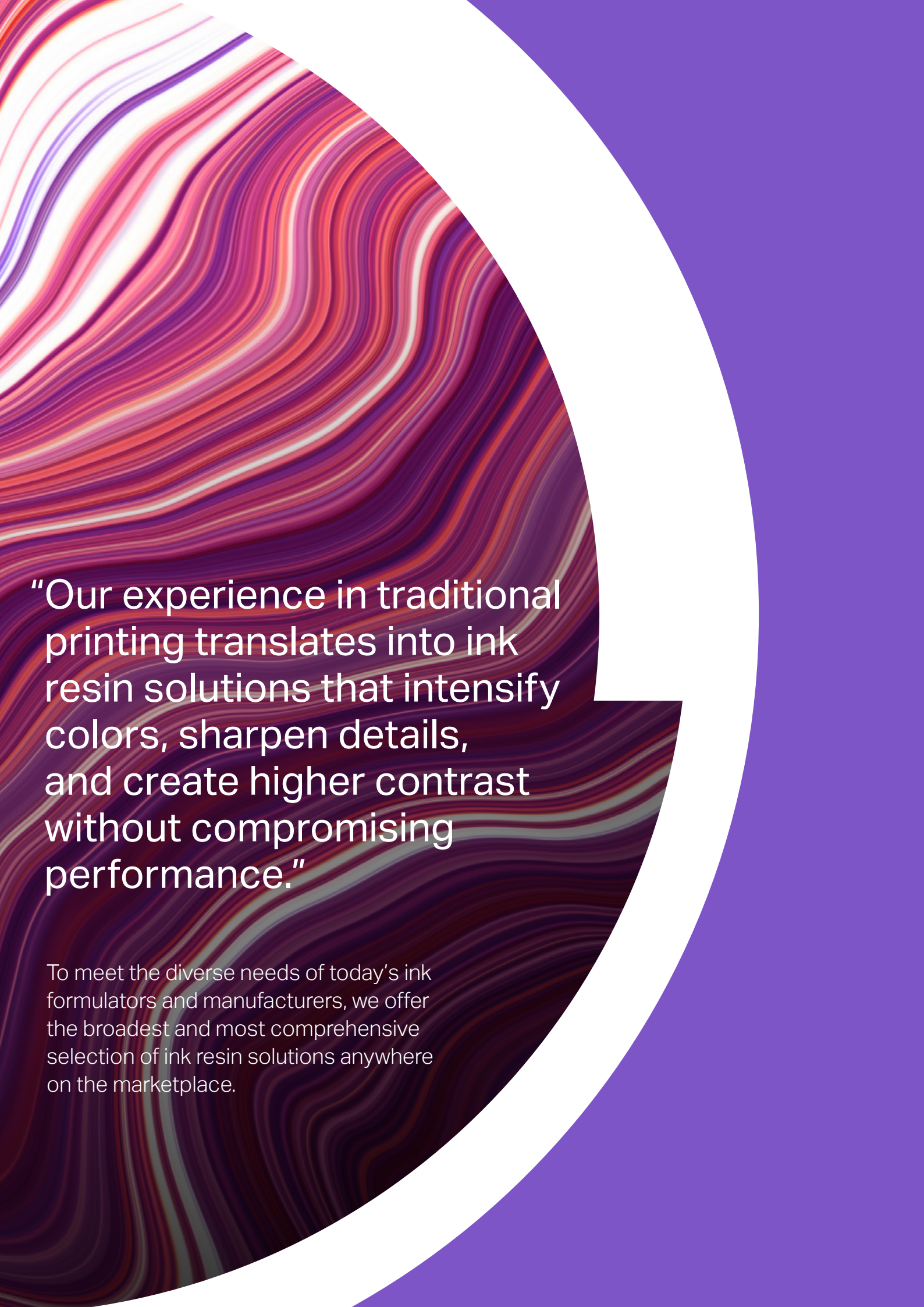




Covestro ink resin solutions.

Create a world of inks with Covestro.





"Our experience in traditional printing translates into ink resin solutions that intensify colors, sharpen details, and create higher contrast without compromising performance."

