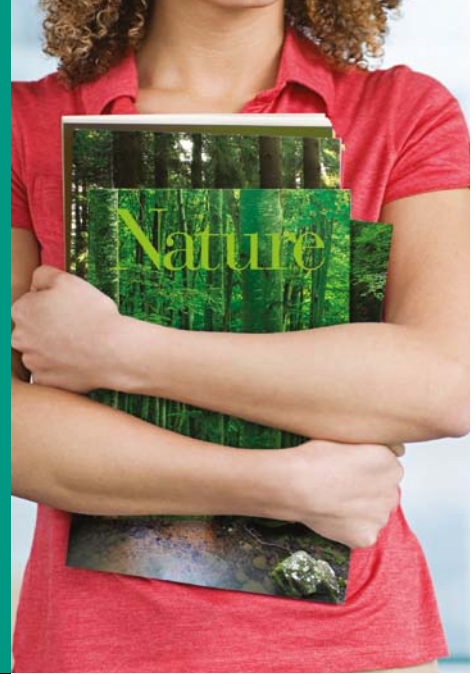


# Ink Resins, Alkyds, Varnishes and Additives Product Guide

Europe



**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.*

## 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.



## 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).

### 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 xylems/ 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.

## Flow time

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.

## 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.

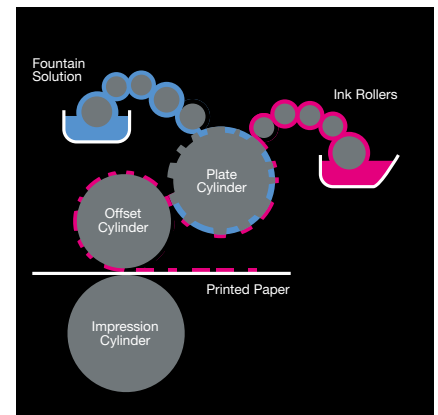
## Dilutability

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.

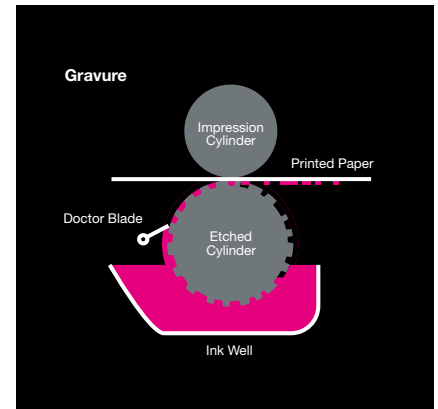
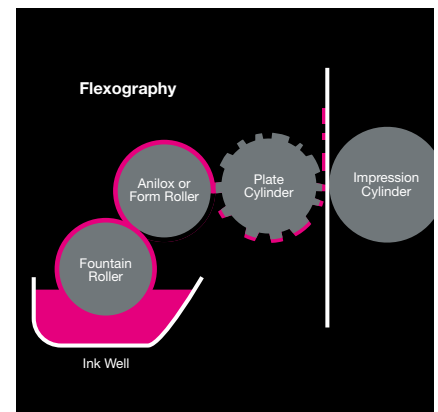
## Tg

