



Designed in Germany – Made in India

# hubergroup Chemicals Product Portfolio

**hubergroup Chemicals** manufactures specialty chemicals such as Resins, Energy Curable Oligomers & Monomers, Lamination Adhesives, Pigments and Concentrates thereof. Launched in 2020, the company is a division of the international chemical and ink specialist hubergroup, which is based in Germany and has a 260-year history. hubergroup Chemicals specialises in the production of raw materials for use in industrial coatings, printing inks and adhesives for flexible food packaging. The company also develops, scales and manufactures customised solutions for the chemical industry.

## Designed in Germany – Made in India



As one of the largest manufacturers in the chemical sector, it is our motivation to prove ourselves anew every day. In addition to our high-quality standard products, we prioritise three core competencies that we work on daily. Leveraging our diverse chemical expertise, we offer customised analytical support, regulatory knowledge, and individual chemical consulting services. With our team of international experts, we help our clients to make chemical processes more efficient.

A handwritten signature in black ink, appearing to read 'Taner Bicer'.

**Taner Bicer**  
Chief Commercial Officer Chemicals





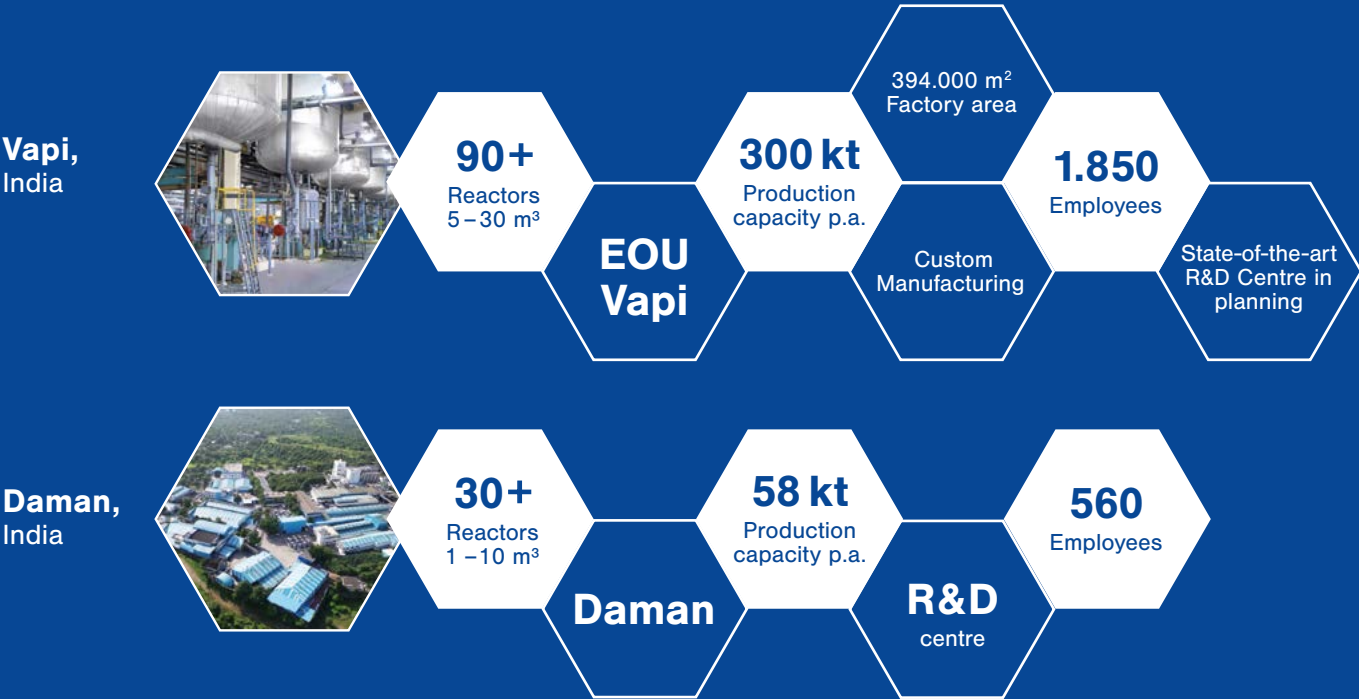
We are nearby and connected



- Accountable & Responsible
- Responsible

- Americas**  
Sales  
Technical Marketing  
Application Technology  
Product Safety & Regulatory Affairs
- Europe**  
hubergroup Corporate Headquarters  
Product Lifecycle Management  
Product Safety & Regulatory Affairs  
Central Analytical Lab  
Intellectual Property  
Innovation Management  
Application Technology  
Business Development  
Technical Marketing  
Sales
- Asia**  
Operations  
Purchasing  
Supply Chain  
Application Technology  
Technical Marketing  
Analytical Lab  
Product Safety & Regulatory Affairs  
Sales

We are a Chemicals Company with Manufacturing Sites in ...



## Business Segments Inks & Industrial Coatings

### Printing Ink Related



#### Printing Inks & Overprint Varnishes

UV-Oligomers  
UV-Monomers  
Ketonic Resins  
Pigments and Concentrates  
Rosin Based Resins  
Polyamide Resins  
PVB Resins  
PU Resins



#### PU Adhesives for Packaging

Solvent-Free and  
Solvent-Based  
Two-Component System  
for flexible packaging

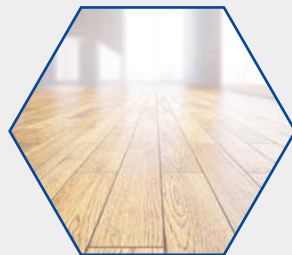
R&D knowledge in Chemicals and  
Printing Inks for a broad range of products from  
Resins to Pigments and Concentrates

### Specialty Applications (Beyond Printing Inks)



#### Custom/Toll Manufacturing

Indian Footprint  
Indian Raw Material Sourcing  
Project Management  
Expertise in Product Safety &  
Regulatory Affairs  
Analytics



#### Industrial Coatings

UV-Oligomers  
UV-Monomers  
Functional Resins  
Ketonic Resins

## Discover our Services

hubergroup Chemicals is one of the largest manufacturers in the chemical sector, offering a broad product portfolio of specialty chemicals, including Pigments and Concentrates, Lamination Adhesives, UV-Monomers, UV-Oligomers and custom manufacturing. We are committed to innovation and excellence, offering a wide array of specialty chemicals tailored to meet the unique demands of our valued clients. To date, hubergroup Chemicals has developed into a major chemical supplier that sells its products to all over the world, in all business areas and to customers ranging from SMEs to large, world-renowned chemical companies.

### Analytical Support

Rely on our dedicated analytical support to ensure the quality and compliance of your formulations. With modern Lab Facilities in India and Munich our expert guidance will help you maintain the highest standards in your products.

### Regulatory Expertise

Navigate complex compliance requirements with confidence. All materials imported to EU are REACH registered and various other inventories are covered as well. Our regulatory expertise from our specialists provides you with the knowledge and assurance you need to meet industry regulations and standards.

### Customised Solutions and Consulting Expertise

Our commitment to tailored solutions extends beyond custom manufacturing. We specialise in creating customised solutions because we recognise that every customer faces unique challenges. Our team of international experts is here to collaborate with you, making your chemical processes more efficient and effective.

At hubergroup Chemicals, we are committed to providing high-quality specialty chemicals and comprehensive support to meet your changing needs. Explore our product portfolio, and let us be your partner in achieving excellence in your industry.