To meet the diverse needs of today's ink formulators and manufacturers, we offer the broadest and most comprehensive selection of ink resin solutions anywhere on the marketplace.

Whatever your need, we have it covered.

"We've been at the forefront of developing ink resins in the printing sector **for over 30 years** and continue to set new trends with the newest printing techniques."



At Covestro, all of our ink resin solutions are designed with our customers in mind. From using market needs to guide our ideas, to involving customers in developing our solutions. Everything we do starts with our end goal of meeting our customers' needs – and those of their customers.

Unlike many other ink resin manufacturers, our R&D efforts focus on tackling the real problems in the market. In particular, we understand that our customers need resins that can work with difficult substrates, grind different pigments into small enough particles, ensure low migration for applications like food packaging, and achieve a good cure response at low energy. We also know that customers look for resins that can

offer good color strength, high definition print quality, excellent adhesion, high-speed processability, and low solvent retention, and waterborne resins that deliver resistance and reliable performance.

Building on our strong experience – for you.

To meet these market demands, we're leveraging our strong experience and global facilities to develop superior-quality resins to meet our customers' required functions. In fact, we've been at the forefront of developing ink resins in the printing sector for over 30 years and continue to set new trends with the newest printing techniques. Our ability to innovate at scale, combined with our customer understanding, enables us to develop solutions that better fit our customers' demands.

But it's not just us doing the innovating: we actively involve our customers in our R&D efforts too. In particular, we visit them regularly and involve them in technical discussions, as well as working on unique new resins together. And, if you don't find what you're looking for in this brochure, we can also offer you tailored solutions that are specifically designed for your precise needs. So, no matter what you're looking for, we've got you covered.

To learn more about developing these solutions together, get in touch with us at www.covestro.com

A range of technologies for a range of needs

The ink resin is the foundation for the ink formulator – indeed, its quality plays a crucial role in the entire printing process. At Covestro, our resins' processing speed is enabled by a balance of even transfer and drying time with steady viscosity. We produce ink resins, via our highly advanced R&D activities, with the following technologies:

- Waterborne
- Solventborne
- Energy curable (UV/EB)

Whether your substrate is highly absorbent, or nonporous and low surface tension (resulting in a surface that's not receptive to bonding), our R&D colleagues will always find the right balance, offering resins that deliver:

- Flow
- Adhesion
- Color strength
- Printability performance in any kind of printing system
- Suitability for food applications

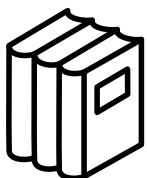


Maximum print performance in three key areas.

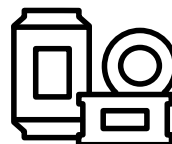
We have over a century's experience developing chemical technology – experience that we use to manufacture the highest-performance ink resins and deliver on the needs of our customers. In particular, our resins deliver the following qualities during the printing process:

- High machine speed without compromising on print quality (appropriate ink transfer, appropriate coverage and thinnest ink layer possible)
- Re-solvability: dry ink can be re-solved with fresh ink during the printing process
- Chemical and physical resistance (providing high print quality on the substrate)

Covestro supplies resins for all three layers of primer, ink, and overprint varnish, available for different types of substrates in various industries including food & beverage, pet food, cosmetics, and pharmaceuticals.



Paper



Metal



Plastic

Our portfolio. Your solutions.

27 solutions with a unique set of properties

Energy curable (UV/EB) ink resin solutions



Agisyn™ 705



Neorad™ P-50



Neocryl® B-302



Neocryl® B-300



Agisyn™ 716



Agisyn™ 703TF

Waterborne ink resin solutions for paper



Neocryl® BT-107



Neocryl® BT-100



Neocryl® BT-24



Neocryl® BT-21

Waterborne ink resin solutions for flexible packaging



Neocryl® A-1127



Neocryl® A-1129



Neorez® R-650



Neocryl® A-1125



Neocryl® A-1131



Neocryl® A-1095



Neopac™ E-200

Solventborne ink resin solutions



Neorez® U-431



Neorez® U-475



Neorez® U-391



Neorez® U-335 &
Neorez® U-395



Neorez® U-415



Neorez® U-347 &
Neorez® U-322



Neorez® U-471



Neorez® U-417



Energy-curable (UV/EB) ink resin solutions

Energy curing (UV/EB) technologies have already made significant inroads into non-food applications due to the numerous advantages they provide over other technologies, such as high gloss, excellent resistance properties, high printing speed, low drying or cure times, no VOCs, and low system cost.