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

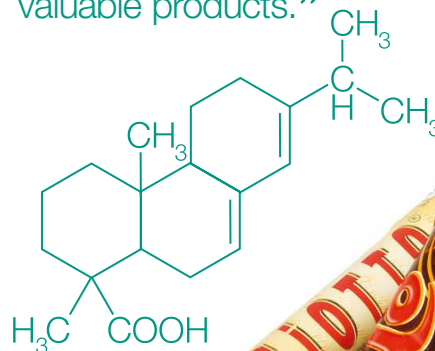
## The offset printing process



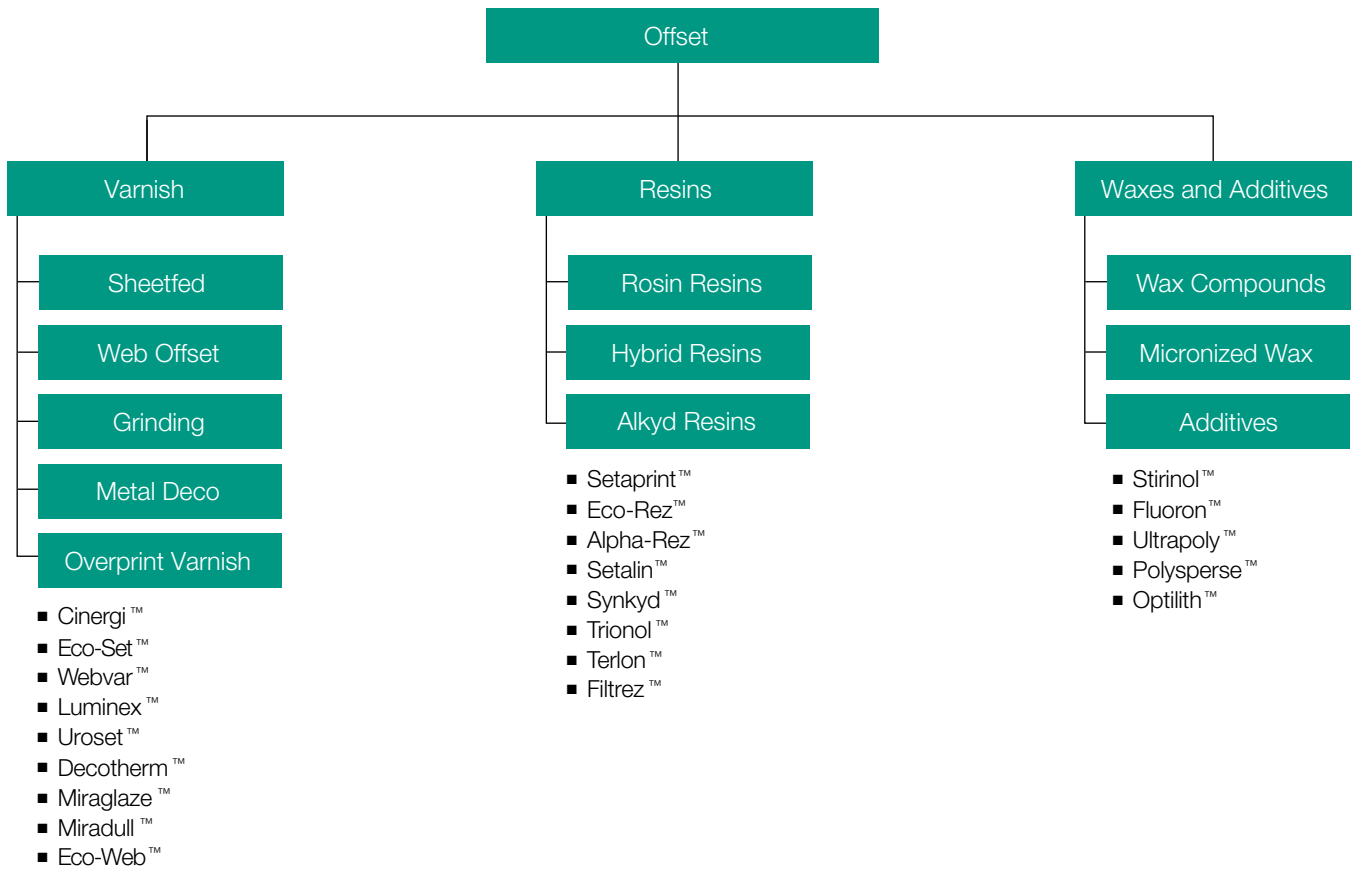
## The liquid inks printing process



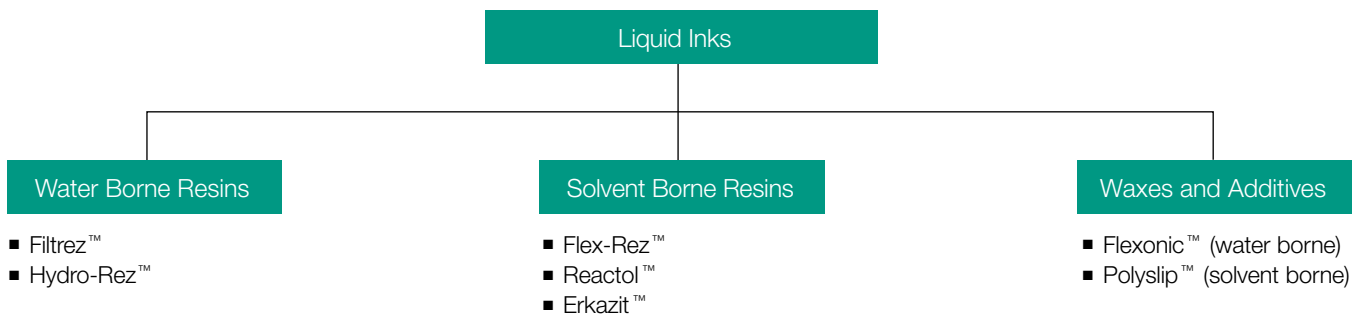
“Abietic acid is at the center of our technology and the means for creating valuable products.”