# Committed to Sustainability

## Advancement

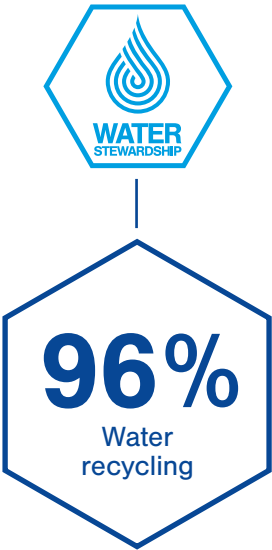
of water stewardship by running own water treatment plant on clever water cycles

## Water recycling

minimum 96% by means of ultra filtration reverse osmosis and water-flea-treatment

## Reduction

of carbon footprint by Avoidance- & Green-Energy-Strategy: solar energy is in use in our production plants and offices



# Highest Quality Standards

## ISO certified in all our facilities

|                |                              |
|----------------|------------------------------|
| ISO 9001:2015  | Quality management           |
| ISO 45001:2018 | Occupational health & safety |
| ISO 14001:2015 | Environmental management     |
| ISO 50001:2018 | Energy management            |

Manufacturers for food packaging materials produced according to GMP standards

A member of the “Responsible Care®” initiative



# Discover our Product Portfolio

## UV-Oligomers

We are experts at creating the solution to your requirement. Rely on our high-quality, sustainable UV-Oligomers for increased reactivity and resistance.

## Rosin Based Resins

As India’s largest manufacturer for Rosin Based Resins we know what we are talking about. Discover our solutions to your Solvent-Based or Oil-Based Ink formulations!

## Pigments and Concentrates

Explore our wide range of high-quality Pigments and Concentrates, suitable for various industries such as printing, packaging, and coatings. Our colour solutions offer a diverse spectrum, providing plenty of creative opportunities for your projects.

## Lamination Adhesives

Our Lamination Adhesives are engineered for durability and precision and guarantee a good processability at a wide range of application speeds. They are well suited for various flexible packaging applications from snacks to detergents. Count on us for a steadfast and enduring bond.

## Ketonic Resins

Remarkable clarity and perfect solubility, how else could we best describe our Ketonic Resins to you?

## UV-Monomers

Elevate formulation performance with our exceptional range of Monomers. We provide the foundational elements for a multitude of applications, from adhesives to coatings, enhancing your products with improved properties and functionality.


## Precursors

Our long history in polyurethane chemistry is based on the synthesis of our own intermediates. You can benefit from our in-depth expertise, be it in polyester polyols or ketone resins as precursors for a wide range of industrial applications such as coatings, adhesives or reactive hot melts.



|   |                            |                             |                   |
|---|----------------------------|-----------------------------|-------------------|
| UV-Monomers                                     |                            |                             |                   |
| TPGDA, DPGDA, PETIA, GPTA, TMPTA, EOTMPTA, HDDA |                            |                             |                   |
| Page 12 – 13                                    |                            |                             |                   |
| Resins  | UV-Oligomers               | Functional Resins           | Resins            |
|   | Page 14 – 19               | Page 20 – 21                | Page 22 – 35      |
| Additives                                       | Siccatives                 | Adhesion Promoter           | Fatty Acid Esters |
|   | Page 36 – 37               | Page 36 – 37                | Page 38 – 39      |
|   | Dispersants                | Tackifier                   |                   |
|   | Page 40 – 41               | Page 40 – 41                |                   |
| Pigments and Concentrates                       | Concentrates               | Powder Pigments             |                   |
|   | Page 42 – 53               | Page 54 – 59                |                   |
| Lamination Adhesives                            | Solvent Free Two-Component | Solvent Based Two-Component |                   |
|   | Page 60 – 61               | Page 62 – 63                |                   |

# UV-Monomers





| Product    | Product Description   | Appearance   | Colour | Acid Value |
|------------|---|--------------|--------|------------|
|            |   |              | APHA   | mg KOH/g   |
| UHVM-22701 | TMPTA   | clear liquid | ≤ 50   | ≤ 4        |
| UHVM-22702 | TPGDA   | clear liquid | ≤ 50   | ≤ 0.5      |
| UHVM-22704 | DPGDA   | clear liquid | ≤ 50   | ≤ 0.2      |
| UHVM-22707 | PETIA   | clear liquid | ≤ 70   | ≤ 10       |
| UHVM-22710 | GPTA  | clear liquid | ≤ 50   | ≤ 2        |
| UHVM-22709 | EOTMPTA   | clear liquid | ≤ 30   | ≤ 0.5      |
| UHVM-24703 | HDDA  | clear liquid | ≤ 30   | ≤ 0.5      |

1) Brookfield

| Moisture | Solvent | Viscosity 25 °C <sup>1)</sup> |
|----------|---------|-------------------------------|
| %        | %       | mPa*s                         |
| ≤ 0.3    | ≤ 0.1   | 80 - 135                      |
| ≤ 0.3    | ≤ 0.1   | 30 - 40                       |
| ≤ 0.3    | ≤ 0.1   | 20 - 30                       |
| ≤ 0.3    | ≤ 0.1   | 700 - 3,000                   |
| ≤ 0.3    | ≤ 0.1   | 110 - 150                     |
| ≤ 0.3    | ≤ 0.1   | 70 - 110                      |
| ≤ 0.3    | ≤ 0.1   | 5 - 30                        |

# UV-Oligomers

## Polyester Acrylates

| Product   | Product Description         | Viscosity <sup>1)</sup> | Acid Value | Hydroxyl Value | Average Functionality |
|---|-----------------------------|-------------------------|------------|----------------|-----------------------|
|   |                             | Pa·s                    | mg KOH/g   | mg KOH/g       |                       |
| UHVO-221019   | Polyester Acrylate BPA-free | 100 - 130               | ≤ 19       | 15 - 35        | 6                     |
| UHVO-221016      | Polyester Acrylate BPA-free | 180 - 235               | ≤ 15       | 55 - 75        | 4                     |
| UHVO-019842   | Polyester Acrylate          | 100 - 130               | ≤ 4        | 55 - 75        | 6                     |
| UHVO-221020**  | Polyester Acrylate BPA-free | 4 - 6                   | ≤ 6        | 60 - 70        | 6                     |
| UHVO-221022    | Polyester Acrylate BPA-free | 13 - 17                 | ≤ 20       | 60 - 70        | 6                     |
| UHVO-221023   | Polyester Acrylate          | 35 - 55                 | ≤ 20       | 20 - 60        | 2 - 3                 |
| UHVO-221024   | Polyester Acrylate          | 15 - 20                 | ≤ 5        | 55 - 75        | 2 - 3                 |
| UHVO-221025    | Polyester Acrylate BPA-free | 1 - 1.4                 | ≤ 20       | 65 - 85        | 4                     |
| UHVO-17806  | Polyester Acrylate          | 5 - 8                   | ≤ 3        | 80 - 90        | 6                     |
| UHVO-17826  | Polyester Acrylate          | 8 - 12                  | ≤ 3        | 80 - 90        | 6                     |


