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FlintGroup

Resins Portfolio

Globally available. Developed by Experts!

PRODUCT FAMILIES

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PRINTPUR – Polyurethane resins

2

PERCRYL – Acrylic & Heat Sealing resins

3

PRINTESTER – Polyester resins

4

PRINTCAT - Titanate Adhesion Promoter

5

PRINTSPERSE - Dispersant

Polymeric Plasticizers

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- We offer a wide range of plasticizers with specific chemical nature to meet the right balance with large number of film forming resins.
- Aromatic Solvents free
- Tin free
- High Molecular Weight
- Low Migration
- All the products are designed on ink sector but can be used in other applications also to improve adhesion on metal and plastic substrates.



Polymeric Plasticizers

Polymeric Plasticizers

| Product | Type | Solid Content | Viscosity mPa.s | Acid Value (mg KOH/g) | Hydroxy Number (mg KOH/g) | Application |
|----------------------|---------------------------|---------------|-----------------|-----------------------|---------------------------|--|
| PERCRYL 101 | Acrylic Resin | 50% EA | 650 ± 150 | 0 | 0 | <i>Especially designed for NC. It provides good adhesion on Alu foil. Very good yellowing resistance under thermal stress. Suitable for Direct Food Contact. Tin Free.</i> |
| PRINTESTER 102 75 AE | Linear Polyester | 75% EA | 3500 ± 500 | 10 | 27 | <i>Polysebacate especially designed for PVC and vinylic resin. It provides good adhesion on plastic substrates.</i> |
| PRINTESTER 105 | Linear Polyester | 100% | 17500 ± 2500 | <2 | 42 ± 6 | <i>Especially designed for PRINTPUR HM, PU polyester resin. High compatibility with a broad range of polymers. Very Good Pigment wetting.</i> |
| PRINTESTER 402 | Linear Polyester in iPrOH | 80% | 1500 ± 500 | <12 | 220 | <i>Especially designed for NC. High compatibility with a broad range of polymers. Very Good Pigment wetting.</i> |



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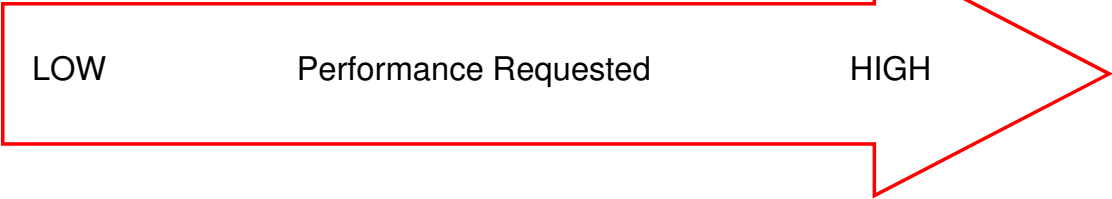
PU SELECTOR: PERFORMANCE & LAMINATE

| | | |
|------------------------------|---------------------------|--|
| OPP/OPP OPP/CPP OPP/PE | PA/PE OPA/PE PET/PE | PET/ALU/CPP PET/ALU/PA/CPP PET/ALU/PET/CPP |
|------------------------------|---------------------------|--|

ALIPHATIC PU

SEMIALIPHATIC PU

NC / PU PLASTICIZERS



PRINTPUR Selector

PRINTPUR LM Selector

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TDI

MDI

PRINTPUR LM 401

PRINTPUR LM 410

Improved resolubility

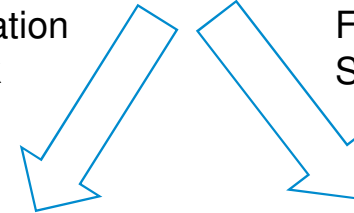
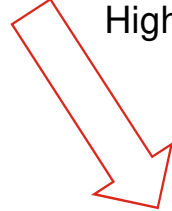
High pigment wetting

Lamination ink

Film forming Surface ink

Crinkle & Rub resistance

Grinding



PRINTPUR LM 403

PRINTPUR LM 407

PRINTPUR LM 443

PRINTPUR LM 404

- PRINTPUR LM are especially designed as Plasticizers in ink formulations. All the products are Tin free

Softer grades:

