



The Chemical Company

Key features and benefits

- water-based
- economical
- low sealing temperature
- good blocking resistance

Joncryl® 9010

preliminary datasheet

an acrylic co-polymer emulsion for use in water-based heat-seal lacquers for cardboard blisters and flexible packaging

General information

Typical physical characteristics (not to be considered specifications)

appearance	translucent emulsion
non-volatile	45 %
viscosity at 25 °C (77 °F) (Brookfield)	70 mPa.s
pH	7.3
acid value	60 mg/KOH/g
glass transition temperature T _g (DSC)	-10 °C (14 °F)
density	1.03 g/cm ³

Applications

Cardboard blister packs

Joncryl® 9010 is an acrylic co-polymer that offers heat-seal properties at low sealing temperature. The product is very suitable for producing cardboard blister cartons. Due to the low activation temperature, the product will allow shorter dwell times of the sealing equipment. As a result the product output of blister packaging lines is improving by 20-50 %.

Joncryl® 9010 normally will be formulated in order to be applied in-line over wet offset inks through the regular coating stations on a sheet-fed offset presses.

The following formulation was used to perform sealing tests:

77.0 parts	Joncryl® 9010		
20.0 parts	Joncryl® 8085	42.5 % solids solution of solid resin	Joncryl® 682
3.0 parts	Aerosol® ¹ OT 75	wetting agent	
100.0 parts			
	solids	46 %	
	viscosity	850 mPa.s	Brookfield 25 °C (77 °F)
	dilution to 150 mPa.s	11 %	water addition
	gloss	78 %	measured at 60° angle over standard offset ink

This formulation can be considered as a starting point for use as an offset overprint varnish. Addition of commonly used defoamer and wax-additive is recommended to improve press stability and scratch resistance.

Sealing profile of the formulation was tested on standard 275 gsm blister board (Lino freeze, MM Karton).

Varnish applied with a cylinder 140 lines/inch over a wet offset ink and on plain board.

Coating weight 8 grams wet, 3.8 grams dry.

Coated board was sealed against PVC and A-PET blister film.

Dwell time 2", pressure 3 Bar. Only upper sealing jaw was heated ("punch seal")

The following table showing result- OK means complete-fiber tear achieved.

dwell time: 2" pressure: 3 Bar	cartonboard - blister plastic combination			
	Linofreeze - PVC		Linofreeze - PET-A	
temp	on offset ink	unprinted	on offset ink	unprinted
120 °C	OK	moderate	OK	moderate
140 °C	OK	OK	OK	OK
160 °C	OK	OK	OK	OK
180 °C	OK	OK	OK	OK

blister performance

Other heat-seal

Joncryl® 9010 is very suitable as binder or modifier for water-based heat-seal lacquers in a variety of other cardboard and flexible packaging applications. In this function it will replace existing solvent-based heat-seal lacquers or co-extruded sealing films.

Cardboard boxes

Joncryl® 9010 can be used in lacquers on cardboard boxes and trays replacing PE co-extrusion. Due to the low activating temperature the product will provide sealing capability in combination with a level of water and water-vapor resistance that is sufficient for many applications. The product can easily be formulated with wax dispersions to further improve barrier properties.

Pharmaceutical blisters

Joncryl® 9010 will provide bond-strength that meets the requirements for strip-off blister foil. For push through foils the product will serve as a modifier to improve sealing profile of existing water-based heat-seal lacquers.

PET lidding film

Joncryl® 9010 is suitable for heat-seal lacquers on easy peel-off PET lidding films for PET tray material in a variety of packaging applications

Activation temperature

Joncryl® 9010 allows relatively low sealing temperatures making the product suitable for sealing thicker packaging materials during short activating time:

Joncryl® 9010 against PS, APET and PVC : Activation temperature 140 - 160 °C (0.5", 3bar)

Joncryl® 9010 against itself (aluminium) : Activation temperature 80 - 100 °C (0.5", 3bar)

Peelstrength* aluminium against plastics		
	3.5 gsm	7.5 gsm
PS	4	7
APET	5-7	8-10
PVC	7-9	8-11
<i>*peelstrength strips in N/15mm, activating temperature 140-160 °C, dwell time 0.5", 3Bar</i>		

Peelstrength* Joncryl® 9010/ Joncryl® 9010 (aluminium)		
	3.5 gsm	7.5 gsm
80 °C	1.5	3
140 °C	3	6
<i>*peelstrength strips in N/15mm, Joncryl® 9010 against itself, dwell time 0.5", 3Bar</i>		

Safety

When handling these products, advice and information given in the safety data sheet must be complied with. Further, protective and workplace hygiene measures adequate for handling chemicals must be observed.