# Product Lines Offset



# Product Lines Liquid Inks

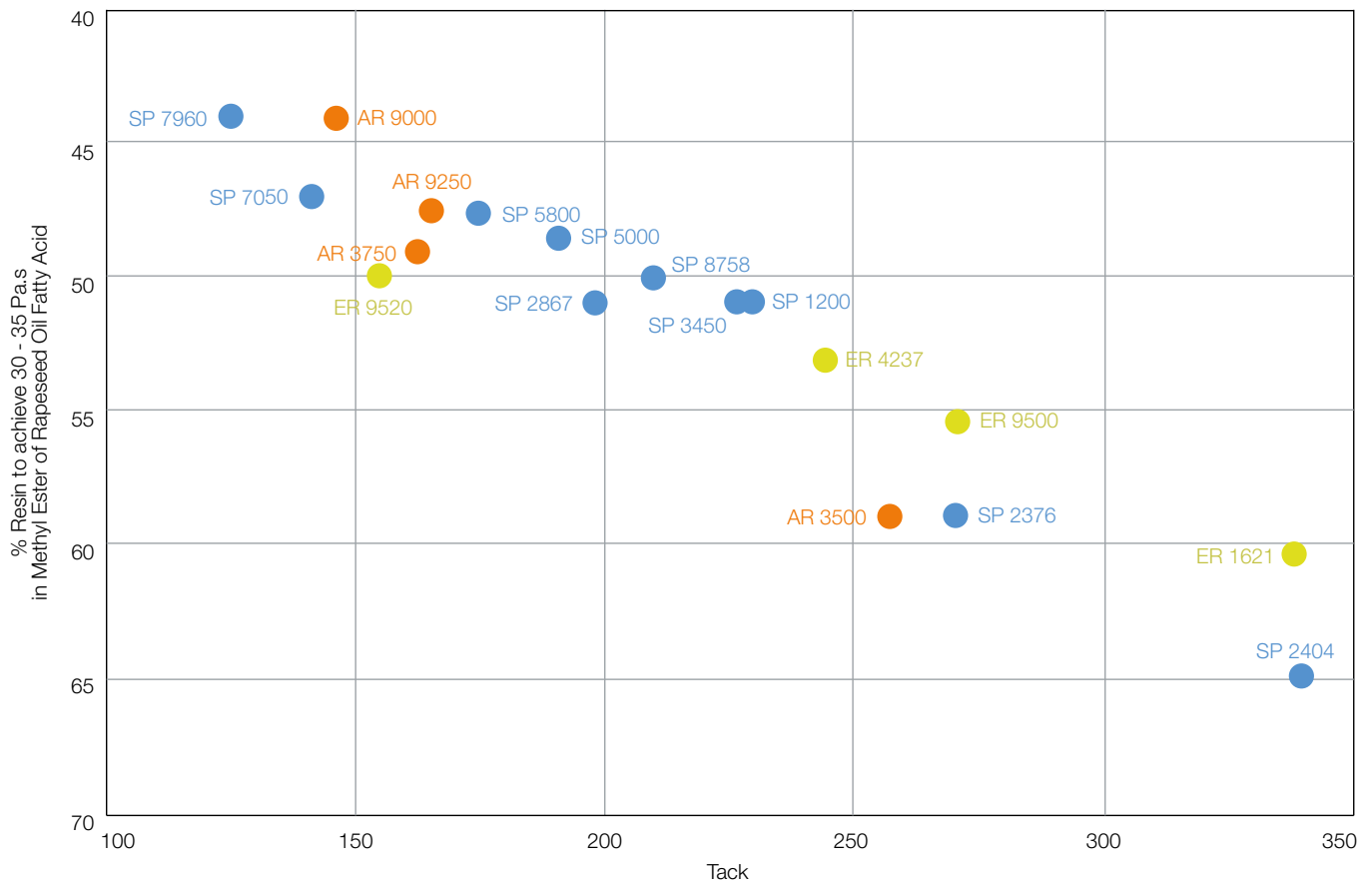


**Product Selections for Offset Printing** Characterization Typical Properties

<b>Phenolic Modified Rosin Resins</b>								
Product	Applications	Physical Characterization	Features	Characteristics				
				Viscosity, Eurocommit* (Pa-s)			Cloudpoint, Eurocommit** 10% solids	
				solids (%)	test oil	typical value	test oil	typical value (°C)
Setaprint™ 1200 E	Webfed (Heatset and Coldset) offset inks. Sheetfed offset inks. Waterless. Letterpress.	High soluble. Medium / high viscous. Structured visco-elastic resin.	Very high gloss and fast setting, Good press stability.	40	6/9	25	6/9 AF	123
Setaprint™ 2376 E	High gloss webfed- and sheetfed offset inks. Wetting varnishes and flushes. Aromatic free inks and varnishes.	High soluble, low viscous resin.	Excellent pigment wetting. Very good co-resin (combine with high structured, high viscous and low soluble resins).	50	6/9	37	6/9 AF	134
Setaprint™ 2404 E	High gloss webfed- and sheetfed offset inks. Wetting varnishes and flushes. Aromatic free inks and varnishes.	High soluble, medium low viscous resin	Excellent pigment wetting. Very good co-resin (combine with high structured, high viscous and low soluble resins).	55	6/9 AFN	14	6/9 AFN	65
Setaprint™ 2867 E	Webfed (Heatset and Coldset) offset inks. Sheetfed offset inks. Waterless. Letterpress.	Medium low soluble, medium high viscous resin. Low polarity.	Very good gelling properties. Fast setting combined with high gloss. Very good water balance. Low tack.	40	6/9 ARB	42	6/9	104
Setaprint™ 3450 E	Sheetfed inks. Webfed (Heatset and Coldset) offset inks. Overprint varnishes.	Medium soluble, medium / low viscous resin.	Combination of high gloss with fast setting. Good gellability. High gloss in overprint varnishes.	40	6/9 ARB	17	6/9 AFN	120
Setaprint™ 5000 E	Webfed (Heatset and Coldset) offset inks. Sheetfed offset inks. Waterless. Letterpress.	Medium soluble, medium high viscous, high structured visco-elastic resin. Low polarity.	High gloss and excellent setting. Improved water balance. Low misting. Low tack. Less gelling.	40	6/9 AR	25	6/9 AFN	130
Setaprint™ 5800 E	Webfed (Heatset and Coldset) offset inks. Sheetfed offset inks. Waterless. Letterpress.	Medium soluble, high structured resin.	High speed presses, high gloss, low misting.	35	6/9 ARB	25	6/9	84
Setaprint™ 7050 E	For mineral distillate free inks and inks based on vegetable oil. Inks based on esters of tall oil fatty acid / vegetable oil fatty acid.	Very high structured visco-elastic resin. Very low solubility in mineral distillates. Very high viscosity.	High gloss and fast setting in mineral distillate free inks. Excellent for inks based on soya bean oil and ester solvents.	45	Methyl ester of rape oil fatty acid	18	6/9 ARB	117
Setaprint™ 7960 E	Webfed (Heatset and Coldset) offset inks. Sheetfed offset inks. Waterless. Letterpress.	Medium soluble, medium / high viscous, high structured visco-elastic resin.	High gloss and very fast setting. Good press stability. Very high stability or rheology under high shear conditions. Low misting. Low tack. Less gelling.	35	6/9 ARB	52	6/9 AFN	132
Setaprint™ 8758 E	Webfed (Heatset and Coldset) offset inks. Sheetfed offset inks. Waterless. Letterpress.	High soluble, medium / high viscous, structured visco-elastic resin.	Very high gloss and fast setting. Good press stability.	42,5	6/9 ARB	45	6/9 AF	132

\* Viscosity measured according to Eurocommit test method at 23 °C and 25 s<sup>-1</sup>. \*\* Cloudpoint measured according to Eurocommit test method, using Haltermann test oils

# Resins for Offset



Phenol Free Rosin Resins								
Product	Applications	Physical Characterization	Features	Characteristics				
				Viscosity, Eurocommit* (Pa-s)			Cloudpoint, Eurocommit** 10% solids	
				solids (%)	test oil	typical value	test oil	typical value (°C)
Eco-Rez™ 1621 E	Webfed (Heatset and Coldset) offset inks. Sheetfed. Low odour inks. Flushes. Wetting varnishes. Overprint varnishes.	Low viscous, high soluble rosin ester.	Pigment wetting. Gloss. Low odour. Low yellowing.	52,5	6/9	37	6/9 AFN	120
Eco-Rez™ 4237 E	Webfed (Heatset and Coldset) offset inks. Sheetfed. Low odour inks. Flushes. Wetting varnishes. Overprint varnishes.	High viscous, low soluble rosin ester.	Fast setting. Higher melting point. Low odour. Low yellowing.	42,5	6/9 AR	18	6/9	145
Eco-Rez™ 4440 E	Webfed (Heatset and Coldset) offset inks. Sheetfed. Low odour inks. Flushes. Wetting varnishes. Overprint varnishes.	Medium viscous, medium soluble rosin ester.	Letdown resin. Low odour. Low yellowing. Low misting. Low tack.	47,5	6/9 ARB	27	6/9	67
Eco-Rez™ 9500 E	Webfed (Heatset and Coldset and Sheetfed). Flushes. Wetting varnishes. Overprint varnishes.	Low viscous, high soluble rosin ester.	Pigment wetting. Low odour. Low yellowing. Low misting.	55	Methyl ester of rape oil fatty acid	22	6/9 AFN	125
Eco-Rez™ 9520 E	Webfed (Heatset and Coldset Sheetfed). Let down varnishes. Overprint varnishes.	Medium viscous, medium soluble rosin ester.	Let down resin. Low odour. Low yellowing. Low misting. Low tack.	50	Methyl ester of rape oil fatty acid	21	6/9	90