- ✓ Superior plasticizing characteristics
- ✓ Low solvent retention
- ✓ Nitrocellulose compatibility
- ✓ Increased levels of adhesion

Harder grades:

- ✓ Improved film strength
- ✓ Better resistance to heat seal

PRINTPUR LM

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| Product | Viscosity mPa.s@25°C | Solvents | Solid Content | Properties |
|-----------------|-------------------------|-------------------------------|---------------|---|
| PRINTPUR LM 401 | 1000 | Ethanol | 75% | <i>General purpose plasticizer for gravure and flexo NC Inks. Good balance Hardness / Softness. Also available in Ethyl Acetate version.</i> |
| PRINTPUR LM 403 | 400 | Ethyl Acetate | 80% | <i>Plasticizer for gravure and flexo NC Inks, it can be used as replacement of phthalates. In combination with PRINTPUR HM series, can improve the resolubility of the Ink.</i> |
| PRINTPUR LM 404 | 1000 | Ethyl Acetate | 70% | <i>Soft system based on MDI with very good Printability especially for Gravure at high Printing speed. Film forming resin with low residual tackiness</i> |
| PRINTPUR LM 407 | 3500 | Solventless | 100% | <i>Especially for pigment grinding (chips and bases). It can be used in combination with other PRINTPUR grades to increase the flexibility of the system. OH functionality.</i> |
| PRINTPUR LM 410 | 1200 | Ethyl Acetate | 75% | <i>LM 401 TDI free version, low solvent retention</i> |
| PRINTPUR LM 443 | 1000 | Isopropanole Ethyl Acetate | 75% | <i>Standard grade for Gravure inks. High Water, Grease and Milk Resistance.</i> |

PRINTPUR HM Semialiphatic

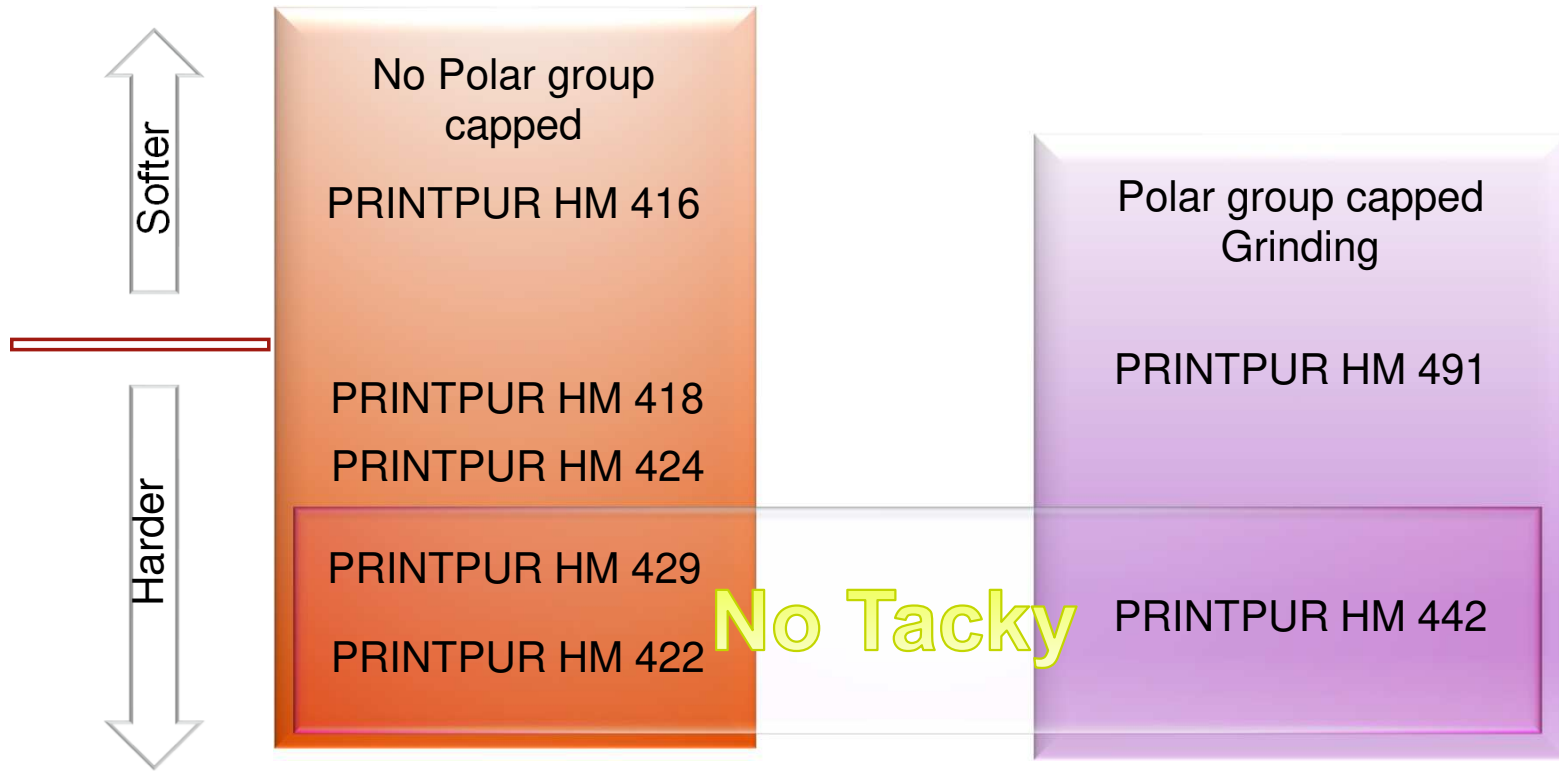
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- PRINTPUR HM are more complex urethane polymers with film-forming properties
- Flint Group offers a complete range from softer and more elastic products to stronger and more rigid urethanes
- After solvent evaporation, PRINTPUR HM exhibit minimal surface tack
- Excellent adhesion and elastomeric characteristics
- As a result of higher molecular weight, PRINTPUR HM are supplied at low solids
- Typical usage ratio NC/PU on solid for this grade is 1/1,5 – 1/2



