25C (Pa.s) | Bubble Tube Gardner (end to end) at 25C, seconds |
|---|---|---|---|---|---|---|
| TERLON™ 613A | Heatset, sheetfed, pigment dispersion vehicles. | #3 Bodied High Performance yet Cost Effective, Broad Resin Compatibility. | 81 | 7 | 5.5 | 70 |
| TERLON™ 605A | Heatset, sheetfed, pigment dispersion vehicles. | #4 Bodied High Performance yet Cost Effective. | 75 | 7 | 12 | 150 |
| TERLON™ 607A | Heatset, sheetfed, pigment dispersion vehicles. | #7 Bodied High Performance yet Cost Effective. | 72 | 7 | 80 | 930 |

## Speciality

| Product Description | Applications | Features | Bio-Renewable Content (+/- 2%) | Acid Value | TA Viscosity at 25C (Pa.s) | Bubble Tube Gardner (end to end) at 25C, seconds |
|---|---|---|---|---|---|---|
| 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™ 1114A | Recommended for metal decorating inks. | Contributes pale color, speed of dry, and a cohesive film build. | 62 | 10 | 11 | 150 |
| TERLON™ 1162A | Metal decorating systems. | #9 Alkyd, very low color development - great for metal decorating. | 60 | 10 | 115 | 1400 |
| TRIONOL™ 1739A | Heatset, sheetfed, pigment dispersion vehicles. Metal decorating systems. | #9 Alkyd, very low color development - great for metal decorating | 60 | 10 | 100 | 1300 |
| TRIONOL™ 3A | Heatset, sheetfed, pigment dispersion vehicles. | #4 High molecular weight alkyd, ultra hard film. | 73 | 10 | 11 | 140 |

# Adhesive Resins and Tackifier Dispersions

ADHESIVES

# Snowtack® Tackifier Dispersions



## Rosin Acids

| Dispersion | Dispersion Properties | | | | | | Dry Properties | | | Application Comments |
|---|---|---|---|---|---|---|---|---|---|---|
| | Solids (%) | Viscosity ( mPa·s ) | pH | Stabiliser | Particle size mean (microns) | Sieve residue at 100 micron (ppm) | Acid value (mg KOH/g) | Softening point (°C) | Glass transition point (°C) | |
| Snowtack® 765A | 50 | 500 | 7.5 | anionic | <0.5 | <100 | >100 | 64 | 12 | General purpose acid grade tackifier to boost adhesion when formulated with acrylic and SBR PSA polymers. |
| Snowtack® 775A | 52 | 650 | 7.5 | anionic | <0.5 | <100 | >100 | 76 | 21 | Higher softening point acid grade tackifier giving higher cohesive strength when formulated with acrylic and SBR Pisa polymers. |
| Snowtack® 779F E | 59 | 350 | 8 | anionic | <0.5 | <100 | >100 | 75 | 20 | High solids, provides excellent cohesive strength, adhesion and water resistance for PSA tape and label applications. |

## Rosin Esters

| Dispersion | Dispersion Properties | | | | | | Dry Properties | | | Application Comments |
|---|---|---|---|---|---|---|---|---|---|---|
| | Solids (%) | Viscosity ( mPa·s ) | pH | Stabilizer | Particle size mean (microns) | Sieve residue at 100 micron (ppm) | Acid value (mg KOH/g) | Softening point (°C) | Glass transition point (°C) | |
| Snowtack® SE724G | 51 | 400 | 9.0 | polymeric | <1.0 | <100 | <25 | 37 | -8 | Modifying resin dispersion for low temperature applications and improved low energy substrate adhesion. |
| Snowtack® SE780G | 55 | 300 | 9.0 | polymeric | <0.6 | <100 | <20 | 83 | 34 | Provides excellent cohesive strength, adhesion andwater resistance for PSA tape and label applications. |
| Snowtack® SE782G | 57 | 475 | 9.0 | polymeric | <0.6 | <100 | <20 | 83 | 34 | High solids, provides excellent cohesive strength, adhesion and water resistance for Pisa tape and label applications. |
| Snowtack® SE783G | 60 | 300 | 9.0 | polymeric | <0.6 | <100 | <20 | 83 | 34 | Highest solids, provides excellent cohesive strength, adhesion and water resistance for PSA tape and label applications. |
| Snowtack® 100G | 57 | 300 | 9.0 | polymeric | <0.6 | <50 | <20 | 99 | 60 | High softening point tackifier for PSA adhesives for tape applications and labels requiring good mandrel performance. |
| Snowtack® SE880G | 57 | 300 | 9.0 | polymeric | <0.6 | <100 | <20 | 85 | 36 | A hybrid tackifier designed to improve adhesionto apolar substrates with 2EHA acrylic and SBRPSA polymers. |
| Snowtack® 110X | 58 | 400 | 9.0 | polymeric | <0.6 | <50 | <20 | 107 | | High softening point tackifier for pressure sensitive adhesives, for tape applications and labels requiring good mandrel performance and high SAFT. |