Our growing technology toolbox for UV and energy-curable resins is based on our customer-centric approach and our conviction that this technology has the potential to revolutionize the coatings industry. That's because energy-curable technology delivers the outstanding performance that coatings formulators look for. In addition to their instantaneous drying times and zero VOC content, our UV resins are delivering high quality across a range of markets – from boosting adhesion in labels and foils for food packaging to increasing the efficiency and safety of paper and board printing.



Agisyn™ 705

The skilled pigment-build king

Agisyn™ 705 is a tetra-functional polyester acrylate with excellent lithographic behavior and pigment wetting for inks. It also exhibits good anti-misting properties. Consequently, this polyester acrylate is an excellent building block to prepare pigment pastes for offset printing inks. Its low odor and low level of potential migratable substances make this resin suitable for low-migration applications.



Neorad™ P-50

The superior pigment-grinding guru

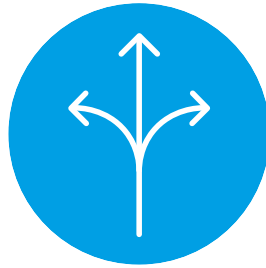
Neorad™ P-50 is recommended as a pigment-grinding vehicle for all types of energy-curable printing inks. This polyester acrylate can be used in combination with a wide range of monomers to prepare pigment concentrates using reduced amounts of the dispersing agent, and exhibits unique flow properties and reduced thixotropic behavior in highly pigmented concentrates. On top of this, the resin has an exceptional combination of adhesion and excellent cure response.



Neocryl® B-302

The energy-curable adhesion king

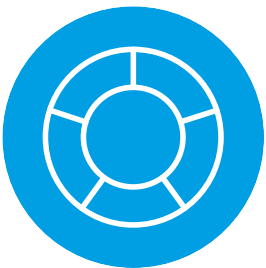
Neocryl® B-302 is specially designed for use as an additive in energy-curable printing inks, especially for applications that require low levels of potentially migratable components – for example, printing on food packaging. This resin provides improved adhesion to difficult substrates and flexibility and can be used in flexo, offset and screen printing. In offset ink formulations, this resin results in enhanced fountain latitude. Its low molecular weight makes it possible to incorporate sufficient material in the ink to achieve the enhanced overall performance of reactive systems.



Neocryl® B-300

The low-migration flexibility adhesion master

Neocryl® B-300 is a solid methacrylic copolymer which can be used in energy-curable systems to improve adhesion to difficult substrates and to increase their flexibility. In energy-curable printing inks, **Neocryl® B-300** is particularly useful for applications that require a low level of potential migratable components – for example, printing on food packaging.



Agisyn™ 716

The low-migration captain salvation

Agisyn™ 716 is a bisphenol-A-free, high-functioning, low-viscosity polyester acrylate that can be used in low-migration EB and UV curable printing inks, flexo and offset. Due to the optimized hydrophobic–hydrophilic balance of the backbone, **Agisyn™ 716** shows excellent pigment grinding properties. The low odor and low level of potentially migratable substances make this resin suitable for low-migration applications.



Agisyn™ 703TF

The high-energy master

Agisyn™ 703TF is an amine-modified acrylate which shows great versatility in a wide range of formulations. It can be used as a lower-viscosity, high-reactivity alternative to epoxy acrylate oligomers in UV or EB varnishes for printing inks (mainly flexo). This product is completely toluene-free and has a low odor and low extractables, making it suitable for low-migration applications.

Waterborne ink resin solutions for paper



Our highly cost-effective colloidal dispersion resins for pre-print and post-print inks offer an excellent balance of printability, cost-effectiveness, and performance on a broad range of paper, paperboard and corrugated board, meeting market demand for high-performance, no-compromise qualities.