Note

The data contained in this publication are based on our current knowledge and experience. In view of the many factors that may affect processing and application of our product, these data do not relieve processors from carrying out their own investigations and tests; neither do these data imply any guarantee of certain properties, nor the suitability of the product for a specific purpose. Any descriptions, drawings, photographs, data, proportions, weights, etc. given herein may change without prior information and do not constitute the agreed contractual quality of the product. It is the responsibility of the recipient of our products to ensure that any proprietary rights and existing laws and legislation are observed.

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We create chemistry

Making sustainable dreams come true

Our expanding portfolio of Joncryl® solutions enable the future of sustainable packaging.



Connect with us

Insights | www.insights.basf.com

Website | www.basf.us/dpsolutions

Joncryl Functional Coatings Portfolio Summary



Low VOC



Enable repulpability and recyclability*



Water-based coatings



Variables to consider:

- ✓ Substrate (paper, paperboard, plastic, film, foil)
- ✓ Caliper
- ✓ Coat-Weight
- ✓ Single or multiple layer
- ✓ Application method (flexography, gravure, rod, curtain, air-knife, blade)
- ✓ Performance required

Expand your functional toolkit

BASF functional coating power up your formulations to address any challenges. Take each piece of the puzzle and make a difference in sustainable packaging.

To learn more about the science of functional coatings visit our LabAssistant tool for detailed information and recommended starting point formulations.

Product	Oil & Grease [g/m ²]	Oil & Grease Creased	Liquid Resistance	MVTR [g/m ² /day]	Heat-Sealable	Block Resistance	T _g [°C]	Solids [%]	Acid Number [mg KOH/g]	Viscosity at 25°C [mPa•s]	Density at 25°C [g/cm ³]	pH
Joncryl HPB Portfolio												
Joncryl HPB 1631-A			++	+++	++	+	<5	39	50	1250	1.02	9
Joncryl HPB 1702	+++	+++			++	+	<5	49	32	125	1.04	7.7
Joncryl HPB 4010			+++		++	+	<5	42	30	100	1.08	8
Joncryl HPB 4030			+++	+++	++	+	<5	40	28	100	1.08	7.5
Joncryl DFC Portfolio												
Joncryl DFC 3025	+		++			+	95	35	220	5,500	1.07	9
Joncryl DFC 3030	+++	+	++			+	-27	47	64	1,150	1.04	7.9
Joncryl DFC 3040	++		++			+	21	47	55	800	1.04	8.6
Joncryl DFC 3050	++		+++			++	99	48	49	850	1.04	8.3

+++ Excellent

++ Very Good

+ Good

*For recycling information, contact your BASF representative

Let's grab the chance to do this together and create better packaging for tomorrow!

We offer innovative solutions for more sustainable packaging. Whether you want to achieve lower carbon emissions, reduce plastic waste or increase the share of renewables in your product, our resins will help you do just that - without compromising on performance.



Product	Paper	Plastic	Film	Foil	Heat-Sealable	Block Resistance	Tg [°C]	Solids [%]	Acid Number [mg KOH/g]	Viscosity at 25°C [mPa·s]	Density at 25°C [g/cm³]	pH
Joncryl HSL Portfolio												
Joncryl HSL 710			+++		+++	++	49	30	30	<500	1.06	9.3
Joncryl HSL 750	+++				+++	+++	4	50	52	<100	1.05	6
Joncryl HSL 9010-A	++	+++			+++	+	-10	45	60	70	1.03	7.3
Joncryl HSL 9011-A	++	+++			+++	+	-30	45	35	<500	1.05	8.7
Joncryl HSL 9012-A				+++	+++	++	<5	39	35	200	1.04	8.8
Other Functional Coatings												
Product	Oil & Grease [g/m²]	Oil & Grease Creased	Liquid Resistance	MVTR [g/m²/day]	Heat-Sealable	Block Resistance	Tg [°C]	Solids [%]	Acid Number [mg KOH/g]	Viscosity at 25°C [mPa·s]	Density at 25°C [g/cm³]	pH
Joncryl 617-A	++		++			+	7	45.5	50	1,300	1.03	8.3
Joncryl 1670	++		++			+	-4	47	57	2,000	1.05	7.6
Joncryl 74-A	+		+			+	-16	48.5	50	700	1.03	8.2
Joncryl 82	++		++			+	-10	39.7	59	400	1.03	3
Joncryl ECO 2124	++		++			+	-35	47.3	65	1,000	1.04	7.9
Joncryl FLX 5000-A	++		++			+	N/D	42	90	1,000	1.04	8.8

+++ Excellent

++ Very Good

+ Good

Contacts

Please contact our technical service department for more help on formulating with products from the Joncryl product line.