PRINTPUR HM Semialiphatic

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PRINTPUR HM Selector

PRINTPUR HM Semialiphatic

| Product | Viscosity mPa.s@25°C | Solvents | Solid Content | Amine N. mgKOH/g | Properties |
|-----------------|-------------------------|--|------------------|---------------------|--|
| PRINTPUR HM 416 | 1000 | Ethanol Ethyl acetate (80/20) | 42% | - | <i>Softer Version of PRINTPUR HM 424 to improve the Bonding Strength.</i> |
| PRINTPUR HM 418 | 6000 | Ethanol Ethyl acetate (75/25) | 55% | - | <i>High Solid Content Grade. Excellent adhesion to the plastic film, low solvent retention, good flexibility, tack free. Very good properties of heat resistance and it can be used also for deep-freeze application. Very good grease resistance.</i> |
| PRINTPUR HM 422 | 3000 | Ethanol Ethyl acetate (10/90) | 46% | - | <i>Very hard film forming PU that exhibits high block and heat resistance. No tendency to scumming during high speed printing processes.</i> |
| PRINTPUR HM 424 | 3650 | Ethanol Ethyl acetate (80/20) | 45% | - | <i>General purpose. Good softness/hardness balance providing good Printability and Bonding strength in the most common laminate systems.</i> |
| PRINTPUR HM 429 | 8000 | Ethanol / Ethyl acetate (60/40) | 54% | - | <i>Hard film exhibits high block and heat resistance. No tendency to scumming during high speed printing processes. Excellent adhesion to the plastic film, low solvent retention, good flexibility, tack free and outstanding lamination bond strength.</i> |
| PRINTPUR HM 442 | 1100 | Ethanol Ethyl acetate (79/21) | 42% | 5 | <i>Film forming resin with elastomeric properties. It is recommended for both flexo and gravure ink formulations on wide variety of flexible films. It is suitable for extrusion lamination to get very high bonding strength.</i> |
| PRINTPUR HM 491 | 1800 | nPropyl acetate Propanol (34/66) | 45% | - | <i>Film forming resin with elastomeric properties. It offers an excellent adhesion and good heat sealing resistance. It shows high wettability and can be used in direct pigment grinding.</i> |