## Hydrogenated Rosin Esters

| Dispersion | Dispersion Properties | | | | | | Dry Properties | | | Application Comments |
|---|---|---|---|---|---|---|---|---|---|---|
| | Solids (%) | Viscosity ( mPa·s ) | pH | Stabiliser | Particle size mean (microns) | Sieve residue at 100 micron (ppm) | Acid value (mg KOH/g) | Softening point (°C) | Glass transition point (°C) | |
| Snowtack® FH95G | 57 | 300 | 9.0 | polymeric | <0.75 | <100 | <25 | 94 | 45 | Fully hydrogenated resin dispersion based on wood rosin for applications where better compatibility and UV resistance is required. Suitable for use with acrylic and SBR systems. |
| Snowtack® FH94G | 57 | 300 | 9.0 | polymeric | <0.75 | <100 | <25 | 94 | 45 | Hydrogenated resin dispersion based on gum rosin for applications where better compatibility and UV resistance is required. Suitable for use with acrylic and SBR systems. |
| Snowtack® FH93C | 58 | 350 | 9.0 | anionic | <0.5 | <100 | <25 | 93 | | Hydrogenated resin dispersion based on gum rosin for applications where better compatibility and UV resistance is required. Suitable for use with acrylic and SBR systems. FDA 175.300 compliant. |

## Terpene Phenolic

| Dispersion | Dispersion Properties | | | | | | Dry Properties | | | Application Comments |
|---|---|---|---|---|---|---|---|---|---|---|
| | Solids (%) | Viscosity ( mPa·s ) | pH | Stabiliser | Particle size mean (microns) | Sieve residue at 100 micron (ppm) | Acid value (mg KOH/g) | Softening point (°C) | Glass transition point (°C) | |
| Snowtack® TP600G | 57 | 300 | 9.0 | polymeric | <0.75 | <100 | | 100 | 45 | Terpene Phenolic dispersion where high heat resistance is needed. Suitable for use with acrylic, SBR, natural and synthetic rubber systems. |

# Pinerez® Tackifier Resins

| Resin | Ring & Ball Softening Point (°C) | Gardner Colour (50% Soln.) | Acid Value (mgKOH/g) | Viscosity ( mPa·s ) | Application Comments |
|---|---|---|---|---|---|
| Pinerez® 7024 | | 7 | 9 | 4500 | Improves adhesion in flooring adhesives and solvent based adhesives. |
| Pinerez® 2490 A | 90 | 5 | 14 | | Improves tack and adhesion in a wide range of hot melt and solvent based adhesives. |
| Pinerez® 9089 | 148 | 10 | | | Improves tack in hot melt adhesives and acts as a cure accelerator in rubber based adhesives. |
| Pineclear® 4306 A | 100 | 3 | 15 | | Improves tack and adhesion in a wide range of hot melt and solvent based adhesives. |

# Burez® Rosin Soaps

| Soap | Solids (%) | Acid Value (mgKOH/g) | Abietic acid (%) | Dehydro Abietate (%) | Application Comments |
|---|---|---|---|---|---|
| Burez® K80-500D | 80 | 12 | not detectable | 42 | Emulsifier for emulsion process SBR, ABS and CR. Tackifier for bottle label adhesives. Used in pigment resination. |

# Pavement Marking and Coatings

COATINGS

# Pavement Marking

## Maleic Modified Rosin Ester

| Coating Resins | Applications | Features & Benefits | Bio-Renewable Content (+/-2%) | Ring & Ball Melt Point -°C | Acid Value | Viscosity |
|---|---|---|---|---|---|---|
| Filtrez™ 3305 | 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 |
| Pineclear® 4305 A | Lacquer coatings, specialty coatings, thermoplastic applications. | Very low color, requires less liquid plasticizer in finished applications. | 95 | 105 | 45 max | 95 centipoise - neat, Brookfield thermocell @ 410°F |
| Pineclear® 4310 A | Lacquer coatings, specialty coatings, thermoplastic applications. | Very low color, high viscosity and melt point for demanding thermoplastic applications. | 93 | 118 | 42 max | 320 centipoise - neat, Brookfield thermocell @ 410°F |

## Rosin Ester

| Coating Resins | Applications | Features & Benefits | Bio-Renewable Content (+/-2%) | Ring & Ball Melt Point -°C | Acid Value | Viscosity |
|---|---|---|---|---|---|---|
| Pinerez® 2306 A | Specialty coatings and thermoplastic applications. | Stablized rosin for excellent color and heat stability. Excellent adhesion to a variety of substrates. | 85 | 100 | 20 max | 85 centipoise - neat, Brookfield thermocell @ 410°F |
| Pineclear® 4306 A | Specialty coatings and thermoplastic applications. | Very low color, stabilized rosin for enhanced heat stability. Excellent adhesion to a variety of substrates. | 86 | 100 | 25 max | 85 centipoise - neat, Brookfield thermocell @ 410°F |