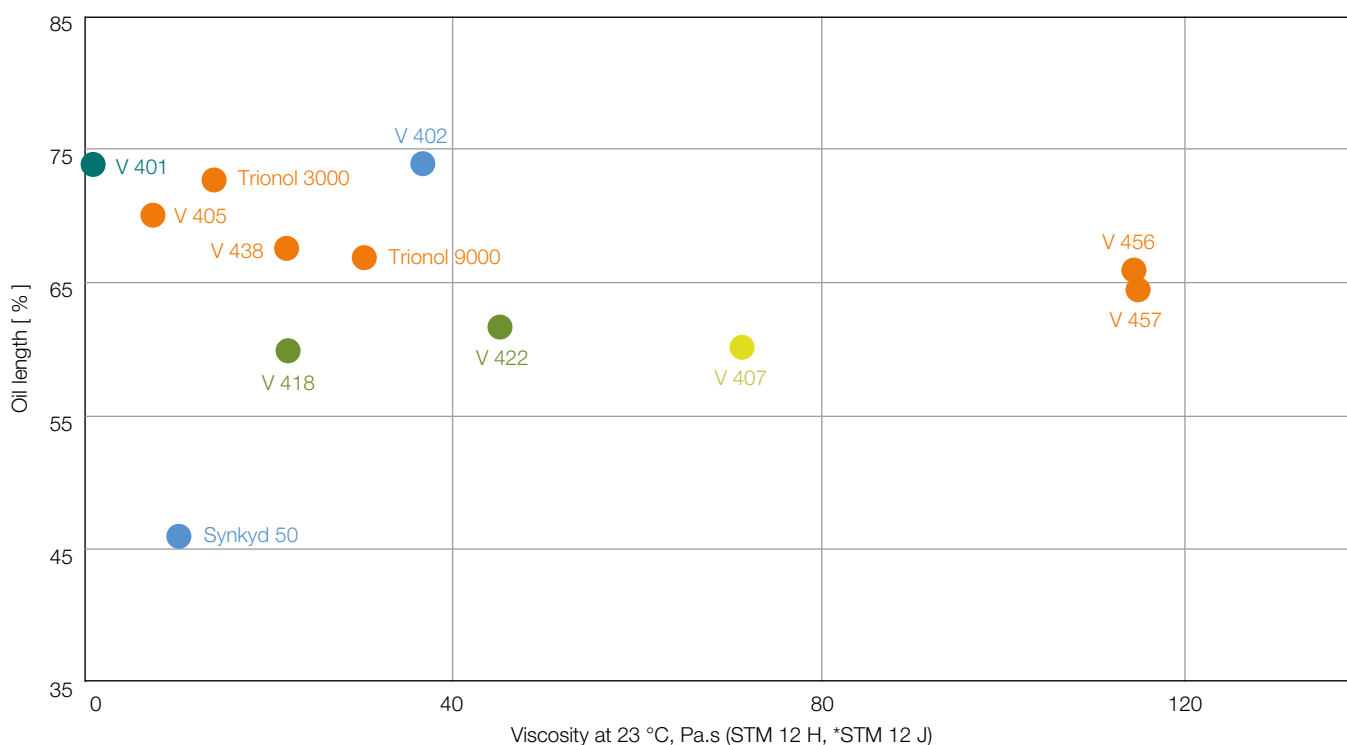
\* Viscosity measured according to Eurocommit test method at 23 °C and 25 s<sup>-1</sup>. \*\* Cloudpoint measured according to Eurocommit test method, using Haltermann test oils

Hybrid Resins and Functional Hydrocarbon Resins								
Product	Applications	Physical Characterization	Features	Characteristics				
				Viscosity, Eurocommit* (Pa-s)			Cloudpoint, Eurocommit** 10% solids	
				solids (%)	test oil	typical value	test oil	typical value (°C)
Alpha-Rez™ 3500 E	Offset Inks, waterless inks.	Very high soluble, low viscous resin.	Very good pigment wetting resin, in particular for black and cyan.	60	6/9 AFN	55	6/9 AF	137
Alpha-Rez™ 3750 E	Offset Inks, waterless inks.	Medium soluble, medium / high viscous phenolic modified hydrocarbon resin. Low polarity.	High gloss and fast setting in mineral distillate free inks, excellent for inks based on soya bean oil and ester solvents, excellent water balance.	50	6/9 ARB	45	6/9 AFN	143
Alpha-Rez™ 9000 E	Offset Inks, waterless inks.	Medium soluble, medium / high viscous phenolic modified hydrocarbon resin. Low polarity.	Excellent water balance. High gloss and excellent wetting properties.	35	6/9 ARB	25	6/9 AFN	130
Alpha-Rez™ 9250 E	Webfed (heatset and coldset) offset inks, sheetfed offset inks, waterless.	High soluble, high viscous structured visco-elastic hybrid resin, low polarity.	Very stable visco-elasticity, even at high temperatures, high stability of rheology under high shear condition, low tack.	40	6/9 ARB	50	6/9 AFN	120

\* Viscosity measured according to Eurocommit test method at 23 °C and 25 s<sup>-1</sup>. \*\* Cloudpoint measured according to Eurocommit test method, using Haltermann test oils

Alkyd Resins							
Product	Applications	Features	Characteristics				
			Oil type	Oil length (%)	Acid value (mg KOH / g substance)	Viscosity at 23 °C at 25s <sup>-1</sup> (Pa.s)	Methanol number (ml MeOH / 5g substance)
					typical value	typical value	typical value
Setalin™ V 401 E	Wetting Varnishes. Flow additive.	Improves flow. Increased water pick-up. Good pigment wetting. High gloss.	blend	74	9	1	55
Setalin™ V 402 E	Sheetfed- and webfed offset inks. Metal deco inks. Low odour inks. Wetting and letdown.	Low polarity. Good overall properties: gloss, flow, waterbalance.	soya bean	74	9	37	28
Setalin™ V 405 E	Sheetfed- and webfed offset inks.	Low bronzing. Good flow, very good pigment wetting. Gloss.	linseed	70	8	7	45
Setalin™ V 407 E	Metal deco inks (3-piece can), especially whit inks. Low odour sheetfed inks.	Good pigment wetting. Low yellowing, low odour.	sunflower	60	8	72	45
Setalin™ V 418 E	Wetting Varnishes. Sheetfed- and webfed offset inks. Metal deco inks (3-piece can). Low odour inks.	Low bronzing. Good flow, very good pigment wetting. Gloss. Due to character an improved hold out. Lower tack. Low odour.	coconut	61	8	22	48
Setalin™ V 422 E	Wetting Varnishes. Sheetfed- and webfed offset inks. Metal deco inks (3-piece can). Low odour inks.	Tinfree version of V414. Low bronzing. Good flow, very good pigment wetting. Gloss. Due to character an improved hold out. Lower tack. Low odour.	coconut	62	8	45	70
Setalin™ V 438 E	Sheetfed- and webfed offset inks.	Fast setting. Good pigment wetting. High gloss.	linseed	68	8	22	40
Setalin™ V 456 E	Sheetfed- and webfed offset inks.	Low bronzing. Very good pigment wetting. High gloss.	linseed	66	10	115	28
Setalin™ V 457 E	Sheetfed- and webfed offset inks.	Tin free version of V456. Low bronzing. Very good pigment wetting. High gloss.	linseed	65	10	115	28
Synkyd™ 50 E	Offset inks. Heatset. Coldset. Screen inks. Letterpress inks. Flush varnishes.	High solubility in mineral distillates. Alkyd "alternative". Low polarity. Better water resistance. Higher gloss. Fast setting. Improved transfer.	soya bean	46	20	10	26
Trionol™ 3000 E	Sheetfed- and webfed offset inks.	Stable rheology under higher shear conditions. Low misting. Combines high gloss with fast set speed and good drying.	linseed	73	8	14	36
Trionol™ 9000 E	Intaglio (water-wipe) inks.	good through drying. Water dilutable. Additive to increase water pick-up.	linseed	67	44	30	>80