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 **BASF**

We create chemistry

Resins and additives selection guide

for printing & packaging
solutions



Supporting the conversion to sustainable solutions

Sustainability is deeply implemented in our innovation process. One key contribution to sustainability is the conversion from solvent-based to water-based printing and converting processes. Through our innovative technologies, the conversion is made possible without compromising on performance and available at a competitive cost. With our Sustainable Solution Steering method, we have evaluated the value chain from cradle to grave, considering industry- and region-specific views in our markets. After identifying key sustainability drivers, our resins and additives have been systematically reviewed. This approach allows us to assess the sustainability performance of each of our products in its specific application. We create chemistry that makes performance love sustainable solutions.

For the printing & packaging industry, we identified the reduction of emissions and the continuous improvements in the field of health and safety in use to be among the key drivers for more sustainable inks.

Together, let's take a look at your specific requirements and find out how we can further improve your sustainability profile.

Learn more about BASF's commitment to driving sustainable solutions at: www.basf.com/sustainability



At BASF, we create chemistry

About the Dispersions & Resins Division

The Dispersions & Resins business of BASF develops, produces, and markets a range of high-quality resins, additives, colorants, and polymer dispersions worldwide. These raw materials are used in formulations for coatings and paints, printing and packaging products, construction coatings, adhesives, cellulose and composites, and paper manufacturing. With a comprehensive product portfolio and extensive knowledge of the industries we serve, our customers benefit from innovative and sustainable solutions to help them advance their formulations through chemistry. For further information about the Dispersions & Resins business in North America, please visit <http://www.basf.us/dpsolutions>.

Creating chemistry for the printing and packaging industries

At BASF, we create chemistry that helps the printing and packaging industries meet specific needs for ecologically friendly solutions without sacrificing functionality and performance.

We offer a comprehensive portfolio of resins and performance additives for specific printing and packaging applications. In addition, we have the best team in the industry to help you solve your most difficult technical challenges.

Sustainable development – not “green washing”

Sustainable development means more to your business than so-called ‘green’ products. It’s a way of doing business, and a path towards future success. We understand this, and have built a strong record of achievement in this area.

BASF is the first chemical company to become a member of the Sustainability Consortium. We can also help you deliver sustainable, eco-efficient solutions that meet or exceed performance requirements – our products can help you meet ecological and functional needs for specific applications.

Broad technology portfolio

BASF provides virtually every ingredient you need, including:

- Acrylic resins, resin solutions, RC emulsions, and colloids
- Energy-curing oligomers and reactive diluents
- Thermoplastic polyurethanes
- UV absorbers and light stabilizers
- Wax emulsions, dispersing agents, rheology modifiers, wetting and surface modifying agents, and defoamers
- Antioxidants

Unique performance attributes

Whatever you are trying to achieve technically, BASF can work with you to develop innovative solutions for your customers that address a multitude of performance attributes, including:

- Consistent product quality
- Printability and resolubility
- Clarity and gloss
- Color strength and stability
- Low VOC and low HAPS
- Resistance and adhesion
- FDA and Global food contact compliance

Service capabilities

Our expert teams, serving the needs of our customers in North America, offer expertise in chemistry, applications, and formulations. We can help you with:

- Formulation support
- Global research and development
- Regulatory support
- Product stewardship
- Global sourcing capabilities

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The best choice for printing and packaging applications

Packaging printing

Our portfolio enables you to increase the effectiveness and structural qualities of your packaging. We understand the performance and sustainability challenges you face, such as cost savings, product quality and consistency, resistance and resolubility, grinding efficiency and color strength, low VOC and food contact compliance.

Packaging inks

For eco-efficient flexible packaging, we have developed a full range of water-based and energy-curable solutions suitable for both surface and reverse printing on different film substrates. Our resins enable efficient printing on corrugated board, reducing the amount of binder and thus cost-in-use. For paper and paperboard, our portfolio provides products for flexographic, gravure and digital applications.

Functional packaging coatings

Part of our product portfolio is water-based binders, which add functionality to your packaging. From aqueous acrylic binders for the formulation of heat seal lacquers with low to high activation temperatures, to pre-metalization primers for vacuum-metallized paper substrates, we offer numerous solutions.

Overprint varnishes

Are you looking to formulate a clear varnish for a matte, satin or glossy finish? Our water-based styrene acrylic binders provide maximum formulation flexibility. Our energy-curable solutions show excellent gloss and scuff resistance on absorbing and non-absorbing substrates.