1) At 20 °C; Physica; D = 5/s  
\*\* Not fully commercialised

| Double Bond Density | Bio Renewable  | Colour  | Key properties  | Application                 |
|---------------------|--|---------|---|-----------------------------|
| mol/kg              | %  | Gardner |   |                             |
| 6 - 7               | 10    | ≤ 12    | - medium viscosity<br>- very good pigment wetting<br>- high reactivity<br>- suitable for LED and EB<br>- suitable for indirect food contact   | - inks OOO<br>- coatings O  |
| 2.8 - 3.2           | 38    | ≤ 12    | - high viscosity<br>- very good pigment wetting properties<br>- high reactivity<br>- suitable for LED and EB<br>- suitable for indirect food contact  | - inks OOO<br>- coatings O  |
| 5.4 - 6.0           | 14    | ≤ 12    | - medium viscosity<br>- high reactivity<br>- suitable for LED and EB<br>- recommended for commercial printing   | - inks OOO<br>- coatings O  |
| 5.4 - 6.4           | 12  | 5 - 8   | - low viscosity<br>- suitable for LED and EB<br>- suitable for indirect food contact<br>- good coffee stain resistance<br>- low yellowing   | - inks OOO<br>- coatings OO |
| 7.5 - 9.0           | 28  | ≤ 13    | - low viscosity<br>- very good pigment wetting<br>- excellent ink water balance<br>- suitable for LED and EB<br>- suitable for indirect food contact<br>- excellent coffee stain resistance<br>- low yellowing          | - inks OOO<br>- coatings OO |
| 3.5 - 5.5           | –  | ≤ 4     | - all around coating resin<br>- balanced flexibility & hardness<br>- suitable for matte top coats<br>- suitable for overprint varnishes   | - inks O<br>- coatings OOO  |
| 3.5 - 5.5           | –  | ≤ 4     | - all around coating resin<br>- balanced flexibility & hardness<br>- high chemical resistance<br>- suitable for matte top coats   | - inks O<br>- coatings OOO  |
| Approx. 3.6         | 15  | ≤ 2     | - very low viscosity<br>- suitable for indirect food contact  | - inks O<br>- coatings OOO  |
| 5.6 - 6.6           | 9   | 4 - 5   | - low viscosity<br>- good stain resistance<br>- excellent pigment wetting & flow<br>- low yellowing<br>- suitable for indirect food contact<br>- suitable for LED and EB  | - inks OOO<br>- coatings OO |
| 6.8 - 7.6           | 14  | ≤ 12    | - low viscosity<br>- outstanding ink water balance<br>- excellent pigment wetting & flow<br>- good stain resistance, e.g coffee<br>- low yellowing<br>- suitable for indirect food contact<br>- suitable for LED and EB | - inks OOO<br>- coatings OO |



# UV-Oligomers

## Chlorinated Polyester



| Product   | Product Description                                  | Viscosity <sup>1)</sup> | Acid Value | Colour  |
|---|--|-------------------------|------------|---------|
|   |  | Pa·s                    | mg KOH/g   | Gardner |
| UHVO-15113     | Chlorinated Polyester in 40% EOTMPTA                 | 180 - 230               | 8 - 12     | ≤ 3     |
| UHVO-241030    | Chlorinated Polyester in 40% EOTMPTA (TMPTA reduced) | 180 - 230               | 8 - 12     | ≤ 3     |
| UHVO-20114   | Chlorinated Polyester in 40% TMPTA                   | 500 - 600               | 9 - 13     | ≤ 3     |
| UHVO-20115   | Chlorinated Polyester in 40% GPTA                    | 490 - 600               | 8 - 12     | ≤ 3     |
| UHVO-221017  | Chlorinated Polyester in 40% EOTMPTA                 | 55 - 75                 | 15 - 25    | ≤ 3     |
| UHVO-221015  | Chlorinated Polyester in 40% TMPTA                   | 80 - 120                | 15 - 25    | ≤ 3     |
| UHVO-221021  | Chlorinated Polyester in 40% GPTA                    | 95 - 115                | 15 - 25    | ≤ 3     |

1) At 20 °C; Physica; D = 5/s




| Appearance   | Key properties   | Application  |
|--------------|--|--|
| clear liquid | - excellent adhesion to plastics and metal<br>- suitable for indirect food contact                   | - inks OOO<br>- coatings O<br>- UV-curable Adhesives OOO |
| clear liquid | - excellent adhesion to plastics and metal<br>- suitable for indirect food contact<br>- TMPTA < 0.1% | - inks OOO<br>- coatings O<br>- UV-curable Adhesives OOO |
| clear liquid | - excellent adhesion to plastics and metal   | - inks OOO<br>- coatings O<br>- UV-curable Adhesives OOO |
| clear liquid | - excellent adhesion to plastics and metal<br>- suitable for indirect food contact                   | - inks OOO<br>- coatings O<br>- UV-curable Adhesives OOO |
| clear liquid | - excellent adhesion to plastics and metal<br>- suitable for indirect food contact                   | - inks OOO<br>- coatings O<br>- UV-curable Adhesives OOO |
| clear liquid | - excellent adhesion to plastics and metal   | - inks OOO<br>- coatings O<br>- UV-curable Adhesives OOO |
| clear liquid | - excellent adhesion to plastics and metal<br>- suitable for indirect food contact                   | - inks OOO<br>- coatings O<br>- UV-curable Adhesives OOO |

# UV-Oligomers

## Urethane Acrylate

| Product  | Product Description         | Viscosity <sup>2)</sup> | Acid Value | Hydroxyl Value |
|--|-----------------------------|-------------------------|------------|----------------|
|  |                             | Pa·s                    | mg KOH/g   | mg KOH/g       |
| UHVO-221014 <sup>**</sup><br> | Aromatic Urethane Acrylate  | 25 - 35                 | ≤ 3        | 50 - 70        |
| UHVO-231029 <sup>**</sup><br> | Aliphatic Urethane Acrylate | 200 - 220               | ≤ 3        | 20 - 30        |

# Epoxy Acrylate

| Product  | Product Description             | Viscosity               | Acid Value | Bio Renewable  |
|--|---------------------------------|-------------------------|------------|--|
|  |                                 | Pa·s                    | mg KOH/g   | %  |
| UHVO-23920   | Epoxy Acrylate 100%             | 85 - 105 <sup>3)</sup>  | ≤ 2        | –  |
| UHVO-23922   | Epoxy Acrylate 100% bio-based   | 100 - 120 <sup>3)</sup> | ≤ 0.5      | Approx. 20  |
| UHVO-22912  | Epoxydised Soybean Oil Acrylate | 15 - 30 <sup>2)</sup>   | ≤ 10       | Approx. 82  |

Any Epoxy Acrylate dilution available on request.









1) At 20 °C; Physica; D = 5/s  
2) At 25 °C, Physica, D = 50/s  
3) At 40 °C, Physica, D = 5/s  
4) At 60 °C, Physica, D = 5/s  
\*\* Not fully commercialized

| Average Functionality | Double Bond Density | Colour   | Key properties   | Application                |
|-----------------------|---------------------|----------|--|----------------------------|
|                       | mol / kg            | mol / kg |  |                            |
| 6                     | 8 - 10              | < 2      | - tin-free<br>- excellent hardness and resistance properties<br>- high gloss<br>- suitable for indirect food contact | - inks OOO<br>- coatings O |
| 6                     | 6 - 10              | < 2      | - low yellowing<br>- high hardness and resistance properties<br>- good reactivity                                    | - inks O<br>- coatings OOO |

| Colour  | Application                  |
|---------|------------------------------|
| Gardner |                              |
| ≤ 2     | - inks OOO<br>- coatings OOO |
| ≤ 2     | - inks OOO<br>- coatings OOO |
| ≤ 2     | - inks OOO<br>- coatings OOO |

# Functional Resins

## UV Reactive/Inert Rosin Resins

| Product  | Product Description                  | Bio Renewable  | Viscosity <sup>1)</sup> | Acid Value | Photoinitiator Content |
|--|--------------------------------------|--|-------------------------|------------|------------------------|
|  |                                      | %  | Pa·s                    | mg KOH/g   | %                      |
| UHVPI-22460<br>   | UV reactive Rosin Resin              | 55    | -                       | ≤ 15       | 10                     |
| UHVPI-22463<br> | UV reactive Rosin Resin in 50% DPGDA | 27    | 2 - 4                   | ≤ 7        | 5                      |
| UHVR-22461<br>  | UV inert Rosin Resin                 | 59  | -                       | ≤ 5        | -                      |
| UHVR-22464<br>  | UV inert Rosin Resin in 50% EOTMPTA  | 29  | 55 - 65                 | ≤ 2        | -                      |

These products are experimental. Regional availability might vary.