## Setalin and Trionol Alkyds





<b>Varnishes</b>								
<b>Wetting varnishes</b>								
<b>Product</b>	<b>Applications</b>	<b>Features</b>	<b>Characteristics</b>					
			<b>Drying oil / alkyd type</b>	<b>Mineral distillate type</b>	<b>Non-volatiles (%)</b>	<b>Viscosity at 23 °C at 25 s<sup>-1</sup> (Pa.s)</b>		<b>Tack, 1 min at 100 mpm</b>
						<b>typical value</b>		
				<b>Viscosity</b>	<b>p-Oswald</b>	<b>typical value</b>		
Eco-set™ 4002 E	Sheetfed, phenol formaldehyde free systems.	Good wetting, low tack and low misting, fast setting, very good lithographic properties.	linseed	280 - 310	80	120	0,9	250
Eco-set™ 4025 E	Sheetfed, phenol formaldehyde free systems.	Good wetting, low tack and low misting, very good lithographic properties.	linseed/MER		100	130	0,87	255
Uroset™ 100S E	Pigment concentrates. Flushes. Offset, metal deco and letterpress inks.	Best grinding properties. Excellent pigment wetting. High pigment loading.	linseed	260 - 290	85	10	0,99	N/A
Uroset™ 4001 E	Pigment dispersions, high gloss sheetfed, 100% soya based systems.	Excellent pigment wetting, high pigment loading, good film forming properties.	soya bean		100	25	0,99	300
Uroset™ 7150 E	Pigment dispersions. Sheetfed. Quickset. Gloss offset.	Excellent pigment wetting. High pigment loading. Combines fast setting with high gloss. Very good rheological stability and press stability. Good water balance.	linseed	260 - 290	70	77	0,92	210
<b>Gloss varnishes</b>								
<b>Product</b>	<b>Applications</b>	<b>Features</b>	<b>Characteristics</b>					
			<b>Drying oil / alkyd type</b>	<b>Mineral distillate type</b>	<b>Non-volatiles (%)</b>	<b>Viscosity at 23 °C at 25 s<sup>-1</sup> (Pa.s)</b>		<b>Tack, 1 min at 100 mpm</b>
						<b>typical value</b>		
				<b>Viscosity</b>	<b>p-Oswald</b>	<b>typical value</b>		
Cinergi™ 7000 E	Sheetfed. Letterpress, metal deco and screen inks. Mineral distillate free inks.	Very high gloss. Very good water balance when using alcohol based fountain solutions. Very good transfer.	linseed	N/A	100	400	0,9	215
Cinergi™ 8000 E	High gloss inks. Mineral distillate free inks.	Very high gloss. Alkyd replacement. Fast setting. Low water sensitivity. Very good rub resistance. Forms tough films.	blend	N/A	100	65	0,9	210
Cinergi™ 8001 E	High gloss inks. Mineral distillate free inks.	Very high gloss. Alkyd replacement. Fast setting. Low water sensitivity. Very good rub resistance. Forms tough films.	blend	N/A	100	65	0,9	210
<b>Sheetfed Varnishes Specialties</b>								
<b>Product</b>	<b>Applications</b>	<b>Features</b>	<b>Characteristics</b>					
			<b>Drying oil / alkyd type</b>	<b>Mineral distillate type</b>	<b>Non-volatiles (%)</b>	<b>Viscosity at 23 °C at 25 s<sup>-1</sup> (Pa.s)</b>		<b>Tack, 1 min at 100 mpm</b>
						<b>typical value</b>		
				<b>Viscosity</b>	<b>p-Oswald</b>	<b>typical value</b>		
Cinergi™ 2000 E	Inks for non-absorbing substrates. Sheetfed- and webfed offset inks. Metal deco inks.	Film forming. Low bronzing. Good litho properties. Good adhesion.	blend	N/A	100	10	0,99	N/A
Cinergi™ 2100 E	Metallic inks.	Disperse metallic pigments easily. High pigment loading. Maintain leafing power. Good transfer. Long shelf life.	linseed	260 - 290	78	180	0,97	475
Cinergi™ 4170 E	Offset inks.	Very good rub and scuff resistance.	tung oil + linseed	N/A	100	135	0,95	300

## Varnishes

### Sheetfed Varnishes Letdown

Product	Applications	Features	Characteristics					
			Drying oil / alkyd type	Mineral distillate type	Non-volatiles (%)	Viscosity at 23 °C at 25 s <sup>-1</sup> (Pa.s)		Tack, 1 min at 100 mpm
						typical value		
				Viscosity	p-Oswald	typical value		
Eco-set™ 4300 E	Sheetfed, phenol formaldehyde free systems.	Low tack and low misting, fast setting, very good lithographic properties.	linseed	280 - 310	75	150	0,75	140
Eco-set™ 4330 E	Sheetfed, phenol formaldehyde free systems.	Low tack and low misting, very good lithographic properties.	linseed/MER	n.a.	100	90	0,85	230
Cinergi™ 2239 E	Sheetfed. Quickset. Letdown.	Gel varnish. High gloss and fast setting. Good water balance. Excellent rheology- and press stability.	N/A	280 - 310	60	120	0,83	140
Cinergi™ 7101 E	Sheetfed. Quickset. Letdown.	Gel varnish. High gloss and fast setting. Good water balance. Excellent rheology- and press stability.	linseed	280 - 310	68	332	0,75	172
Cinergi™ 7105 E	Mineral oil free sheetfed inks. Letdown.	Low misting. Good gloss. Good water behavior.	blend + ester solvents	ester solvents	100	75	0,8	260
Cinergi™ 7106 E	Sheetfed. Quickset. Letdown.	Structured, visco-elastic letdown varnish. Fast setting combined with high gloss. Good press stability (on high speed presses). Very good litho properties and stability of rheology.	ester solvents	260 - 310	64	275	0,7	125
Cinergi™ 7107 E	Sheetfed. Quickset. Letdown.	Structured, visco-elastic letdown varnish. Fast setting combined with high gloss. Good flow. Good litho properties. Excellent print sharpness.	linseed	280 - 310	75	230	0,76	206

