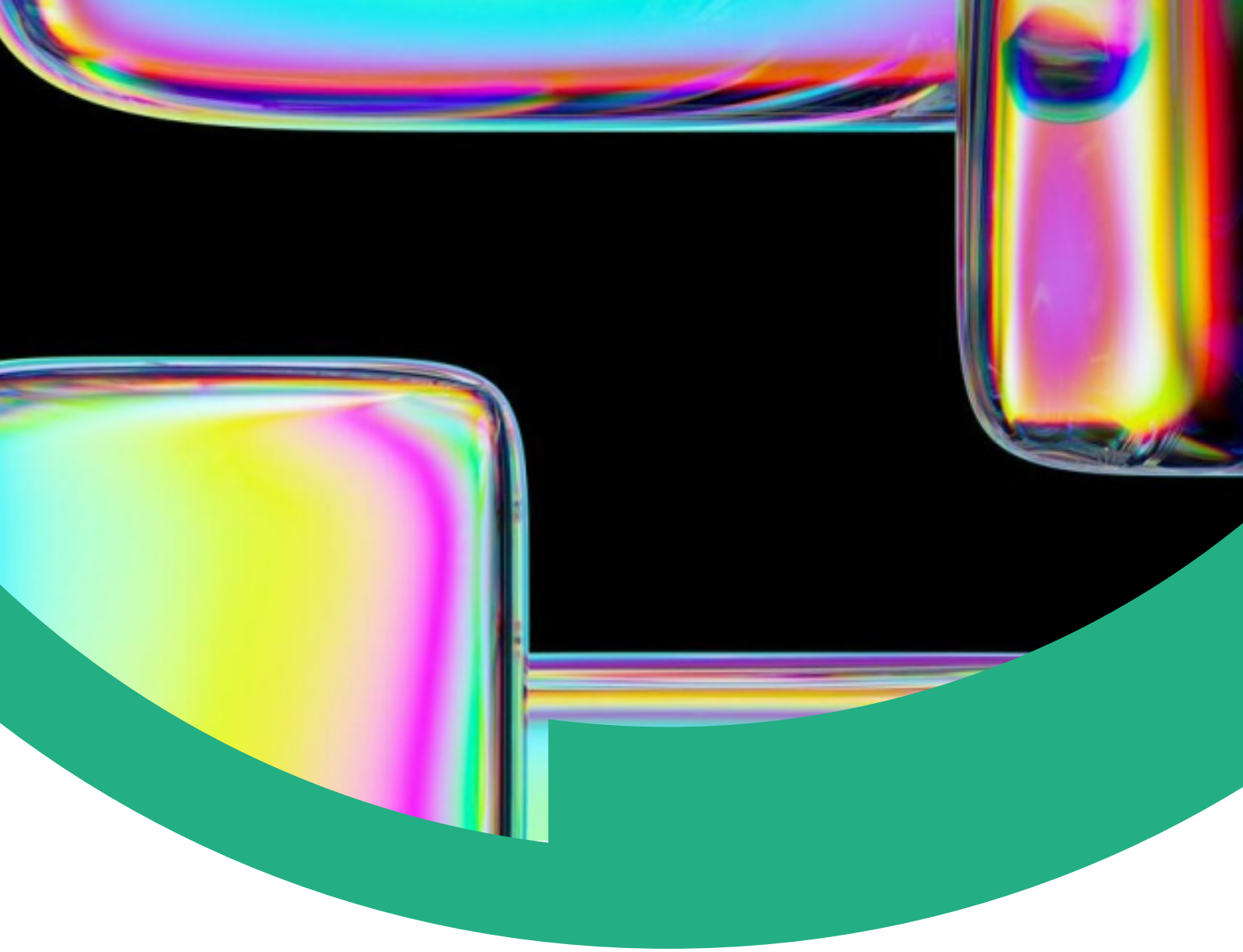


Energy-curing technology

UV resins made with bio-based content

covestro

UV resins made with bio-based content

Across the coatings industry, demand is growing for more sustainable solutions that can lower your customers' environmental impact. UV-curable coatings are an established way to achieve this, since they need less energy to cure. And using partly bio-based resins can make your UV-curable coatings even more sustainable.