1) 40 °C

| Appearance   | Softening Point | Key properties  | Application                |
|--------------|-----------------|---|----------------------------|
|              | °C              |   |                            |
| Amber Flakes | 115 - 125       | - excellent suitability for LED curing<br>- recommended to replace monomeric photoinitiator<br>- flexibilizes and improves adhesion to difficult substrates<br>- suitable for direct-to-metal application | - inks O<br>- coatings OOO |
| Amber Liquid | -               | - excellent suitability for LED curing<br>- recommended to replace monomeric photoinitiator<br>- flexibilizes and improves adhesion to difficult substrates<br>- suitable for direct-to-metal application | - inks O<br>- coatings OOO |
| Brown Flakes | 95 - 105        | - flexibilizes and improves adhesion to difficult substrates<br>- suitable for direct-to-metal application<br>- suitable for indirect food contact  | - inks O<br>- coatings OOO |
| Brown Liquid | -               | - flexibilizes and improves adhesion to difficult substrates<br>- suitable for direct-to-metal application<br>- suitable for indirect food contact  | - inks O<br>- coatings OOO |



Resins

Modified Rosin for Offset Inks

| Product       |   | Product Description                        | Viscosity <sup>1)</sup> | Acid Value | Colour  | Softening Point <sup>2)</sup> |
|---------------|---|--|-------------------------|------------|---------|-------------------------------|
|               |   |  | Pa·s                    | mg KOH/g   | Gardner | °C                            |
| URZ-090041    |    | Phenolic Modified Rosin Resin              | 10 - 22                 | ≤ 25       | 8 -13   | 150 - 160                     |
| URZ-060935    |    | Phenolic Modified Rosin Resin              | 40 - 70                 | ≤ 25       | 8 -13   | 160 - 185                     |
| URZ-190936    |    | Phenolic Modified Rosin Resin              | 40 - 70                 | ≤ 25       | 8 -13   | 160 - 180                     |
| URZ-060925    |    | Phenolic Modified Rosin Resin              | 64 - 104                | ≤ 25       | 8 -13   | 165 - 185                     |
| URZ-120085    |   | Phenolic Modified Rosin Resin              | 5 - 8                   | ≤ 25       | 8 -13   | 150 - 170                     |
| URZ-160036    |  | Phenolic Modified Rosin Resin              | 350 - 650               | 18 - 25    | 8 -13   | 165 - 190                     |
| URZ-141800    |  | Hybrid Rosin Resin                         | 20 - 40                 | ≤ 25       | 8 -13   | 165 - 190                     |
| URZ-191900    |  | Hybrid Rosin Resin                         | 15 - 25                 | ≤ 25       | 8 -13   | 165 - 190                     |
| URZ-110083    |  | Hybrid Rosin Resin                         | 1.5 - 3.5               | ≤ 25       | 8 -13   | 150 - 170                     |
| URZ-060010    |  | Modified Rosin, Phenol & Formaldehyde free | 15 - 35                 | ≤ 25       | 8 -13   | 110 - 120                     |
| URZ-210011    |  | Modified Rosin, Phenol & Formaldehyde free | 35 - 60                 | ≤ 25       | 8 -13   | 100 - 120                     |
| URZ-200082    |  | Modified Rosin, Phenol & Formaldehyde free | 8 - 12                  | ≤ 25       | 8 -13   | 140 - 150                     |
| URZ-200932 ** |  | Modified Rosin, Phenol & Formaldehyde free | 20 - 30                 | ≤ 25       | 8 - 13  | 140 - 150                     |

1) Physica; D = 50/s ; 20 °C; 40% in Linear Alkyl Benzene

2) B&R Method

3) 10% in Test Oil 6/9 AF New

4) 10% in Test Oil 6/9

\*\* Not fully commercialized

| Cloud point             | Key properties   | Suggested Application      |
|-------------------------|--|----------------------------|
| °C                      |  |                            |
| 110 - 135 <sup>3)</sup> | - high gloss<br>- excellent ink water balance  | Heatset, Sheetfed, Coldset |
| 100 - 130 <sup>3)</sup> | - high gloss<br>- excellent ink water balance  | Heatset, Sheetfed, Coldset |
| 145 - 170 <sup>3)</sup> | - low solubility<br>- fast setting<br>- improved press performance   | Heatset, Sheetfed, Coldset |
| 70 - 100 <sup>4)</sup>  | - high gloss<br>- excellent ink water balance and ink set<br>- high viscosity  | Heatset, Sheetfed, Coldset |
| 150 - 170 <sup>3)</sup> | - excellent pigment wetting  | Heatset, Sheetfed, Coldset |
| 130 - 165 <sup>4)</sup> | - excellent solubility in fatty esters<br>- indirect food contact  | Heatset, Sheetfed, Coldset |
| 130 - 160 <sup>3)</sup> | - low tack<br>- low misting<br>- excellent ink water balance   | Heatset, Sheetfed, Coldset |
| 60 - 75 <sup>4)</sup>   | - very good ink water balance  | Heatset, Sheetfed, Coldset |
| 80 - 110 <sup>3)</sup>  | - good pigment wetting<br>- low viscosity<br>- improve film thickness<br>- increase tack   | Heatset, Sheetfed, Coldset |
| 70 - 90 <sup>3)</sup>   | - excellent pigment wetting<br>- high compatibility with alkyd resin<br>- low viscosity<br>- recommended for indirect food contact | Heatset, Sheetfed, Coldset |
| 45 - 65 <sup>3)</sup>   | - low viscosity<br>- excellent pigment wetting<br>- recommended for indirect food contact  | Heatset, Sheetfed, Coldset |
| 80 - 120 <sup>4)</sup>  | - low viscosity<br>- excellent pigment wetting<br>- low viscosity<br>- recommended for indirect food contact                       | Heatset, Sheetfed, Coldset |
| 120 - 140 <sup>5)</sup> | - medium solubility<br>- indirect food contact<br>- very good ink - water balance  | Heatset, Sheetfed, Coldset |