### Webfed Varnishes

Product	Applications	Features	Characteristics					
			Drying oil / alkyd type	Mineral distillate type	Non-volatiles (%)	Viscosity at 23 °C at 25 s <sup>-1</sup> (Pa.s)		Tack, 1 min at 100 mpm
						typical value		
				Viscosity	p-Oswald	typical value		
Webvar™ 1100 E	Heatset. Coldset (news ink).	Highly structured letdown varnish. High gloss and excellent printability on fast running heatset presses. Very good dot sharpness. Good tack and press stability.	soya bean	240 - 290	60	88	0,84	110
Webvar™ 1200 E	Pigment dispersions. High gloss offset.	Replace alkyds in varnishes and inks. Fast setting. High gloss. Low water sensitivity. Good rub resistance.	soya bean	N/A	100	5,5	0,99	55
Webvar™ 1230 E	Coldset, for grinding and letdown.	Excellent transfer and litho behavior, excellent printability and press stability.		280 - 310	44	27	0,95	170
Webvar™ 2317 E	Coldset. News ink. No heat web offset.	Fast set speed. Excellent printability.	N/A	N/A	45	25	0,94	135

Overprint Varnishes							
Base							
Product	Applications	Composition	Features	Characteristics			
				Drying oil type	Non-volatiles in mineral distillate* (%)	Viscosity at 23 °C at 25 s <sup>-1</sup> (Pa.s) typ. value	Tack, 1 min at 100 mpm typ. value
Miraglaze™ 1810 base E	Gelled overprint varnish base. Wet-on-wet and wet-on-dry.	Varnish without wax, no driers	Good gloss, fast setting.	blend	75 in 260 - 290	90	130
Miraglaze™ 8834 base E	Overprint varnish base. Wet-on-wet and wet-on-dry	Varnish with wax and no driers.	Combines very high gloss with fast setting and high rub resistance. Good tackability.	tung	60 in 260 - 290	12	90 at 85 mpm
Miraglaze™ 8909 base E	Gelled overprint varnish base. Wet-on-wet and wet-on-dry.	Varnish with wax and no driers.	Fast drying and setting in combination with very high gloss.	D.C.O / tung	71 in 260 - 290	10	75 at 85 mpm
Gloss							
Product	Applications	Composition	Features	Characteristics			
				Drying oil type	Non-volatiles in mineral distillate* (%)	Viscosity at 23 °C at 25 s <sup>-1</sup> (Pa.s) typ. value	Tack, 1 min at 100 mpm typ. value
Miraglaze™ 8834 E	Complete overprint varnish. Wet-on-wet and wet-on-dry.	Varnish with wax and driers.	Combines very high gloss with fast drying and high rub resistance. Cost-effective OPV.	tung	60 in 260 - 290	12	90 at 85 mpm
Miraglaze™ 8909 E	Complete overprint varnish. Wet-on-wet and wet-on-dry.	Varnish with wax and driers.	Combines very high gloss with high rub resistance. Excellent leveling	D.C.O / tung	70 in 260 - 290	4	75 at 85 mpm
Satin							
Product	Applications	Composition	Features	Characteristics			
				Drying oil type	Non-volatiles in mineral distillate* (%)	Viscosity at 23 °C at 25 s <sup>-1</sup> (Pa.s) typ. value	Tack, 1 min at 100 mpm typ. value
Miraglaze™ 3100 E	Complete satin overprint varnish. Sealer	Varnish with wax, driers and matting agent.	Very good drying. Good tack stability. Semi-matt (satin). Good rub resistance. Fast setting.	blend	82 in 280 - 310	25	85
Matt							
Product	Applications	Composition	Features	Characteristics			
				Drying oil type	Non-volatiles in mineral distillate* (%)	Viscosity at 23 °C at 25 s <sup>-1</sup> (Pa.s) typ. value	Tack, 1 min at 100 mpm typ. value
Miradull™ E	Complete matt overprint varnish.	Varnish with wax, driers and matting agent.	High degree of matting. Fast set speed and fast drying combined with high rub resistance	tung / alkyd	75 in 240 - 270	43	95 at 85 mpm

## Metal Decorating

### Two Piece Can

Product	Applications	Product Description	Features	Characteristics		
				Solvent type	Acid value (mg KOH/g substance)	Viscosity at 23 °C at 25 s <sup>1</sup> (Pa-s)
					typical value	typical value
Decotherm™ 220 E	Dry offset / spindle printing.	Polyester resin in Tridecanol / Dobanol 23.	Gloss, printability MEK resistance.	TDA / Dobanol 23	50	200
Decotherm™ 255 E	Dry offset / spindle printing.	Catalyst (blocked).	Curing agent for polyester / melamine systems.	TXIB	105	2,5
Decotherm™ 260 E	Dry offset / spindle printing.	Polyester resin in Tripropylene glycol.	High performance, high gloss, fast cure, overcoatable with water-based coating.	TPG	26	100
Decotherm™ 290 E	Dry offset / spindle printing.	Structured polyester in TDA / TPG / mineral distillate.	Very low misting. Very fast curing. Low tack.	TDA / TPG / 260 - 290 distillate	35	105

### Three Piece Can

Product	Applications	Product Description	Features	Characteristics		
				Solvent type	Acid value (mg KOH/g substance)	Viscosity at 23 °C at 25 s <sup>1</sup> (Pa-s)
					typical value	typical value
Decotherm™ 100 E	Lithographic / flat sheet printing.	Complete varnish with high gloss and good adhesion on steel, tin and aluminum.	Very fast drying.	Mineral distillate 260 - 290	N/A	50
Setalin™ V 402 E	Lithographic / flat sheet printing.	Soya bean oil alkyd for colors. Low odour.	Fast setting.	none	9	37
Setalin™ V 407 E	Lithographic / flat sheet printing.	Sunflower oil based alkyd for mainly white inks.	Low yellowing and low odour.	none	8	45
Setalin™ V 418 E	Wetting Varnishes. Sheetfed- and webfed offset inks. Metal deco inks (3-piece can). Low odour inks.	Coconut oil based alkyd.	Low bronzing. Good flow, very good pigment wetting. Gloss. Due to character an improved hold out. Lower tack. Low odour.	none	8	22
Setalin™ V 422 E	Wetting Varnishes. Sheetfed- and webfed offset inks. Metal deco inks (3-piece can). Low odour inks.	Coconut oil based alkyd.	Tinfree version of V414. Low bronzing. Good flow, very good pigment wetting. Gloss. Due to character an improved hold out. Lower tack. Low odour.	none	8	45