Neocryl® BT-107

The key-grade acrylic captain

Neocryl® BT-107 is a cost-effective key-grade resin for pre- and post-print on corrugated board. It is alkali-soluble with high viscosity after neutralization, and also has a linear dilution curve.



Neocryl® BT-100

The ultra-resistance champion

Neocryl® BT-100 is a general-purpose-grade resin for post-print, enabling ink manufacturers to achieve the optimum price-performance balance. It can act as a slow binder containing flexo-inks for paper and board, or a rheology (flow) modifier for waterborne inks. **Neocryl® BT-100** offers broad compatibility with other resins, low foaming tendencies, good pigment-wetting properties, and excellent printing behavior. It is alkali-soluble, with high viscosity at relatively low solids after neutralization.



Neocryl® BT-24

The pigment-grinding wizard

Neocryl® BT-24 is a key-grade resin used for dispersing pigment. It is water- and humidity-resistant, and suitable for a wide variety of applications. **Neocryl® BT-24** offers adhesion to a wide range of substrates.

The resin is a white, translucent, liquid, all-acrylic co-polymer developed for waterborne flexo printing inks and paper coatings. Films with **Neocryl® BT-24** exhibit excellent hardness, resistance to water and chemicals, flexibility and hiding power. It is also alkaline-soluble and highly compatible with other resins.



Neocryl® BT-21

The high-gloss metallic master

High gloss. Especially suitable to combine with metallic pigments. Modifying resin with broad compatibility with other resins, low foaming tendency, good pigment wetting properties and excellent printing behaviour.

"Our solutions are driven by our intricate knowledge of the processes and technologies used by our customers, and their customers."



Waterborne ink resin solutions for flexible packaging

Our acrylic resins for surface-printing inks for plastic films and paper board offer excellent printability and resolubility during the printing process. After drying, they develop the fast chemical and mechanical resistance our customers look for in waterborne resins. In fact, these binders can achieve the performance of 2k systems using only 1K systems.



Neocryl® A-1127

The waterborne king

Self-crosslinking emulsion resin **Neocryl® A-1127** offers the best chemical and physical resistance level of the acrylics.

It is designed for surface printing onto polyolefines, polyesters and polyamide, and for coating metalized films. **Neocryl® A-1127** is also used in print-receptive, heat-seal blister and embossing applications.



Neocryl® A-1129

The chemical-resistance champion

Neocryl® A-1129 is a transparent non-blocking resin with chemical, alcohol and detergent resistance. It is a hard, self-crosslinking copolymer emulsion with small particle size and offers good adhesion to plastics, including polystyrene and polyamide.



Neorez® R-650

The waterborne lamination leader

Neorez® R-650 is a non-tin-based flexible aliphatic polyurethane resin. It is APEO free and offers high reversibility and excellent adhesion to a wide variety of packaging films, including OPA and aluminum.

Neorez® R-650 is suitable for lamination ink for films and is EU food contact compliant.



Neocryl® A-1125

The versatile printability wizard

Neocryl® A-1125 is a printability modifier for **Neocryl® A-1127** that doesn't affect its adhesion properties or chemical resistance. It combines good chemical and physical resistance, excellent printability and excellent adhesion. Its main application is as a print modifier for acrylic dispersions, but it can also be used as a sole binder. The resin is a waterborne self-cross-linking acrylic copolymer solution in the form of a light tan transparent liquid. It is suitable for use in flexo and gravure inks on flexible non-absorbing substrates.



Neocryl® A-1131

The emulsion resistance maestro

This is a hard, non-blocking emulsion that requires a coalescent for film-forming. **Neocryl® A-1131** is suitable for PVC and paper wall coverings, with excellent plasticizer, water, and chemical resistance. It also offers excellent anti-blocking and temperature resistance.