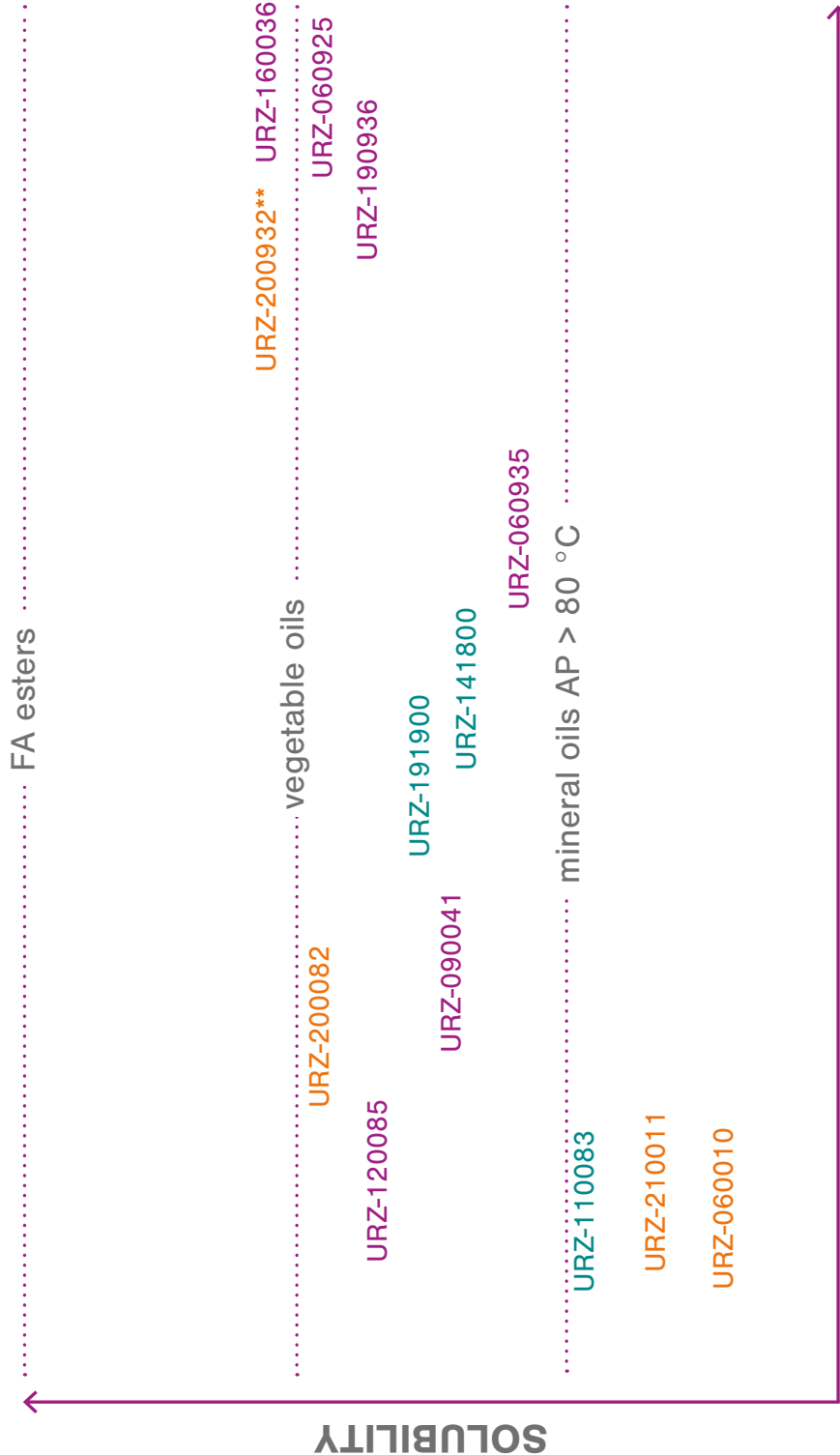
Conventional Drying Resins /

Modified Rosin for Offset Inks

Phenolic mod.



Hybrid

Phenol free



# Resins

## Modified Rosin for Liquid Inks

| Product   | Product Description          | Viscosity <sup>1)</sup> | Acid Value | Colour  | Softening point <sup>2)</sup> |
|---|------------------------------|-------------------------|------------|---------|-------------------------------|
|   |                              | s                       | mg KOH/g   | Gardner | °C                            |
| UFRZ-1020  | Fumaric Modified Rosin Resin | 17 - 22                 | 190 - 210  | 0 - 8   | 136 - 150                     |
| UFRZ-1121  | Fumaric Modified Rosin Resin | 15 - 18                 | 280 - 300  | 0 - 12  | 140 - 150                     |

1) At 30 °C; FCB4; 50% Solution in Ethanol  
2) B&R Method

| Key properties  | Suggested Application  |
|---|--|
| <ul style="list-style-type: none"><li>- excellent adhesion</li><li>- high gloss</li><li>- improved solvent release</li><li>- suitable for solvent-borne and water-borne systems</li></ul> | <ul style="list-style-type: none"><li>- inks + OPV OOO</li><li>- coatings OO</li></ul> |
| <ul style="list-style-type: none"><li>- excellent adhesion</li><li>- high gloss</li><li>- improved solvent release</li><li>- suitable for solvent-borne and water-borne systems</li></ul> | <ul style="list-style-type: none"><li>- inks + OPV OOO</li><li>- coatings OO</li></ul> |



# Resins

## Polyurethane

| Product   | Product Description            | Viscosity <sup>1)</sup> | Solid Content | Volatiles                          |
|---|--------------------------------|-------------------------|---------------|------------------------------------|
|   |                                | mPa·s                   | %             | %                                  |
| UMU-097080  | Plasticizing<br>Semi-Aliphatic | 1,000 - 2,000           | 78 - 82       | 18 ethyl acetate<br>2 ethanol      |
| UMU-247175  | Plasticizing<br>Semi-Aliphatic | 1,000 - 2,000           | 73 - 77       | 22 ethyl acetate<br>3 iso-propanol |
| UMU-139045<br> | Film-Forming<br>Aliphatic      | 3,500 - 4,500           | 43 - 47       | 17 propyl acetate<br>38 n-propanol |
| UMU-239355<br> | Film-Forming<br>Aliphatic      | 20,000 - 30,000         | 53 - 57       | 12 propyl acetate<br>33 n-propanol |
| UMU-185030<br> | Film-Forming<br>Aliphatic      | 1,000 - 3,000           | 28 - 32       | 68 ethyl acetate<br>4 n-propanol   |
| UMU-201230  | Film-Forming<br>Aliphatic      | 1,000 - 3,000           | 28 - 32       | 70 ethyl acetate                   |

1) at 25 °C; Brookfield

| NCO Type | Key properties  | Application                |
|----------|---|----------------------------|
|          |   |                            |
| TDI      | - tin-free<br>- suitable for indirect food contact<br>- suitable for surface and lamination printing<br>- recommended for flexo and gravure inks                  | - inks OOO<br>- coatings   |
| TDI      | - tin-free<br>- suitable for indirect food contact<br>- suitable for surface printing<br>- recommended for flexo and gravure inks                                 | - inks OOO<br>- coatings   |
| IPDI     | - tin-free<br>- suitable for indirect food contact<br>- recommended for PU NC systems<br>- suitable for pure PU white<br>- recommended for flexo and gravure inks | - inks OOO<br>- coatings   |
| IPDI     | - tin-free<br>- suitable for indirect food contact<br>- recommended for PU NC systems<br>- suitable for pure PU white<br>- recommended for flexo and gravure inks | - inks OOO<br>- coatings O |
| IPDI     | - tin-free<br>- suitable for indirect food contact<br>- recommended for pure PU colours and white<br>- recommended for flexo and gravure inks                     | - inks OOO<br>- coatings O |
| IPDI     | - tin-free<br>- suitable for indirect food contact<br>- recommended for PU vinyl systems<br>- recommended for gravure inks<br>- Polyester-based                   | - inks OOO<br>- coatings O |

# Resins

## Polyamide

| Product | Product Description | Viscosity <sup>1)</sup> | Acid Value | Amine Value |
|---------|---------------------|-------------------------|------------|-------------|
|         |                     | s                       | mg KOH/g   | mg KOH/g    |
| HPR-209 | Cosolvent Soluble   | 60 - 75 <sup>2)</sup>   | ≤ 5        | ≤ 5         |
| HPR-215 | Cosolvent Soluble   | 120 - 160 <sup>2)</sup> | ≤ 5        | ≤ 5         |
| HPR-260 | Cosolvent Soluble   | 48 - 58 <sup>2)</sup>   | ≤ 5        | ≤ 5         |
| HPR-500 | Cosolvent Soluble   | 17 - 23 <sup>2)</sup>   | ≤ 10       | ≤ 2         |
| HPR-304 | Alcohol Soluble     | 17 - 23 <sup>3)</sup>   | ≤ 6        | ≤ 6         |
| HPR-350 | Alcohol Soluble     | 17 - 23 <sup>3)</sup>   | ≤ 6        | ≤ 6         |
| HPR-307 | Alcohol Soluble     | 17 - 23 <sup>3)</sup>   | ≤ 6        | ≤ 6         |

1) At 30 °C with FCB4  
2) 40% Resin, 40% Toluene, 20% Butanol  
3) 40% Resin, 60% Ethanol  
4) B&R Method

| Softening Point <sup>4)</sup> | Bio Renewable  | Apearance         | Key properties  | Application              |
|-------------------------------|--|-------------------|---|--------------------------|
| °C                            | %  |                   | mg KOH/g  |                          |
| 105 - 115                     | 90    | pale yellow solid | - general application<br>- anti-slip  | - inks OOO<br>- coatings |
| 110 - 120                     | 90    | pale yellow solid | - general application<br>- anti-slip  | - inks OOO<br>- coatings |
| 100 - 107                     | 89   | pale yellow solid | - general application<br>- anti-slip  | - inks OOO<br>- coatings |
| 95 - 100                      | 88  | pale yellow solid | - general application<br>- untreated olefinic surfaces<br>- corona treated surfaces | - inks OOO<br>- coatings |
| 110 - 120                     | 77  | pale yellow solid | - weathering resistant  | - inks OOO<br>- coatings |
| 128 - 138                     | 80  | pale yellow solid | - release properties  | - inks OOO<br>- coatings |
| 100 - 105                     | 78  | pale yellow solid | - general application<br>- anti-slip<br>- stretch and shrink application            | - inks OOO<br>- coatings |