Industrial printing

When it comes to decorative laminates, wallpapers or floor decors, our resins and additives complement your needs, with high molecular weight dispersing agents that improve the tinctorial strength and ink viscosity. Defoamers, slip and surface additives optimize finishing effects and applicability. To round off our solution package, we offer a range of water-based, solvent-based, and UV resins, reactive diluents, and light stabilizers.

Digital printing

Raw materials for drop-on-demand inkjet for both radiation curing as well as water-based digital printing technology, are available. Our Laromer products, such as monomers and oligomers, are well suited for formulating radiation-curable digital inks for graphic arts and label applications. These materials also enable efficient pigment grind via dispersants, and other performance characteristics required of inks. As a leading supplier of water-based resins and additives, BASF's portfolio of low viscosity, high solids products is well suited to provide unique properties to inks, such as resolubility, adhesion, and efficient, stable pigment dispersion.





Key resin portfolio

Product	Description	Application	
		Film & aluminium foil	Paper & board
Functional packaging coatings			
Joncryl DFC 3025	Direct food contact compliant, medium molecular weight resin solution.		■
Joncryl DFC 3030	Direct food contact compliant, soft film-forming acrylic emulsion that provides flexibility and water resistance.		■
Joncryl DFC 3040	Direct food contact compliant, hard film-forming acrylic emulsion that provides rub and block resistance.		■
Joncryl DFC 3050	Direct food contact compliant, non-film-forming acrylic emulsion that provides fast dry and block resistance.		■
Joncryl ECO 2177	Emulsion for high-performance pre- and post-metallization lacquers.		■
Joncryl ECO 2189	Emulsion for high-performance pre- and post-metallization lacquers.		■
Joncryl HSL 9010	Emulsion for cardboard blister packs and flexible packaging.		■
Joncryl HSL 9011	Emulsion for low heat-activated blister lacquer for carton board.		■
Joncryl HSL 9012	Emulsion for heat seal lacquers for pharmaceutical blister packaging.	■	
Surface film printing			
Joncryl FLX 5000-A	Self-crosslinking technology for medium-duty printing on LDPE and BOPP with excellent resolubility.	■	
Joncryl FLX 5026-A	Self-crosslinking technology for medium-duty white printing ink with good heat seal resistance on BOPP.	■	
Versamid PUR 1120	An elastomeric aliphatic polyurethane compatible with NC pigment concentrates.	■	
Lamination – reverse film printing			
Joncryl FLX 5201	Polyurethane dispersion for BOPP and PET lamination with very high bond strength.	■	
Joncryl FLX 5220	Polyurethane-acrylic hybrid emulsion for lamination structures including PET and OPA, providing very good lamination bond strength and printability.	■	
Versamid PUR 2011	Retort lamination ink resin solution providing excellent hydrolysis resistance, adhesion to various barrier films, and pigment dispersion capability.	■	
Pigment grinding			
Joncryl HPD 96	High molecular weight acrylic resin solution that improves color development and gloss of pigment dispersions without compromising ink stability.	■	■
Joncryl HPD 196	Mid-range molecular weight acrylic resin solution for dispersing organic pigments at high concentrations without compromising ink stability.	■	■

Product	Description	Application	
		Film & aluminium foil	Paper & board
Joncryl HPD 296	High-performance resin solution that improves the viscosity and shock stability of highly pigmented dispersions.	■	■
Laromer EA 9101	Epoxidized soybean oil acrylate – providing moderate reactivity, excellent flexibility and pigment wetting.	■	■
Laromer LR 9013	Inert resin in monomer – providing excellent pigment wetting, high yield values and low shrinkage.	■	■
Laromer PE 9105	Good substrate wetting, low viscosity.	■	■
Corrugated, paperboard & paper inks			
Joncryl 633	Opaque water-based binder that enables clean, bright colors on kraft.		■
Joncryl 652-A	Colloidal emulsion that, when used as a modifying binder in water-based inks and overprint varnish applications, improves gloss, hardness, and heat resistance.		■
Joncryl 2110	Hard film-forming, low VOC acrylic emulsion that provides high gloss & clarity, good transfer & printability in flexo & gravure high-strength inks for fine-line anilox printing on multiple types of substrate.	■	■
Overprint varnishes			
Joncryl 617-A	Mid-Tg, film-forming acrylic emulsion that provides rub and water resistance.		■
Joncryl 678	Versatile solid resin for pigment dispersions or promoting good gloss, holdout and resolubility.	■	■
Joncryl 682	Solid resin for highest gloss, holdout and clarity.	■	■
Joncryl 1616	High-gloss, hard film-forming acrylic emulsion.		■
Reactive diluent			
Laromer LR 8863	Trifunctional monomer that provides high reactivity, flexibility and hardness.	■	■
Laromer PPTTA	Tetrafunctional monomer that provides excellent reactivity and film-forming properties and good flexibility.	■	■
Reactivity booster			
Laromer PO 94 F	Amine-modified polyether acrylate that provides excellent reactivity and film-forming properties, medium viscosity and good solvent resistance.	■	■
Laromer PO 8996	Amine-modified polyether acrylate that provides excellent reactivity and film-forming properties, low viscosity and good solvent resistance.	■	■
Laromer PO 9103	Amine-modified polyether acrylate that provides excellent reactivity and good adhesion to plastics.	■	■