Neocryl® A-1095

The full-contact flyer

Neocryl® A-1095 is a low-Tg (glass transition), soft, modified acrylic styrene copolymer dispersion. It offers excellent adhesion to a broad film of substrates including polyolefines, polyamide, PET, PEPET, PA and BOPP. In addition, it provides clear and transparent films, good dry and wet rub resistance, fast film formation, good wetting, and good anti-slip properties. It is also EU food contact compliant. **Neocryl® A-1095** is used as a let-down resin for low-odor and low-VOC overprint varnishes for films, foils and paper, and for waterborne flexo or gravure printings onto polyolefin films. It contains no glycol ethers and very low levels of organic solvent.



Neopac™ E-200

The hybrid lamination hero

Neopac™ E-200 was specifically developed for lamination ink formulations for use with packaging films. **Neopac™ E-200** has excellent adhesion to a wide range of film substrates, including polyester, and is a highly reversible and low-foaming polymer for ink application using flexo or gravure printing techniques. Additionally, it offers good adhesion and sterilization resistance and is EU food contact compliant. The resin is a yellow non-tin and non-TEA-based aliphatic urethane/acrylic liquid dispersion.



Solventborne ink resin solutions

Our elastomeric solventborne urethanes for surface and lamination inks offer excellent printability in both gravure and flexo print systems. These resins meet the solventborne market's demand for good performance, high color strength, high image definition, and low solvent retention.

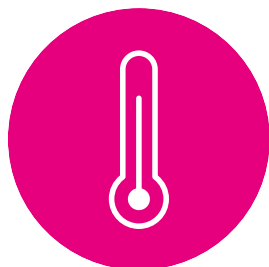


Neorez® U-431

The expert in adhesion for difficult substrates

Neorez® U-431 is a mild solventborne urethane, free of toluene and MEK, with high lamination bond strength including extrusion lamination. It exhibits excellent adhesion latitude onto various mainstream flexible films (OPP, PET, and Nylon) used for food packaging.

Neorez® U-431 is an aliphatic-grade resin targeted for gravure printing that can be formulated with both vinyl- and nitrocellulose-based pigment concentrates, resulting in highly universal laminating ink. **Neorez® U-431** is also suitable for dispersing both organic and inorganic pigments, providing the option to formulate sole binder systems. By utilizing the right formulation, **Neorez® U-431** can be formulated to pass sterilization and pasteurization treatments.



Neorez® U-475

The high-temperature color power

Neorez® U-475 reaches the next level of universal performance in laminating ink applications. Specific features include high opacity in white, excellent high-speed printability behavior and excellent immediate adhesion properties. **Neorez® U-475** is an aliphatic-grade resin which is targeted for flexo and gravure printing and can be formulated with nitrocellulose and PVB-based pigment concentrates.



Neorez® U-391

The gravure adhesion master

Neorez® U-391 is a non-tin and non-TDI-based nonreactive thermoplastic semi-film forming polyether polyurethane resin, for use in conjunction with toughening resins to laminate and surface-print inks onto packaging films and foil.



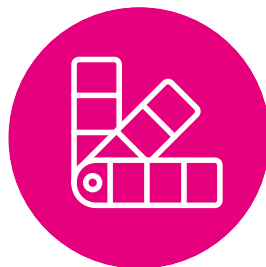
Neorez® U-335 & Neorez® U-395

The versatile captain for gravure and flexo

Neorez® U-335 is a non-reactive semi-aliphatic polyurethane of a high molecular weight. The product forms a film with elastomeric properties and is recommended in flexo for gravure printing ink formulations on a wide variety of flexible films, especially OPP, PE, and PET. **Neorez® U-335** offers the following key benefits: excellent adhesion to the plastic films mentioned above, good solvent release, excellent flexibility, tack-free, excellent lamination bond strength, good alcohol dilutability, and strong heat resistance.

Neorez® U-395 is a non-reactive semi-aliphatic polyurethane resin of a high molecular weight. The product forms a film with elastomeric properties and is recommended in flexo and for gravure printing ink formulations on a wide variety of flexible films, especially OPP, PE, and PET.

Neorez® U-395 has good alcohol dilutability and heat resistance. It is non-tin and non-TDI based.