PRINTPUR HM ALIPHATIC

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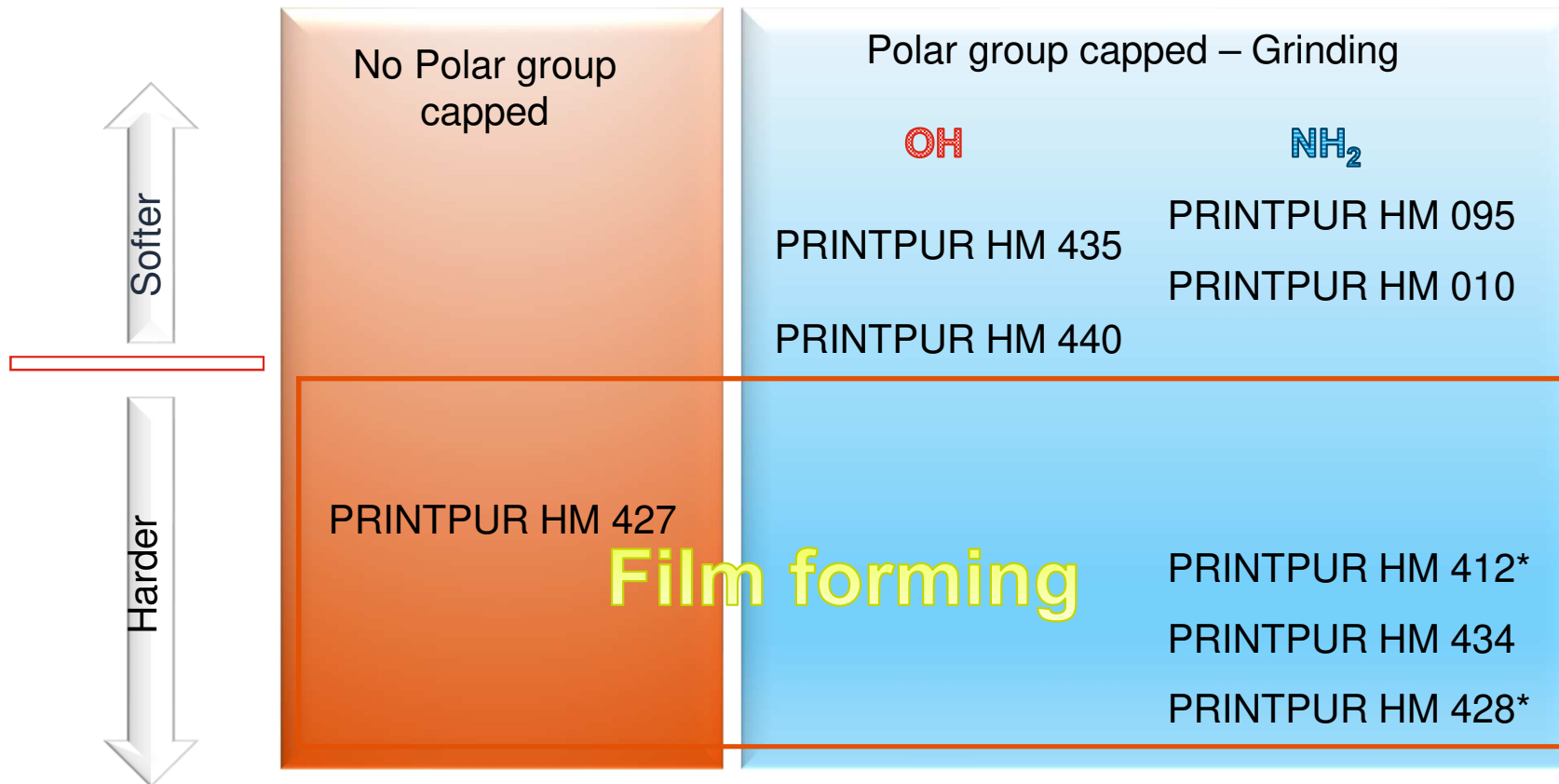
- Aliphatic nature makes this range of products suitable for the formulation of printing ink for flexography and rotogravure with characteristics like:
- Excellent alcohol tolerance, also in combination with NC
- Non yellowing
- Thermal resistance and therefore suitable for retorting, sterilization and pasteurization process