# Resins

## Ketonic

| Product   | Product Description | Viscosity <sup>1)</sup> | Acid Value | Hydroxyl Value | Softening Point <sup>2)</sup> |
|-----------|---------------------|-------------------------|------------|----------------|-------------------------------|
|           |                     | s                       | mg KOH/g   | mg KOH/g       | °C                            |
| HUK-0001E | Ketonic Resin       | 20 - 22                 | 0 - 1      | 200 - 230      | 92 - 102                      |
| HUK-0009  | Ketonic Resin       | 20 -22                  | 0 - 1      | 260 - 290      | 81 - 91                       |
| HUK-0010  | Ketonic Resin       | 18 - 20                 | 0 - 1      | 230 - 270      | 75 - 85                       |
| HUK-0011E | Ketonic Resin       | 27 - 31                 | 0 - 1      | 200 - 230      | 110 - 120                     |
| HUK-0014  | Ketonic Resin       | 28 - 30                 | 0 - 1      | 230 - 260      | 108 - 118                     |

1) FCB4; 30 °C; 50% Solution in Ethanol  
2) capillary method

| Appearance            | Key properties  | Application  |
|-----------------------|---|--|
| Star Bright Particles | - easy to dissolve<br>- small clear particles<br>- high purity<br>- excellent pigment wetting | - inks OOO<br>- ball point pen inks OOO<br>- coatings OO<br>- nail varnish OOO |
| Pale Yellowish Lumps  | - high OH reactivity<br>- excellent pigment wetting   | - inks OOO<br>- ball point pen inks OOO<br>- coatings OO<br>- nail varnish OO  |
| Pale Yellowish Lumps  | - excellent pigment wetting   | - inks OOO<br>- ball point pen inks OOO<br>- coatings OO<br>- nail varnish OO  |
| Star Bright Particles | - excellent pigment wetting   | - inks OOO<br>- ball point pen inks OOO<br>- coatings OO<br>- nail varnish OO  |
| Pale Yellowish Lumps  | - very low residual monomer<br>- excellent pigment wetting                                    | - inks OOO<br>- ball point pen inks OOO<br>- coatings OO<br>- nail varnish OO  |



# Resins

## Polyvinyl Butyral (PVB)

| Product  | Product Description          | Viscosity               | Bulk Density <sup>3)</sup> | Acid Value | Polyvinyl Alcohol Content |
|----------|------------------------------|-------------------------|----------------------------|------------|---------------------------|
|          |                              | s                       | g/cm³                      | mg KOH/g   | %                         |
| HVB-0001 | High Viscosity, Themoplastic | 180 - 250 <sup>1)</sup> | 0.280 - 0.312              | 0 - 1      | 14 - 17                   |
| HVB-0004 | High Viscosity, Themoplastic | 55 - 60 <sup>2)</sup>   | 0.222 - 0.238              | 0 - 1      | 17 - 19                   |
| HVB-0005 | Themoplastic                 | 48 - 58 <sup>1)</sup>   | 0.245 - 0.291              | 0 - 1      | 14 - 17                   |
| HVB-0006 | Themoplastic                 | 75 - 85 <sup>1)</sup>   | 0.284 - 0.312              | 0 - 1      | 11 - 14                   |

1) 20% in Ethanol at 30 °C; FCB4  
2) 10% in Ethanol at 30 °C; FCB4  
3) 25 °C


| Polyvinyl Acetate Content | Polyvinyl Butyral Content | Key properties  | Application   |
|---------------------------|---------------------------|---|---|
| %                         | %                         |   |   |
| 2.2 - 2.5                 | 80 - 90                   |   |   |
| 1.9 - 2.3                 | 75 - 85                   | - grades differ by molecular weight and degree of acetalization<br>- solubility in various solvents<br>- good compatibility with various resins and plasticizers<br>- excellent film formation<br>- free, reactive hydroxyl groups for crosslinking | - inks OOO<br>- inks for textile OOO<br>- powder coatings OO<br>- adhesives OO<br>- temporary binder for ceramics OOO<br>- coatings OOO |
| 1.0 - 1.5                 | 80 - 90                   | - excellent flexibility<br>- heat sealability<br>- good light resistance<br>- suitable for indirect food contact  |   |
| 1.6 - 1.7                 | 80 - 90                   |   |   |

# Additives

## Siccatives

| Product    | Product Description     | Viscosity <sup>1)</sup> | Moisture <sup>2)</sup> | Metal Content |
|------------|-------------------------|-------------------------|------------------------|---------------|
|            |                         | s                       | %                      | %             |
| UMID-17504 | Iron Neodecanoate Drier | 24 - 45                 | 0 - 0.4                | 4.9 - 5.1     |
| UMID-12306 | Manganese Tallate Drier | 50 - 350                | 0 - 0.4                | 4.9 - 5.1     |

# Adhesion Promoter

| Product  | Product Description        | Viscosity <sup>1)</sup> | Solid Content <sup>3)</sup> | Titanium Content |
|--|----------------------------|-------------------------|-----------------------------|------------------|
|  |                            | s                       | %                           | %                |
| UAP-11002<br> | Titanium Phosphate Complex | 16 - 18                 | 49 - 51                     | 8.4 - 8.6        |

1) 30 °C, FCB4  
2) Karl-Fischer  
3) 120 °C for 1 hour

| Solvent               | Key properties   | Application                 |
|-----------------------|--|-----------------------------|
|                       |  |                             |
| 2-ethyl hexyl laurate | - Effective cobalt-free drier for all air-drying systems | - inks OOO<br>- coatings OO |
| 2-ethyl hexyl laurate | - Effective cobalt-free drier for all air-drying systems | - inks OOO<br>- coatings OO |

| Odour     | Key properties  | Application                |
|-----------|---|----------------------------|
|           |   |                            |
| Alcoholic | - high compatibility with NC, PU, PA and other binders<br>- no predilution required<br>- excellent viscosity stability<br>- crosslinker for -OH and -COOH functionalities | - inks OOO<br>- coatings O |

# Additives

## Fatty Acid Esters

| Product   | Product Description                        | Viscosity,<br>FCB4 | Refractive Index <sup>1)</sup> | Moisture |
|-----------|--|--------------------|--------------------------------|----------|
|           |  | s                  |                                | %        |
| UEAF-0706 | Isopropyl Laurate                          | 12                 | 1.425 - 1.427                  | < 0.1    |
| UEAF-0905 | Soya Fatty Acid Butyl Ester                | 13 - 15            | 1.452 - 1.454                  | < 0.2    |
| UEAF-1107 | 2-Ethyl Hexyl Laurate                      | 13                 | 1.435 - 1.445                  | < 0.2    |
| UEAF-1108 | Pentaerythritol Caprylic/ Caprate Ester    | 24                 | 1.450 - 1.455                  | < 0.2    |
| UEAF-1109 | Trimethylol Propane Caprylic/Caprate Ester | 19                 | 1.445 - 1.455                  | < 0.2    |

1) 30 °C

| Density <sup>1)</sup> | Acid value | Colour, Gardner | Application                   |
|-----------------------|------------|-----------------|-------------------------------|
| g/cm³                 | mg KOH/g   |                 |                               |
| 0.845 - 0.855         | < 1        | < 1             | - inks OOO<br>- lubricants OO |
| 0.860 - 0.880         | < 5        | 10 - 14         | - inks OOO<br>- lubricants OO |
| 0.850 - 0.865         | < 1        | < 1             | - inks OOO<br>- lubricants OO |
| 0.948 - 0.956         | < 1        | < 1             | - inks OOO<br>- lubricants OO |
| 0.930 - 0.940         | < 1        | < 1             | - inks OOO<br>- lubricants OO |