## Wax Compounds Sheetfed

Product	Applications	Type	Features	Characteristics		
				Vegetable oil (alkyd) type	Solids (%)	Average particle size (µm)
Fluoron™ 4800 E	Sheetfed; heatset. Mineral distillate free inks.	PTFE compound.	Combines high gloss with good abrasion resistance with very good slip. Low usage level.	blend	100	3
Ultrapoly™ 210 E	Sheetfed. Mineral distillate free inks.	PE compound.	100% non-volatile. Very high rub resistance and good gloss.	blend / alkyd	100	2,5
Ultrapoly™ 990 E	Sheetfed. Mineral distillate free inks.	PE compound.	Very good pumpability. 100% non-volatile. Very high rub resistance and good gloss.	blend	100	2,2

## Heatset and PTFE Wax Compounds

Product	Applications	Type	Features	Characteristics		
				Vegetable oil (alkyd) type	Solids (%)	Average particle size (µm)
Fluoron™ 4800 E	Sheetfed. Heatset. Mineral distillate free inks.	PTFE compound.	Combines high gloss with good abrasion resistance with very good slip. Low usage level.	blend	100	3
Stirinol™ 385 E	Heatset.	Microcrystalline wax / PTFE compound.	Very good gloss and slip with very good rub, abrasion and scratch resistance. Easy incorporation.	mineral distillate	59	3

<b>Micronised Waxes</b>					
<b>Product</b>	<b>Applications</b>	<b>Type</b>	<b>Features</b>	<b>Characteristics</b>	
				<b>Melting point (°C)</b>	<b>Average particle size (µm)</b>
Polysperse™ E	Sheetfed, Heatset and liquid inks.	Micronised FT wax.	Good rub resistance and good slip.	98	3

<b>Ink and Press Additives</b>				
<b>Product</b>	<b>Applications</b>	<b>Features</b>	<b>Form</b>	<b>Benefits</b>
Optilith™ 3 E	Offset inks. Flushes.	Water balance regulator.	varnish	Regulates the water balance without influencing other ink properties. Gives a fast water break during flush production.
Optilith™ 1181 E	Offset inks.	BHT anti-oxidant.	liquid	Anti-skinning solution, low usage, easy to handle.
Optilith™ XJ12 E	Offset inks	Anti-setoff	compound	Inhibits setoff, 15 % non VOC

**Product Selections for Flexo, Gravure and Digital Printing** Characterization Typical Properties

<b>Resins for Solvent Based Liquid Inks</b>					
<b>Polyketones</b>					
<b>Product</b>	<b>Applications</b>	<b>Features</b>	<b>Characteristics</b>		
			<b>Acid value (mg KOH/g substance)</b>	<b>Hydroxyl number (mg KOH/g substance)</b>	<b>Melting Point (°C)</b>
Reactol™ 1717	Flexo and gravure inks and lacquers. Screen inks. Ballpoint inks. Jet inks.	Broad compatibility with solvents and other resins. Very good pigment wetting and high gloss. Reduces gel point of polyamide inks. Improves adhesion. Low colour.	<1	270	100
Reactol™ 1717 H	Flexo and gravure inks and lacquers. Screen inks. Ballpoint inks. Jet inks.	Broad compatibility with solvents and other resins. Very good pigment wetting and high gloss. Reduces gel point of polyamide inks. Improves adhesion. Low colour. Excellent solvent release. Higher melt point, improved solvent release. Improved heat resistance and block resistance.	<1	270	120
<b>Co Solvent Soluble Polyamides</b>					
<b>Product</b>	<b>Applications</b>	<b>Features</b>	<b>Characteristics</b>		
			<b>Acid value (mg KOH/g substance)</b>	<b>Hydroxyl number (mg KOH/g substance)</b>	<b>Melting Point (°C)</b>
Flex-Rez™ 1074 CS C	Flexo and gravure inks and lacquers for polyolefin films. Cold seal release lacquers.	Good solvent release. High gloss. Excellent adhesion on treated films. Excellent cold seal release properties.	<6	<1	110
Flex-Rez™ 1094 CS C	Flexo and gravure inks and lacquers for polyolefin films.	Very good gel resistance. Very high gloss. Excellent adhesion on treated films.	<6	<1	110
Flex-Rez™ 3370 CS C	Flexo and gravure inks and lacquers for polyolefin films.	Improved gel resistance.	<6	<1	100
<b>Alcohol Dilutable Polyamides</b>					
<b>Product</b>	<b>Applications</b>	<b>Features</b>	<b>Characteristics</b>		
			<b>Acid value (mg KOH/g substance)</b>	<b>Hydroxyl number (mg KOH/g substance)</b>	<b>Melting Point (°C)</b>
Flex-Rez™ 2433 AD C	Flexo and gravure inks and lacquers for polyolefin films.	Very high gloss.	<6	<1	120
Flex-Rez™ 5111 AD C	Flexo and gravure inks and lacquers for polyolefin films. Deepfreeze packaging (bread bags).	Excellent gel resistance. High gloss combined with excellent water and ice crinkle resistance.	<4	<1	100
<b>Alcohol Soluble Polyamides</b>					
<b>Product</b>	<b>Applications</b>	<b>Features</b>	<b>Characteristics</b>		
			<b>Acid value (mg KOH/g substance)</b>	<b>Hydroxyl number (mg KOH/g substance)</b>	<b>Melting Point (°C)</b>
Flex-Rez™ 1084 AS C	Flexo and gravure inks and lacquers for polyolefin films. Modifying resin.	Higher melt point. Very high heat resistance. No gel formation. Non-film forming.	<15	<1	185
Flex-Rez™ 1155 AS C	Flexo and gravure inks 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.	<6	<1	115
<b>Maleic and Fumaric Modified Rosin Resins. Polyesters and Phenolics.</b>					
<b>Product</b>	<b>Applications</b>	<b>Features</b>	<b>Characteristics</b>		
			<b>Acid value (mg KOH/g substance)</b>	<b>Hydroxyl number (mg KOH/g substance)</b>	<b>Melting Point (°C)</b>
Hydro-Rez™ 5614 A	Flexo and gravure inks and lacquers. Water / Alcohol soluble inks and lacquers.	Rapid water release in aqueous systems. Improves gloss and adhesion. Good flexibility. Low viscosity.	200	<15	160
Hydro-Rez™ 5626 A	Flexo and gravure inks and lacquers. Water / Alcohol soluble inks and lacquers.	Rapid water release in aqueous systems. Improves gloss and adhesion in aqueous systems. Good flexibility. Low viscosity.	200	<15	160
Hydro-Rez™ 6500 A	Flexo and gravure inks and lacquers. Water / Alcohol soluble inks and lacquers.	Excellent rub resistance. Good adhesion on aluminum foil. Good flexibility. Low viscosity.	305	<15	150
Reactol™ 5145 A	Flexo and gravure inks and lacquers. Water / Alcohol soluble inks and lacquers.	Improves gloss and adhesion. Is crosslinkable. Excellent compatibility with cellulose resins (NC, CAP, CAB). Very good heat, product, water, alkali, oil, solvent and block resistance (when cured). Flexible and fast solvent release.	130	130	120