## Modified Rosin Ester

| Coating Resins | Applications | Features & Benefits | Bio-Renewable Content (+/-2%) | Ring & Ball Melt Point -°C | Acid Value | Viscosity |
|---|---|---|---|---|---|---|
| Pinerez® 2307 A | Specialty coatings and thermoplastic applications. | Stablized rosin for excellent color stability. Excellent adhesion. High bio-renewable content. | 94 | 102 | 25 max | 100 centipoise at 410°F (210°C) |
| Pinerez® 2308 A | Specialty coatings and thermoplastic applications. | Stablized rosin for excellent color and heat stability. Excellent adhesion to a variety of substrates. High bio-renewable content. | 93 | 109 | 25 max | 140 centipoise at 410°F (210°C) |
| Pineclear® 4307 A | Specialty coatings and thermoplastic applications. | Very low color, stabilized rosin for enhanced heat stability. Excellent adhesion. High bio-renewable content | 95 | 103 | 25 max | 100 centipoise at 410°F (210°C) |

# Coatings

## Coating Resins

| Product Description | Resin Type | Features and Benefits | Acid Value | Hydroxyl Number | Ring & Ball Melt Point -°C | Viscosity |
|---|---|---|---|---|---|---|
| REACTOL™ 1111 E | Pure Phenolic Resin, Unreactive (Novolac) | Non-reactive pure phenolic. Improves toughness, gloss adhesion and hardness. | 75 | N/A | 145 | Z6 Gardner Holdt at 25C (60% in Xylene) |
| REACTOL™ 1717 | Polyketone | Provides excellent adhesion to difficult substrates; low viscosity; can be used to increase solids. Excellent intercoat adhesion properties | <1 | 270 | 100 | 545 centipoise, Brookfield at 25C (60% in Isopropyl Alcohol) |
| REACTOL™ 1717 H | Polyketone | Higher melting point version of Reactol 1717 | <1 | 270 | 115 | 1000 centipoise, Brookfield at 25C (60% in Isopropyl Alcohol) |
| REACTOL™ 1979 C | Polyester | Low molecular weight hydroxyl functional polyester. Outstanding color retention. Excellent adhesion properties. | 8 | 280 | 85 | 4" Gardner Holdt LL at 25C (60% in Ethanol) |
| REACTOL™ 5145 A | Polyester | 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 | 26" Ford Cup at 25C (50% in Ethanol) |
| FILTREZ™ 339 | Maleic Modified Rosin Ester | Soluble in aliphatic and aromatic solvents, vegetable oils. Promotes high gloss. Useful in sandng sealers. | 35 | N/A | 135 | 2" Gardner Holdt LL at 25°C, (60% NV Toluene) |
| ECO-REZ™ 303 A | Maleic Modified Rosin Ester | Soluble in aliphatic and aromatic solvents, vegetable oils. Promotes high gloss. | 20 | N/A | 125 | 6" Gardner Holdt LL at 25C (1:2 in Linseed Oil) |
| SETAPRINT™ 999 A | Phenolic Modified Rosin Ester | Soluble in aliphatic and aromatic solvents, vegetable oils. Promotes high gloss and film toughness. | 20 | N/A | 135 | 14" Gardner Holdt LL at 25C (1:2 in Linseed Oil) |
| FILTREZ™ 807 | Fumaric Modified Rosin Ester | Soluble in polar solvents and water/amine. Promotes gloss. Excellent pigment wetting. | 125 | N/A | 120 | 2" Gardner Holdt LL at 25C (60% in Ethanol) |
| FILTREZ™ 809 | Fumaric Modified Rosin Ester | Soluble in polar solvents and water/amine. Promotes gloss and film hardness. | 133 | N/A | 160 | 13" Gardner Holdt LL at 25C (60% in Ethanol) |
| HYDRO-REZ™ 3886 A | Fumaric Modified Rosin Ester | Soluble in polar solvents and water/amine. Promotes gloss. Excellent pigment wetting. | 150 | N/A | 130 | 2" Gardner Holdt LL at 25C (50% in Ethanol) |

**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 Inquiries**
4techinfo.anz@lawter.com

**Lawter North America**
**Customer Service**
+1 912 366 4322
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 inquirees**
4EHSinfo@lawter.com
**REACH Inquiries**
reach02@lawter.com

LAWTER™

**Lawter, Inc.**
200 North LaSalle Street
Suite 2600
Chicago, IL 60601
+1 312 662 5700



LAW-001 09/17