# Additives

## Dispersant

| Product      | Product Description | Appearance         | Moisture | Viscosity <sup>1)</sup> |
|--------------|---------------------|--------------------|----------|-------------------------|
|              |                     |                    | %        | s                       |
| UADP-21001*  | Dispersant          | light brown liquid | -        | 35 - 45                 |
| UADP-23002 * | Pigment Synergist   | yellow powder      | < 4      | -                       |

# Tackifier

| Product      | Product Description | Softening Point <sup>2)</sup> | Ash content | Colour  |
|--------------|---------------------|-------------------------------|-------------|---------|
|              |                     | °C                            | %           | Gardner |
| UTRZ-2300 ** | DCPD Resin          | 80 - 120                      | < 0.1       | 10 - 14 |

1) FCB4 at 30 °C, 60% in Xylene  
2) Ball & Ring  
\* Limited regional availability  
\*\* Not fully commercialised

| Bulk density | Key properties   | Application |
|--------------|--|-------------|
| g/cm³        |  |             |
| -            | - high pigment loading<br>- high colour strength<br>- improves grinding efficiency   | - inks OOO  |
| 0.55 - 0.65  | - high pigment loading<br>- high colour strength<br>- improved pigment stabilisation | - inks OOO  |

| Appearance  | Acid value | Iodine value | Key properties  | Application                 |
|-------------|------------|--------------|---|-----------------------------|
|             | mg KOH/g   | g I2/100g    |   |                             |
| brown lumps | < 10       | 110 - 180    | - high reactivity<br>- softening and reinforcing agent<br>- excellent compatibility | - rubber OOO<br>- tyres OOO |

# Concentrates

## UV Flexo Spot Colours

| Product  | Colour Index      | Viscosity <sup>1)</sup> | Fineness of grind | Pigmentation |
|----------|-------------------|-------------------------|-------------------|--------------|
|          |                   | Pa·s                    | NPIRI             | %            |
| UFX-Y14  | Pigment Yellow 14 | 0.5 - 2.5               | < 4               | Approx. 32   |
| UFX-O13  | Pigment Orange 13 | 15 - 25                 | < 4               | Approx. 32   |
| UFX-R571 | Pigment Red 57:1  | 2.5 - 7.5               | < 4               | Approx. 30   |
| UFX-R531 | Pigment Red 53:1  | 2.5 - 7.5               | < 4               | Approx. 30   |
| UFX-R254 | Pigment Red 254   | 2.5 - 7.5               | < 4               | Approx. 32   |
| UFX-V23  | Pigment Violet 23 | 10 - 20                 | < 4               | Approx. 24   |
| UFX-B154 | Pigment Blue 15:4 | 10 - 20                 | < 4               | Approx. 30   |
| UFX-G7   | Pigment Green 7   | 0.5 - 2.5               | < 4               | Approx. 36   |
| UFX-Bk7  | Pigment Black 7   | 0.5 - 2.5               | < 4               | Approx. 34   |

1) At 20 °C; Physica; D = 50/s

[illegible]

# Concentrates

## UV Sheetfed Process Colours

| Product   | Product Description                       | Viscosity               | Tack <sup>3)</sup> | Pigmentation |
|-----------|---|-------------------------|--------------------|--------------|
|           |   | Pa·s                    |                    | %            |
| UOBX-Y174 | Pigment Yellow 174<br>(for Paper & Board) | 130 - 180 <sup>1)</sup> | 21.0 - 25.0        | Approx. 31   |
| UOBX-R571 | Pigment Red 57:1<br>(for Paper & Board)   | 170 - 230 <sup>1)</sup> | 25.0 - 29.0        | Approx. 31   |
| UOBX-B153 | Pigment Blue 15:3<br>(for Paper & Board)  | 125 - 185 <sup>1)</sup> | 24.5 - 28.5        | Approx. 31   |
| UOPX-Y174 | Pigment Yellow 174<br>(for Plastic)       | 190 - 260 <sup>1)</sup> | 18.0 - 22.0        | Approx. 19   |
| UOPX-R571 | Pigment Red 57:1<br>(for Plastic)         | 400 - 800 <sup>2)</sup> | 23 - 27            | Approx. 24   |
| UOPX-B153 | Pigment Blue 15:3<br>(for Plastic)        | 125 - 185 <sup>1)</sup> | 18 - 22            | Approx. 33   |

1) At 20 °C; Physica; D = 5/s; 70% Concentrate, 30% Letdown  
2) At 20 °C; Physica; D = 5/s; Measured as Such  
3) At 32 °C And 800 RPM; Thwing Albert Inkometer; 70% Concentrate, 30% Letdown;

| Colour Strength | Delta E (CIELAB) | FCM suitability |
|-----------------|------------------|-----------------|
| %               |                  |                 |
| 95 - 105        | 0.00 - 1.50      | No              |
| 95 - 105        | 0.00 - 1.50      | No              |
| 95 – 105        | 0.00 - 1.50      | No              |
| 95 – 105        | 0.00 - 1.50      | No              |
| 95 – 105        | 0.00 - 1.50      | No              |
| 95 – 105        | 0.00 - 1.50      | No              |

# Concentrates

## UV Sheetfed Spot Colours

| Product   | Product Description                       | Viscosity <sup>1)</sup> | Tack <sup>2)</sup> | Pigmentation |
|---|---|-------------------------|--------------------|--------------|
|   |   | Pa·s                    |                    | %            |
| UOBF-Y174   | Pigment Yellow 174<br>(for Paper & Board) | 120 - 220               | 12.5 - 14.5        | Approx. 25   |
| UOBF-R571   | Pigment Red 57:1<br>(for Paper & Board)   | 70 - 140                | 12.0 - 14.0        | Approx. 24   |
| UOBF-B153   | Pigment Blue 15:3<br>(for Paper & Board)  | 80 - 150                | 13.0 - 15.0        | Approx. 27   |
| UOPF-Y174   | Pigment Yellow 174<br>(for Plastic)       | 120 - 180               | 12.0 - 15.0        | Approx. 21   |
| UOPF-R571   | Pigment Red 57:1<br>(for Plastic)         | 60 - 100                | 13.0 - 15.0        | Approx. 21   |
| UOPF-B153   | Pigment Blue 15:3<br>(for Plastic)        | 60 - 110                | 12.5 - 14.5        | Approx. 25   |
| Other Shades<br>available for<br>Printing on<br>Plastic or Paper<br>and Board | Details on Request                        |                         |                    |              |

1) At 20 °C, Physica; D = 5/s; 90% Concentrate, 10% PI-Solution  
2) At 32 °C And 800 RPM; Thwing Albert Inkometer;  
90% Concentrate, 10% PI-Solution

[illegible]

Yes



# Concentrates

## Heatset Process Colours

| Product  | Colour Index      | Viscosity <sup>1)</sup> | Tack <sup>2)</sup> | Pigmentation |
|----------|-------------------|-------------------------|--------------------|--------------|
|          |                   | Pa·s                    |                    | %            |
| HSX-Y12  | Pigment Yellow 12 | 800 - 1,100             | 10.0 - 12.0        | Approx. 22   |
| HSX-R571 | Pigment Red 57:1  | 500 - 800               | 11.0 - 13.0        | Approx. 27   |
| HSX-B153 | Pigment Blue 15:3 | 800 - 1,200             | 12.0 - 14.0        | Approx. 30   |

# Coldset Process Colours

| Product  | Colour Index      | Viscosity <sup>1)</sup> | Tack <sup>2)</sup> | Pigmentation |
|----------|-------------------|-------------------------|--------------------|--------------|
|          |                   | Pa·s                    |                    | %            |
| CSX-Y12  | Pigment Yellow 12 | 750 - 1,000             | 10.0 - 12.0        | Approx. 22   |
| CSX-R571 | Pigment Red 57:1  | 500 - 800               | 10.0 - 12.0        | Approx. 28   |
| CSX-B153 | Pigment Blue 15:3 | 600 - 1,000             | 10.0 - 12.0        | Approx. 30   |