■ Water-based ■ Solvent-based ■ Energy-curable

Water-based resins

With our Joncryl range, we offer high-performance resins that enable flexible packaging printers and converters to switch from solvent-based to water-based technologies. Stricter regulations are a key issue in the industry, and we make sure that it is incorporated into our new product development process, e.g., compliance with food contact legislation.

Flexible printing inks without performance trade-off

The Joncryl FLX portfolio is known in the industry as the reference in resins for water-based film printing inks. The portfolio provides substrate wetting, adhesion, and chemical resistance properties along with good printability and resolubility for surface-print inks on a broad range of substrates. The Joncryl FLX product line also offers excellent adhesion and lamination bond strength for lamination ink applications. Joncryl FLX products are not only cost-effective and eco-efficient, they also represent our commitment to support printers and converters with sustainable solutions – without compromising on performance.

Versatile and efficient heat seal lacquers

The Joncryl HSL product line offers a range of options for heat seal lacquers in various applications, providing secure seal and smooth peeling behavior.

Joncryl HSL 9011 can be used in various food contact applications as well as in cardboard blister packs for sensitive applications, e.g., baby pacifiers and toothbrushes.

pH stability without sacrificing resistance properties

The Joncryl LMV series of low-maintenance vehicles provides the printing industry a complete selection of resin solutions and emulsions that can reduce waste and downtime due to anilox plugging and ink build-up on printing plates. Joncryl LMV 7000 series pH-stable polymers, when used to make low VOC inks for paper, film, and foil inks, demonstrate a balance of clean printing, resolubility, and excellent pH stability without sacrificing resistance properties.

Strong inks for a more colorful world

Joncryl HPD (High Performance Dispersion) series of resins and resin solutions offers excellent color development, ink stability, processing efficiencies, and improved cost-in-use. Joncryl HPD resins and resin solutions provide strong, high-performance, viscosity-stable inks that meet the needs of high-quality imaging.



Joncryl acrylic resins

BASF's Joncryl acrylic resins meet the most stringent formulation requirements of ink and overprint varnish manufacturers: high molecular weight resins for high pigment load, high solids dispersions used in quality inks for film, foil, and paper applications; general purpose, mid-range molecular weight resins for gloss, resolubility, and drying speed modification; and low molecular weight resins used in high-gloss overprint varnishes and label inks.

Product	Appearance	Non Volatile (%)	Total VOC (% wt)	Molecular Weight (Mw)	Acid No. (NV)	Density @ 25°C (g/cm ³)	Softening Point (°C)	Tg (°C)	Description and Applications
Joncryl 67	clear	98.6	1.4	13,000	213	1.14	143	73	High molecular weight acrylic resin for high-quality pigment dispersions. It can also be used for water-soluble pigment chips where maximum color development and transparency are essential.
Joncryl 586	clear	99.3	0.7	4,600	108	1.13	115	60	Low acid acrylic resin that provides excellent alkaline and water resistance for inks and overprint varnishes, and is especially suitable for digital inks.
Joncryl 611	clear	99.8	0.2	8,100	53	1.12	112	50	Mid-range molecular weight, film-forming, solvent-soluble acrylic resin capable of maintaining high solids at low viscosity in solvent-based formulations.
Joncryl 678	clear	98.7	1.3	8,600	215	1.16	165	109	General purpose, mid-range molecular weight acrylic resin for water-based inks, pigment dispersions, and overprint varnishes that promotes gloss, holdout, and resolubility.
Joncryl 680	clear	99.3	0.7	4,500	215	1.15	127	67	Low molecular weight acrylic resin for high solids, low viscosity solutions to enhance gloss, resolubility, and transfer in printing ink formulations.
Joncryl 682	yellow	99.5	0.5	1,700	238	1.16	105	56	Very low molecular weight acrylic resin for high solids overprint varnishes with high gloss and excellent holdout.
Joncryl 683	clear	98.0	2.0	8,000	165	1.13	81	75	Low acid value acrylic resin that imparts resolubility and gloss in alkaline-resistant inks and overprint varnishes.
Joncryl 690	clear	98.5	1.5	16,500	240	1.07	155	102	High molecular weight, high acid value acrylic resin that optimizes the gloss and transparency of organic pigment dispersions.
Joncryl 693	clear	99.1	0.7	6,000	205	1.16	140	84	Cost-effective, mid-range molecular weight acrylic resin that offers superior value when used as a component in overprint varnishes or as an ink-extender resin.
Joncryl ECO 675	clear	99.5	0.5	5,700	222	1.16	141	103	General purpose, glycol ether-free ^(a) , low VOC, mid-range molecular weight acrylic resin that enhances gloss, holdout, and resolubility in low odor inks and overprint varnishes for food packaging applications.
Joncryl ECO 684	slightly yellow	99.5	0.5	1,850	243	1.16	122	88	Low molecular weight, glycol ether-free ^(a) acrylic resin that provides high solids overprint varnishes with excellent gloss and holdout for food packaging applications.
Joncryl HPD 671	clear	99.4	0.4	17,250	214	1.14	173	128	Cost-effective, high molecular weight acrylic resin for high-quality pigment dispersions with very good viscosity stability.
Joncryl HPD 696	clear	98.9	1.1	16,000	220	1.16	155	88	High molecular weight acrylic resin that improves color development and gloss of pigment dispersions without compromising ink stability.