Key benefits

of partly bio-based UV resins from Covestro

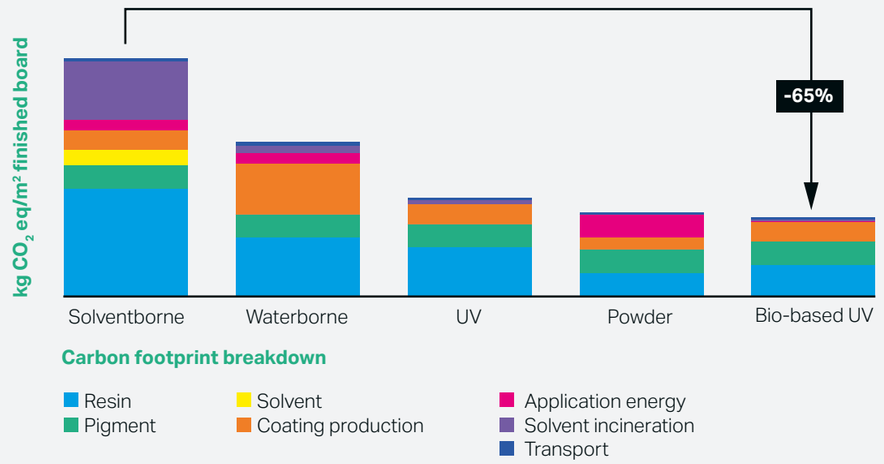
- Certified bio-based C14 content (up to 83%)
- Lower carbon footprint
- High-performance properties
- Good cost value

UV resins: An established more sustainable technology

Energy curing (using UV, EB, LED, or Excimer energy sources) is compatible with many substrates and application technologies, and has several performance benefits. Curing is fast thanks to the instant crosslinking, enabling high productivity and lower costs. And UV-cured coatings often provide properties such as excellent adhesion, mechanical resistance, and chemical resistance.

Energy curing also comes with sustainability benefits. In fact, UV-curable coatings have one of the lowest carbon footprints of all resin technologies – 60% lower on average than solvent-based equivalents. The fast curing means lower energy consumption, minimizing emissions. With newer technologies like LED, energy consumption can be reduced even further. And with no additional solvents needed, energy-curable resins also have low volatile organic compound (VOC) content.

Carbon footprint comparison per m² of finished board: Solventborne, waterborne, powder, and UV technologies



Bringing in bio-based materials

The sustainability benefits of UV curing can be increased even further when combined with partly bio-based resins, manufactured from plant-based raw materials. The potential impact is particularly large in flooring and furniture applications.

But implementing this bio-based content can be easier said than done. Not only is the coatings industry as a whole relatively new to bio-based raw materials, but UV-curable coatings require entirely different raw materials to existing solutions. This means different suppliers, scale of production, and pricing. As such, manufacturers are still developing the most efficient ways to gather, purify, and process these bio-based raw materials.

Covestro’s approach to partly bio-based UV resins

At Covestro, we’re determined to tackle these challenges and continue creating partly bio-based UV resins to enable even more sustainable coatings. Our approach to developing these resins has two key pillars:

Certified C14 sources

The bio-based content used in our UV resins comes from natural sources such as soybean oil, which is backed up by certified external analysis. Specifically, the renewable carbon (C14) content can be measured and quantified versus fossil-based carbon (C12), all the way back to the raw materials. The renewable carbon content is noted as a percentage of total carbon content, not as the weight percentage of the total commercial product.

We’re continually working with our suppliers to get additional certifications for our partly bio-based UV-curable resins, on topics such as sustainable harvesting and human food chain competition.

Balancing bio-based content with cost and performance

Besides certified C14 content, we aim to continue offering strong functional performance and cost value across all our partly bio-based UV-curable resins. While this balance will look different for every customer and market, our goal is for our partly bio-based resins to replicate the performance of traditional equivalents as much as possible. And where there are inevitable differences in performance, we’ll work with you to identify them and make improvements.