1) At 20 °C; Physica; D = 5/s  
2) At 32 °C and 800 RPM; Thwing Albert Inkometer

| Colour Strength | Delta E (CIELAB) | FCM suitability |
|-----------------|------------------|-----------------|
| %               |                  |                 |
| 95 - 105        | 0.00 - 1.50      | No              |
| 95 - 105        | 0.00 - 1.50      | No              |
| 95 - 105        | 0.00 - 1.50      | No              |

| Colour Strength | Delta E (CIELAB) | FCM suitability |
|-----------------|------------------|-----------------|
| %               |                  |                 |
| 95 - 105        | 0.00 - 1.50      | No              |
| 95 - 105        | 0.00 - 1.50      | No              |
| 95 - 105        | 0.00 - 1.50      | No              |

# Concentrates

## Sheetfed Process Colours

| Product  | Colour Index       | Viscosity <sup>1)</sup> | Tack <sup>2)</sup> | Pigmentation |
|----------|--------------------|-------------------------|--------------------|--------------|
|          |                    | Pa·s                    |                    | %            |
| SFE-Y174 | Pigment Yellow 174 | 500 – 850               | 13.5 – 15.5        | Approx. 21   |
| SFE-R571 | Pigment Red 57:1   | 750 – 1,000             | 13.5 – 15.5        | Approx. 28   |
| SFE-B153 | Pigment Blue 15:3  | 950 – 1,300             | 13.5 – 15.5        | Approx. 30   |

# Sheetfed Spot Colours

| Product                              | Colour Index       | Viscosity <sup>1)</sup> | Tack <sup>2)</sup> | Pigmentation |
|--------------------------------------|--------------------|-------------------------|--------------------|--------------|
|                                      |                    | Pa·s                    |                    | %            |
| SFF-Y174                             | Pigment Yellow 174 | 350 - 650               | 11.0 - 13.0        | Approx. 27   |
| SFF-R571                             | Pigment Red 57:1   | 170 - 470               | 12.0 - 14.0        | Approx. 29   |
| SFF-B153                             | Pigment Blue 15:3  | 400 - 800               | 12.5 - 14.5        | Approx. 35   |
| Other Shades available <sup>3)</sup> | Details on Request |                         |                    |              |

1) At 20 °C; Physica; D = 5/s  
2) At 32 °C and 800 RPM; Thwing Albert Inkometer  
3) PY74, PY83, PY139, PY180, PO34, PO43, PR 2, PR48:1, PR48:4, PR53:1, PR112, PR122, PR146, PR184, PR254, PV23, PG7, PBk7, PWh6

| Colour Strength | Delta E (CIELAB) | FCM suitability |
|-----------------|------------------|-----------------|
| %               |                  |                 |
| 95 - 105        | 0.00 - 1.50      | No              |
| 95 - 105        | 0.00 - 1.50      | No              |
| 95 - 105        | 0.00 - 1.50      | No              |

| Colour Strength | Delta E (CIELAB) | FCM suitability |
|-----------------|------------------|-----------------|
| %               |                  |                 |
| 95 - 105        | 0.00 - 1.50      | Yes             |
| 95 - 105        | 0.00 - 1.50      | Yes             |
| 95 - 105        | 0.00 - 1.50      | Yes             |
|                 |                  | Yes             |

1) At 20 °C; Physica; D = 5/s  
2) At 32 °C and 800 RPM; Thwing Albert Inkometer

## 55

[illegible]



## 57

The chart displays the distribution of the number of children per woman across different educational levels. The y-axis lists educational levels from '0.00 - 1.50' to '5.00+'. The x-axis represents the number of children, ranging from 0 to 10. Each bar is labeled with its corresponding educational level and the number of children.

| Education Level | Number of Children |
|-----------------|--------------------|
| 0.00 - 1.50     | 0                  |
| 0.00 - 1.50     | 1                  |
| 0.00 - 1.50     | 2                  |
| 0.00 - 1.50     | 3                  |
| 0.00 - 1.50     | 4                  |
| 0.00 - 1.50     | 5                  |
| 0.00 - 1.50     | 6                  |
| 0.00 - 1.50     | 7                  |
| 0.00 - 1.50     | 8                  |
| 0.00 - 1.50     | 9                  |
| 0.00 - 1.50     | 10                 |

# Powder Pigments

## Alkali Blue

| Product  | Product Description | Binder System Recommendation | Colour Strength |
|----------|---------------------|------------------------------|-----------------|
|          |                     |                              | %               |
| H03-PDI  | Red Shade           | Conventional Offset          | 95 - 105        |
| H05-PDI  | Medium Shade        | Conventional Offset          | 95 - 105        |
| H05-PDI1 | Medium Shade        | Conventional Offset          | 95 - 105        |
| H09-PDI  | Green Shade         | Conventional Offset          | 95 - 105        |

| Delta E (CIELAB) |
|------------------|
| 0.00 - 1.50      |
| 0.00 - 1.50      |
| 0.00 - 1.50      |
| 0.00 - 1.50      |

# Lamination Adhesives

## Solvent Free Two-Component

| Type                    | Product Attributes    |                     |
|-------------------------|-----------------------|---------------------|
|                         | Bond / Seal Strength* | Chemical Resistance |
| Medium-High Performance | 5 – 6                 | Very good           |
| General Performance     | 4 – 5                 | Good                |

\* scale 1 - 10; 10 = perfect

| Key properties  | Application   |
|---|---|
| <ul style="list-style-type: none"><li>- use with high gauge PE</li><li>- use with Alu foil</li><li>- demanding filling goods</li><li>- hot fill</li></ul>   | <ul style="list-style-type: none"><li>- very good chemical and heat resistance properties.</li><li>- aggressive end use applications (e.g. liquids, spices and detergents, or edible oils)</li></ul>          |
| <ul style="list-style-type: none"><li>- all purpose product for general use</li><li>- product with increased curing speed</li><li>- high speed lamination</li><li>- use with metallized films</li></ul> | <ul style="list-style-type: none"><li>- laminates for packaging of snacks and other non-aggressive dry products.</li><li>- adhesives for general purpose film to film metalized or foil application</li></ul> |

# Lamination Adhesives

## Solvent Based Two-Component

| Type                | Product Attributes    |                     |
|---------------------|-----------------------|---------------------|
|                     | Bond / Seal Strength* | Chemical Resistance |
| High Performance    | 8 – 9                 | Excellent           |
| Medium Performance  | 6 – 7                 | Very good           |
| General Performance | 4 – 5                 | Good                |

\* scale 1 - 10; 10 = perfect

| Key properties   | Application   |
|--|---|
| <ul style="list-style-type: none"><li>- reverse technology</li><li>- retort grade up to 130°C</li><li>- retort grade up to 125°C</li></ul>   | <ul style="list-style-type: none"><li>- for extremely demanding end uses like packing of acidic liquids and harsh chemicals</li><li>- can be used in retort applications as well as at very low temperature (deep freeze)</li></ul> |
| <ul style="list-style-type: none"><li>- standard medium performance product</li><li>- high solid, high viscosity</li></ul>                   | <ul style="list-style-type: none"><li>- very good chemical and heat resistance</li><li>- aggressive end use applications (e.g. liquids, spices and detergents, or edible oils)</li></ul>  |
| <ul style="list-style-type: none"><li>- standard general performance product</li><li>- especially suitable for metallized PE films</li></ul> | <ul style="list-style-type: none"><li>- laminates for packaging of snacks and other non-aggressive dry products.</li><li>- adhesives for general purpose film to film, metallized or foil application</li></ul>                     |



# Let's Stay In Touch

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