^(a) The glycol ether level averages less than 0.002 wt%.

Joncryl acrylic resin solutions

Resin solutions based on Joncryl SGO resin technology are a convenient and cost-effective manufacturing alternative to Joncryl solid resins. The Joncryl HPD line of resin solutions allows ink manufacturers to make pigment dispersions that reduce milling time, are higher in pigment loading and color development, are viscosity stable and compatible in most water-based ink systems.

Product	Appearance	Non Volatile (%)	Total VOC (% wt)	Molecular Weight (Mw)	Viscosity @ 25°C (cps)	pH	Acid No. (NV)	Density @ 25°C (g/cm ³)	Tg (°C)	Description and Applications
Joncryl 50	clear amber	50.0	0.2	1,700	5,000	8.4	238	1.11	56	Low VOC solution of Joncryl 682 for high solids overprint varnishes that require high gloss and excellent holdout.
Joncryl 60	yellow	34.0	0.5	8,500	5,500	8.5	215	1.07	109	Low VOC solution of Joncryl 678 in water and ammonia for good gloss, holdout, and clarity in pigment dispersions, inks, and overprint varnishes.
Joncryl 61	yellow	35.5	5.7	8,500	3,500	8.3	215	1.06	109	Solution of Joncryl 678 for gloss, holdout, and resolubility in inks and overprint varnishes.
Joncryl 62	clear	30.5	1.4	13,000	4,500	8.3	213	1.06	73	Solution of Joncryl 67 for high pigment loading with either dry pigment or press cake in inks and overprint varnishes.
Joncryl 63	clear	30.5	0.5	13,000	5,000	8.5	213	1.07	73	Low VOC solution of Joncryl 67 for high-quality dispersions and printing inks.
Joncryl DFC 3025	clear liquid	35.4	< 0.2	5,800	5,500	9.0	220	1.07	95	Direct food contact compliant, medium molecular weight resin solution for printing ink, overprint varnish, and functional packaging coating applications.
Joncryl ECO 75	clear yellow	33.5	0.2	5,700	2,000	8.5	222	1.07	103	General purpose, glycol ether-free ^(a) , mid-range molecular weight acrylic resin solution for pigment dispersion, low odor ink, and overprint varnish applications.
Joncryl HPD 71	clear	27.5	0.2	17,250	4,000	8.5	214	1.05	128	Solution of Joncryl HPD 671 for cost-effective, heat-resistant, high-quality pigment dispersions with very good viscosity stability.
Joncryl HPD 96	clear	34.0	0.6	16,000	5,000	8.5	220	1.10	88	Solution of a high molecular weight acrylic resin that improves color development and gloss of pigment dispersions without compromising ink stability.
Joncryl HPD 96 MEA	yellow - amber	39.0	8.6	16,000	5,000	8.6	220	1.10	86	Solution of a high molecular weight acrylic resin in water and mono-ethanol amine that improves the color development and gloss of pigment dispersions with excellent rheology, flow, and stability.
Joncryl HPD 196	clear	36.0	0.4	9,200	3,800	8.6	200	1.08	92	Solution of a mid-range molecular weight acrylic resin for dispersing organic pigments at high concentrations without compromising stability.
Joncryl HPD 196 MEA	yellow - amber	41.5	7.8	9,200	3,500	8.5	200	1.08	92	Solution of a mid-range molecular weight acrylic resin for dispersing organic pigments at high concentrations without compromising stability.
Joncryl HPD 296	yellow	36.3	0.4	11,500	600	8.1	141	1.03	15	High-performance resin solution that improves the viscosity and shock stability of highly pigmented dispersions.
Joncryl LMV 7025	clear	31.0	0.4	12,500	1,200	7.3	235	1.06	97	Low-maintenance, pH-stable, low VOC solution that modifies the resolubility and drying speed of Joncryl LMV-based inks.
Joncryl LMV 7085	clear	34.5	0.4	12,500	2,000	7.2	215	1.07	77	Low-maintenance, pH-stable, low VOC solution that optimizes organic pigment dispersions in Joncryl LMV-based inks, producing lower amounts of foam during pigment grinding.