Neorez® U-415

The value-engineered boss of color

Neorez® U-415 is a semi-aliphatic film-forming polyurethane with a very high solids level. This resin, which is targeted for use in NC-based inks, exhibits excellent high-speed flexo printability in combination with good adhesion on a wide range of flexible packing film substrates. In laminating applications, **Neorez® U-415** provides good bond strength performance in a broad range of substrate combinations based on OPP, PE, and polyester.

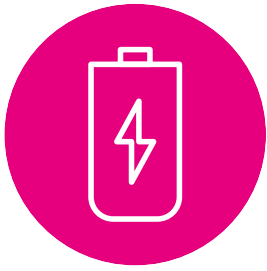


Neorez® U-347 & Neorez® U-322

The cost-efficient gravure color expert

Neorez® U-347 is a non-reactive aromatic polyurethane with a superior molecular weight to similar products. This characteristic allows reduced solvent retention when printed. The product is suitable for gravure and flexo printing inks used for laminates and for surface and interior printing. It offers excellent adhesion on several plastic films, especially on COPP, PE and aluminum foil.

Neorez® U-322 is a non-reactive, flexible polyurethane resin. The resin is used as an adhesion- and flexibility-promoting resin for film-forming ink binders like nitrocellulose. It is also used to formulate solvent borne flexo and gravure inks for packaging films, especially polyolefin films. Inks based on this resin are recommended for surface printing as well as laminating applications.

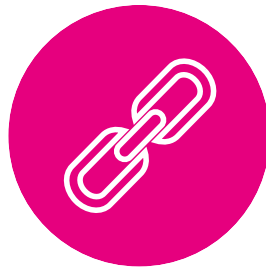


Neorez® U-471

Gravure high-quality color and retortable power

Neorez® U-471 is a high-performance, NCO-free hydroxyl functional aliphatic polyurethane with a high molecular weight. The product forms a film with elastomeric properties without any blocking tendency. For this reason, **Neorez® U-471** can be used as a sole binder, resulting in ink with real polyurethane properties.

Neorez® U-471 is suitable for pigment grinding; even organic pigment grinds can be prepared. It is recommended for use in flexo and gravure laminating inks.



Neorez® U-417XP

The bond-strengthening king

Neorez® U-417XP is a semi-aliphatic film-forming polyurethane with a very high solids level. The product, which is targeted for use in NC-based inks, exhibits excellent high-speed flexo and gravure printability, in combination with excellent adhesion on a wide range of flexible packing film substrates. In laminating applications, **Neorez® U-417XP** provides excellent bond strength performance in a broad range of substrate combinations based on OPP, PE, and polyester. It is an ethanol-free product and therefore suitable for ethanol-free markets.

“Our elastomeric solventborne urethanes for surface and lamination inks offer excellent printability in both gravure and flexo print systems.”



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The manner in which you use our products, technical assistance and information (whether verbal, written or by way of production evaluations), including any suggested formulations and recommendations, is beyond our control. Therefore, it is imperative that you test our products to determine suitability for your processing and intended uses. Your analysis must at least include testing to determine suitability from a technical, health, safety, and environmental and regulatory standpoint. Such testing has not necessarily been done by Covestro, and Covestro has not obtained any approvals or licenses for a particular use or application of the product, unless explicitly stated otherwise. If the intended use of the product is for the manufacture of a pharmaceutical/medicinal product, medical device¹ or of pre-cursor products for medical devices or for other specifically regulated applications which lead or may lead to a regulatory obligation of Covestro, Covestro must explicitly agree to such application before the sale. Any samples provided by Covestro are for testing purposes only and not for commercial use. Unless we otherwise agree in writing, all products are sold strictly pursuant to the terms of our standard conditions of sale which are available upon request. All information, including technical assistance is given without warranty or guarantee and is subject to change without notice. It is expressly understood and agreed by you that you assume and hereby expressly release and indemnify us and hold us harmless from all liability, in tort, contract or otherwise, incurred in connection with the use of our products, technical assistance, and information. Any statement or recommendation not contained herein is unauthorized and shall not bind us. Nothing herein shall be construed as a recommendation to use any product in conflict with any claim of any patent relative to any material or its use. No license is implied or in fact granted under the claims of any patent.

¹Please see the "Guidance on Use of Covestro Products in a Medical Application" document.

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