We also aim for the cost of our partly bio-based UV resins to be as close as possible to their traditional equivalents, to make them a viable and worthwhile choice.

Our goal is for our partly bio-based resins to replicate the performance of traditional equivalents as much as possible.

Our partly bio-based, 100%-solids UV resin portfolio

We currently offer 15 partly bio-based UV resins containing up to 83% bio-based content. These resins come from three of our brands:

AgiSyn™
100%-solids materials designed for high-throughput coating and printing lines

NeoRad™
Including 100%-solids materials for high-throughput production lines

NeoCryl®
Including 100%-solids acrylic resins for high-throughput production lines

The resins in this portfolio offer high-performance properties including multi-substrate adhesion, pigment grinding, silky-feel haptics, excellent wetting, and easy gloss reduction. They're particularly suitable for interior furniture and flooring applications, as well as printing & packaging purposes.

Toward even more sustainable, high-performance UV resins

As we expand this portfolio, we'll strive to offer even higher levels of both bio-based content and functional performance. Alongside this, we'll continue exploring other ways to improve the sustainability of our resins, such as alternative fuels, recycled raw materials, and mass balancing.

To do this, your feedback is essential. As such, we'd like to have ongoing discussions about how we can tailor these resins to your specific application needs. This could look like increasing mechanical and chemical resistance in furniture applications, for example, or prioritizing recyclability for printing & packaging applications. Together, we can enable the even more sustainable, effective UV-curable coatings of tomorrow.

Our partly bio-based,100%-solids UV resin portfolio

Resin	Bio-based C14 content	Application	Features
AgiSyn™ 248	45%	Overprint varnishes	Silky-feel urethane acrylate used in combination with easy gloss-reduction technology to obtain haptic matt overprint varnishes (OPV)
AgiSyn™ 701	13%	All-purpose	All-purpose amine-modified acrylate; cure-speed booster with good pigment wetting
AgiSyn™ 705	56%	Offset inks	Fatty-acid-modified polyester acrylate with excellent pigment-grinding vehicle for offset inks
AgiSyn™ 717	44%	Flexo inks	Low-extractable fatty-acid-modified polyester acrylate used as pigment-grinding vehicle for flexo, screen, and offset inks offering good adhesion
AgiSyn™ 720	15%	Coatings and inks	Low-viscosity polyester acrylate with good diluting power
AgiSyn™ 2020	83%	Coatings and inks	Epoxidized soya oil acrylate with excellent wetting properties suitable for inks and coatings
AgiSyn™ 2837	14%	All-purpose	General-purpose diluent (GPTA) with a good balance between flexibility and hardness *Also available as High Purity version (P grade) for low migration applications*
AgiSyn™ 2870	79%	All-purpose	Monomer (IBOA) with high Tg and strong diluting power
AgiSyn™ 2896	80%	All-purpose	Monomer (LA) with low Tg and strong diluting power
NeoCryl® B-302	32%	Coatings and inks	Inert acrylic polymer that reduces shrink and stress in UV-cured systems. Highly suitable for adhesion primers
NeoRad™ E-20	12%	Offset inks	Fatty-acid-modified bisphenol A epoxy acrylate with good lithographic behavior and pigment wetting, recommended for use in offset inks
NeoRad™ CQ P-12	52%	Coatings	Polyester acrylate ideal for basecoats, sealers, and wear-layer uses that demand flexibility, wear resistance, and/or pigment wetting
NeoRad™ P-50	13%	Coatings and inks	LED-curing polyester acrylate exhibiting Newtonian flow behavior of pigment concentrates
NeoRad™ U-81	26%	Coatings and adhesives	Elastic aliphatic urethane acrylate (>300% elongation) for primer applications on melamine paper or in adhesives
NeoRad™ U-6282	38%	Coatings	Easy-to-matt (when formulated with conventional matting agents) urethane acrylate, for topcoat use in flooring and furniture applications

Find out more on our website

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 device[1] 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.

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

Edition: November 2024 · Printed in The Netherlands

Covestro Deutschland AG
Kaiser-Wilhelm-Allee 60
51373 Leverkusen
Germany

solutions.covestro.com