^(a) The glycol ether level averages less than 0.002 wt%.

Joncryl RC emulsions

The near Newtonian flow characteristics of Joncryl Rheology Controlled (RC) emulsions allow inks and overprint varnishes to meet the demanding shear stress encountered in high-speed flexographic and gravure printing. In addition, they provide wetting and adhesion as well as gloss and clarity to inks and overprint varnishes on a wide variety of substrates. The versatile Joncryl LMV line provides resolubility, pH stability, and improved pressroom efficiency through savings in ink additives and a reduction in ink waste.

Product	Appearance	Non Volatile (%)	Total VOC (% wt)	Viscosity @ 25°C (cps)	pH	Acid No. (NV)	Density @ 25°C (g/cm ³)	Tg (°C)	MFFT (°C)	Freeze-thaw Stable	Description and Applications
Joncryl 74-A	translucent	48.5	1.0	700	8.2	50	1.03	- 16	< 5	yes	Soft film-forming acrylic emulsion that provides excellent rub, water, and grease resistance to inks, overprint varnishes, and functional packaging coatings.
Joncryl 77	translucent	46.0	1.0	500	8.3	55	1.05	21	20	yes	Hard film-forming acrylic emulsion that provides gloss, transparency, and block, rub, and water resistance to inks and overprint varnishes.
Joncryl 80	semi-translucent	48.0	0.7	550	7.8	50	1.05	- 30	< 7	yes	General purpose acrylic emulsion for water-based flexo and gravure inks with good adhesion to flexible films and foils.
Joncryl 82	translucent	39.7	0.01	400	3.0	59	1.03	- 10	< 0	no	Film-forming acrylic emulsion, that when neutralized, forms a tough water- and oil-resistant film with excellent adhesion to a wide variety of paper and polyolefin substrates.
Joncryl 89	opaque	48.0	0.8	500	8.3	50	1.05	98	> 80	yes	General purpose, non-film-forming acrylic emulsion that provides gloss and clarity, block resistance, and fast drying properties to overprint varnishes.
Joncryl 98	semi-translucent	47.0	0.9	500	8.4	35	1.05	1	5	no	Acrylic emulsion that minimizes blushing or whitening in overprint varnish formulations when subjected to hot water vapor.
Joncryl 537	translucent	45.7	0.8	150	9.0	40	1.05	44	42	yes	Non-film-forming acrylic emulsion that can be coalesced to form an alkali- and detergent-resistant film for inks, overprint varnishes, and functional packaging coatings.
Joncryl 538-A	translucent	45.0	1.0	200	9.3	53	1.04	64	65	yes	Non-film-forming acrylic emulsion that can be coalesced to form an alcohol- and chemical-resistant film for inks, overprint varnishes, and functional packaging coatings; can also resist plasticizer migration.
Joncryl 585	translucent	44.0	2.0	300	9.1	30	1.07	- 20	< 7	yes	Heat-resistant, film-forming acrylic emulsion that exhibits high gloss and adhesion to treated flexible films and foils in inks and overprint varnishes.
Joncryl 617-A	semi-translucent	45.5	0.8	1,300	8.3	50	1.03	7	< 5	yes	Mid-range, film-forming acrylic emulsion that provides rub and water resistance in inks, overprint varnishes, and functional packaging coatings.

Joncryl RC emulsions (cont.)