PRINTPUR HM

PRINTPUR HM Aliphatic

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Film forming

* EtOH free

PRINTPUR HM ALIPHATIC

| Product | Viscosity mPa.s@25°C | Solvents | Solid Content | Amine N. mgKOH/g | Properties |
|-----------------|-------------------------|--|---------------|---------------------|---|
| PRINTPUR HM 010 | 2400 | Ethanol Ethyl acetate (80/20) | 55% | 5 | <i>High Bonding strength also in Extrusion lamination. Very good properties of heat resistance. High adhesion and Bonding strength with various substrates High Bonding strength also in Extrusion lamination. High compatibility with PVB. High wettability in Pigment grinding.</i> |
| PRINTPUR HM 095 | 300 | Ethyl Acetate | 36% | 3 | <i>Excellent adhesion to the plastic film, low solvent retention, good flexibility, tack free and outstanding lamination bond strength. Very good properties of heat resistance. High compatibility with PVB. High wettability in Pigment grinding.</i> |
| PRINTPUR HM 412 | 1000 | Isopropanol / Ethyl Acetate (40/60) | 43% | - | <i>Film forming resin with no residual tackyness. High adhesion and Bonding Strength in several applications and especially with PET substrates.</i> |
| PRINTPUR HM 427 | 2500 | Ethanol / Ethyl acetate (70/30) | 51% | - | <i>Pure Aliphatic Poly(urethane) for retorting Applications. No yellowing Tendency and High Stability in Thermal Processes (sterilization).</i> |
| PRINTPUR HM 428 | 1800 | nPropanol / nPropyl Acetate (30/70) | 35% | 5 | <i>Very hard film. High adhesion and Bonding strength with various substrates High Bonding strength also in Extrusion lamination. High compatibility with PVB. High wettability in Pigment grinding.</i> |
| PRINTPUR HM 434 | 850 | Ethanol / Ethyl acetate (70/30) | 55% | 4 | <i>Film forming resin with no residual tackyness for NC free Lamination Inks especially in Flexo systems. High compatibility with PVB. High wettability in Pigment grinding.</i> |
| PRINTPUR HM 435 | 2300 | Ethanol / Ethyl Acetate (2/98) | 34% | - | <i>Film Forming resin for NC free printing Inks. Very good properties of heat resistance. Compatible with NC, PVC or PVB resins. High wettability in Pigment grinding.</i> |
| PRINTPUR HM 440 | 1900 | Ethyl Acetate | 33% | - | <i>High adhesion and Bonding Strength in several applications and especially with PET substrates. Suitable for Mono-solvent PVC based Retortable Inks. High wettability in Pigment grinding.</i> |

PRINTESTER & PERCRYL

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Our experience in manufacturing resins makes Flint Group the right partner. We offer polyester and acrylic resins for OPV & coating formulation:

- OH polyesters for application in 2K OPV
- Low OH acrylic resins aromatic free for 2K coating
- Thermoplastic acrylic resins for 1K application



COATING & OPV

PRINTESTER

| Product | Solvent | Solid content | Viscosity mPa.s@25°C | Hydroxy Number mg KOH/g on solid | Acid Value mg KOH/g on solid | It can be Properties |
|----------------------|---------------|---------------|----------------------|----------------------------------|------------------------------|--|
| PRINTESTER 044 | Ethyl Acetate | 70 | 1200 - 1800 | 160 | < 3 | <i>It can be used in 2K system in combination with polyisocyanate. It is indicated for high performance OPV. It exhibits high gloss, high chemical resistance and fast tack-free.</i> |
| PRINTESTER 101 | Ethyl Acetate | 80 | 500 - 900 | 210 | < 5 | <i>It can be used to formulate 2K OPV and inks in combination with polyisocyanate. It is especially indicated for white inks due to the low yellowing and good light fastness.</i> |
| PRINTESTER 105 85 AE | Ethyl Acetate | 85 | 1000-1800 | 42 | < 2 | <i>It can be used to formulate 2K highly flexible coatings in combination with polyisocyanate. It improve the toughness and resistance to wear and abrasion of highly branched polyester. It exhibits very good pigment wetting.</i> |
| PRINTESTER 401 | Ethyl Acetate | 71 | 750-1150 | 160 | 14-21 | <i>This resin is suitable in 2K varnishes and inks in combination with polyisocyanate. It is indicated for high performance OPV. It exhibits high gloss, high chemical resistance and fast tack free.</i> |