Solvent Borne Wax Dispersions						
Product	Applications	Type	Features	Characteristics		
				Solvent	Solids (%)	Average particle size (µm)
Polyslip™ FA06 E	Gravure and flexo inks.	Synthetic wax compound.	Combines good rub and scratch resistance with high gloss.	Iso-propanol	40	15
Polyslip™ FA09 E	Gravure and flexo inks.	PE compound.	Combines good rub and scratch resistance with high gloss.	Iso-propanol	25	10
Polyslip™ VM 55 E	Metallic base coats.	PE compound.	Quick drying. Minimizes migration.	Xylene / n-Butyacetate	6	8
Polyslip™ VM 70 E	3-piece internals and 2-piec externals. Gold lacquers.	Synthetic wax. Carnauba wax.	High slip, scratch, slip and leveling.	Iso-propanol / Solvesso 150	20	4
Polyslip™ VS86 E	Can coatings	Mixtures of waxes.	Excellent slip and scratch resistance with good leveling and no loss of gloss.	Solvesso 150, n-Butanol, Methoxypropanol	15	8

Resins for Water Based Liquid Inks							
Self Crosslinking Acrylic Emulsions							
Product	Applications	Features	Characteristics				
			Solids (%)	Viscosity (mPa-s)	pH	Tg (°C)	Acid value (mg KOH/g substance)
Hydro-Rez™ 800 E	Flexo and gravure inks and OPV.	Selfcrosslinking emulsion with excellent adhesion, water resistance, drying properties, good temperature resistance (>200°C).	44	300	8,9	N/A	19
Acrylic Emulsions							
Product	Applications	Features	Characteristics				
			Solids (%)	Viscosity (mPa-s)	pH	Tg (°C)	Acid value (mg KOH/g substance)
Hydro-Rez™ 655 E	Flexo and gravure inks and OPV.	General purpose emulsion with excellent resolubility and heatseal properties. APE free.	51	100	2,1	140	200
Hydro-Rez™ 3013 E	Flexo and gravure inks. Inks for tissues, wall paper and wrapping paper.	High rub resistance. High grease resistance.	30	125	8,5	22	55
Maleic and Fumaric Modified Rosin Resins							
Product	Applications	Features	Characteristics				
			Solids (%)	Viscosity (mPa-s)	pH	Tg (°C)	Acid value (mg KOH/g substance)
Hydro-Rez™ 5614 A	Flexo and gravure inks and lacquers. Water / alcohol soluble inks and lacquers.	Rapid water release in aqueous systems. Improves gloss and adhesion. Good flexibility. Low viscosity.	100	-	-	N/A	200
Hydro-Rez™ 5626 A	Flexo and gravure inks and lacquers. Water / alcohol soluble inks and lacquers.	Excellent rub resistance. Good adhesion on aluminum foil. Good flexibility. Low viscosity.	100	-	-	N/A	200
Hydro-Rez™ 6500 A	Flexo and gravure inks and lacquers. Water / alcohol soluble inks and lacquers.	Rapid water release in aqueous systems. Improves gloss and adhesion. Good flexibility. Low viscosity.	100	-	-	N/A	305

## Water Borne Wax Emulsions

Product	Applications	Type	Features	Characteristics		
				Solvent	Solids (%)	Average particle size (µm)
Flexonic™ EN41 E	w/b inks and overprint varnishes.	PE wax dispersion.	Good rub and scratch resistance with gloss retention.	water	33	50 nm
Flexonic™ W378 E	w/b inks and overprint varnishes.	PE wax dispersion.	Excellent compatibility with good rub and scratch resistance with gloss retention.	water	55	6 µm

## Resins for Publication Gravure Inks

### Grinding Resins

Product	Resin Type	Features	Character		Flow time (typical value)				Dilutability (typical value)			
			Type of Metal(s)	Acid Value (mg KOH/g) typical value	Solids content (%)	Type of cup	Temp. (°C)	Value (s)	Solids content (%)	Type of cup	Final time (s)	Value (%)
Erkazit™ 4902 E	Rosin based resinate.	Excellent pigment wetting. Very fast drying. Good block resistance and fast solvent release.	Ca / Zn / Mg	33	50	DIN #4	20	48	50	GS #3	30	64
Erkazit™ 4905 E	Rosin based resinate.	Excellent pigment wetting especially with Milori blue. Very fast drying. Good block resistance and fast solvent release.	Ca / Zn / Mg	30	45	DIN #4	23	27	45	GS #3	30	55
Erkazit™ 4908 E	Rosin based resinate.	Excellent pigment wetting. Very fast drying. Low viscosity and good solubility.	Ca / Zn / Mg	28	45	DIN #4	20	50	45	GS #3	30	71

### Letdown Resins

Product	Resin Type	Features	Character		Flow time (typical value)				Dilutability (typical value)			
			Type of Metal(s)	Acid Value (mg KOH/g) typical value	Solids content (%)	Type of cup	Temp. (°C)	Value (s)	Solids content (%)	Type of cup	Final time (s)	Value (%)
Erkazit™ 3800 E	Highly Modified hydrocarbon resin.	Lower resin content and lower pigment content while maintaining good printing properties. Medium to high dilutability.	N/A	12	35	DIN #4	20	30	35	GS #3	30	135
Erkazit™ 4000 E	Highly Modified hydrocarbon resin.	Lower resin content and lower pigment content while maintaining good printing properties. Medium to high dilutability.	N/A	13	35	DIN #4	20	29	35	GS #3	30	145
Erkazit™ 7861 E	Phenolic modified rosin resin.	Good dilutability. Fast drying. Good block resistance.	N/A	27	35	DIN #4	20	70	35	GS #3	30	160









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