PERCRYL

| Product | Solvent | Solid content | Viscosity mPa.s@25°C | Hydroxy Number mg KOH/g on solid | Acid Value mg KOH/g on solid | Tg °C | Properties |
|---------------|---------------|---------------|----------------------|----------------------------------|------------------------------|-------|--|
| Percryl 13 EA | Ethyl Acetate | 50 | 400-1000 | 0 | 20 | 65 | <i>Film forming thermoplastic acrylic resin with good adhesion on metal substrates. Shows high gloss aspect and very good flexibility.</i> |
| Percryl 048 | Ethyl Acetate | 50 | 1400-2000 | 64 | 40 | 53 | <i>Used in the formulation of 1K or 2K system in combination with melamine or polyisocyanate. High acidity improve the adhesion on metal.</i> |
| Percryl 118 | Ethyl Acetate | 40 | 600-1100 | 0 | 10 | 106 | <i>Durable resin with plasticizer and chemical resistance. Good aluminum adhesion it's used in metallization and hot stamping applications (release coating on PET). For formulation of varnishes and primers for paper, for PVC printing and metallic inks.</i> |
| Percryl 145 | Ethyl Acetate | 50 | 650-1050 | 45 | 0 | 70 | <i>Excellent gloss, high chemical resistance and fast-tack-free. Durable resin with plasticizer resistance. Can be formulated as ink and OPV and primers for paper, and plastic substrate. Exhibits a good pigment wetting.</i> |



RESIN FOR HEAT SEALING LACQUER

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- ✓ **PERCRYL are a special class of resins designed for smooth-peel heat sealing formulations**
- ✓ **PERCRYL means also products for PVC free application**
- ✓ **PERCRYL are applied on Alufoil or PET for lid application**
- ✓ **PERCRYL can be sealed on all the common packaging substrates as PS, PVC, PP, PET, PLA**

RESIN FOR HEAT SEALING LACQUER

Rely on us.™

| Product | Suitable Substrate | Solvent-mix | Solid Content % | Viscosity mPa.s @ 25°C | Properties |
|-------------|--------------------|--|-----------------|------------------------|---|
| PERCRYL 119 | Aluminium | Butyl Acetate 54 MEK 46 | 40 | 250 | <i>Resin for the formulation of PVC based Heat Sealing Lacquers.</i> |
| PERCRYL 122 | Aluminium, PET | Propyl Acetate 59 Ethyl Acetate 40 Heptane 1 | 40 | 250 | <i>Resin in low boiling solvent mix, for the formulation of PVC based Heat Sealing Lacquers.</i> |
| PERCRYL 131 | Aluminium | Butyl Acetate 53 MEK 47 | 44 | 1700 | <i>Resin for the formulation of PVC free Lacquers. Good Fat resistance. It can be used also in the formulation of dot coating</i> |
| PERCRYL 135 | Aluminium, PET | Propyl Acetate 61 Ethyl Acetate 35 Heptane 4 | 43 | 1600 | <i>Universal PVC free Lacquers in low boiling solvent mix.</i> |
| PERCRYL 010 | Aluminium, | Propyl Acetate 86 Heptane 14 | 44 | 2000 | <i>Resin for the formulation of PVC based Heat Sealing Lacquers.</i> |

PRINTCAT 508

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- Titanium Phosphate Complex
- High reactivity and good Stability in the Ink System
- High Purity, Low Color and Smell
- Food Packaging Applications. Acetyl Acetonate free.

High quality specifically developed for food packaging applications! Manufactured in Europe!

Adhesion Promoter for Packaging Inks



PRINTSPERSE

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- Exceptionally effective in the dispersion and stabilization of pigments in the bases and concentrates.
- Highly pigment, very stable and low viscosity bases.
- Extremely gloss and transparency pigments dispersion.
- The best benefit is obtained by using in the milling stage.



Dispersant

Flint Group – HSE

Rely on us.™

Our HSE dept can provide full documentation for each specific product in order to support our customers in compliance evaluation of the final product.

- All the substances used for the product manufacture are REACH registered
- All our range is free from SVHC substances
- All our resins are in line with Flint Group's global sustainability platform





Flint Group Resins

Rely on us.™

- A range of products for a wide variety of applications.
- More than 30 years of experience in resins technology.
- Producing more than 20,000 T of resins annually.
- Resin scientists and technicians with expert knowledge.
- A pilot plant focused on future development.

We bring

colour

to the world



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