Product	Appearance	Non Volatile (%)	Total VOC (% wt)	Viscosity @ 25°C (cps)	pH	Acid No. (NV)	Density @ 25°C (g/cm ³)	Tg (°C)	MFFT (°C)	Freeze-thaw Stable	Description and Applications
Joncryl 624	translucent	48.0	1.1	900	8.2	50	1.05	- 30	< 7	yes	General purpose, soft film-forming acrylic emulsion for water-based flexo and gravure inks on flexible films and foils.
Joncryl 631	opaque	50.0	< 0.1	2,500	7.9	25	1.05	105	> 60	no	Opaque acrylic emulsion that provides hiding power and enhances brightly colored inks on natural kraft substrates.
Joncryl 633	opaque	37.0	< 0.1	600	7.2	60	1.05	104	> 50	yes	Opaque acrylic emulsion that may enable the reduction of TiO ₂ needed in inks for corrugated board and other natural kraft substrates.
New Joncryl 660 DPM	translucent	33.0	4.0	400	8.5	203	1.08	27	< 0	yes	Hard film-forming acrylic emulsion that resists hot scuffing during corrugation of pre-printed linerboard.
Joncryl 750	opaque	50.0	0.2	< 100	5.5	52	1.05	4	< 5	no	Film-forming, self-thickening acrylic emulsion with good hot-tack properties for heat-seal coatings on paper and paperboard.
Joncryl 1163	opaque	45.5	0.2	1,200	7.1	25	1.03	105	60	yes	Sodium neutralized, non-film-forming acrylic emulsion that gives brighter, more intense colors on newsprint and kraft substrates.
Joncryl 1610	translucent	45.0	0.8	1,100	8.5	69	1.05	92	87	yes	Non-film-forming acrylic emulsion that imparts high gloss and holdout, optical clarity, and good transfer to ink and overprint varnish formulations.
New Joncryl 1616	translucent	42.5	1.2	800	8.5	140	1.05	40	15	yes	High-gloss, hard film-forming acrylic emulsion that, when used as a letdown vehicle in inks for paper and paperboard applications, offers excellent transfer and printability with low-foaming in flexo and gravure inks and overprint varnishes.
Joncryl 1655	semi-translucent	47.5	0.5	480	8.1	50	1.05	108	> 80	yes	Sodium neutralized, non-film-forming acrylic emulsion for inks and overprint varnishes that require no ammonia odor and exceptional flexo and gravure stability on the press.
Joncryl 1670	translucent	47.0	0.1	2,000	7.6	57	1.05	- 4	< 5	yes	Soft film-forming acrylic emulsion that provides excellent rub, water, and grease resistance in inks and overprint varnishes.
Joncryl 1680	opaque	45.0	0.1	385	7.5	29	1.03	56	42	no	Non-film-forming acrylic emulsion that provides low-gloss and can reduce the amount of silica or clay matting agents in inks and overprint varnishes.
Joncryl 1695	translucent	39.2	0.3	700	8.1	120	1.03	- 50	< 5	yes	Soft film-forming acrylic emulsion with no added zinc or other metallic crosslinkers for use in high heat-resistant inks and overprint varnishes.
New Joncryl 2110	translucent	49	<0.5	1200	9.0	65	1.05	22	< 5	yes	Hard film-forming, low VOC acrylic emulsion that provides high gloss and clarity, good transfer and printability in flexographic and gravure high-strength inks for fine-line anilox printing on multiple types of substrate.

Joncryl RC emulsions (cont.)

Product	Appearance	Non Volatile (%)	Total VOC (% wt)	Viscosity @ 25°C (cps)	pH	Acid No. (NV)	Density @ 25°C (g/cm ³)	Tg (°C)	MFFT (°C)	Freeze-thaw Stable	Description and Applications
New Joncryl 2121	opaque	51.0	< 1.0	750	8.0	42	1.03	98	> 80	yes	Fast-drying, high solids, non-film-forming acrylic emulsion that provides viscosity stability, rub resistance and printability in flexographic and gravure inks for paper and paperboard applications.
Joncryl 2136-A	semi-translucent	42.0	< 0.1	200	8.0	78	1.03	- 25	< 0	yes	A low-foaming, low-gassing acrylic emulsion for formulating viscosity-stable aluminum- and bronze-based metallic inks.
Joncryl 2153	semi-translucent	49.0	0.8	700	8.4	50	1.05	75	60	yes	Hard, non-film-forming acrylic emulsion that provides excellent stability and drying speed in inks and overprint varnishes on paper and paperboard.
Joncryl 2156	opaque	50.0	< 0.1	50	8.3	36	1.50	105	> 80	yes	High solids, non-film-forming acrylic emulsion that provides fast drying and printability in flexo and gravure inks for paper and paperboard.
Joncryl 2178-A	translucent	44.0	0.06	800	8.5	66	1.04	42	< 0	yes	Hard film-forming, low VOC acrylic emulsion with excellent wet and dry block resistance for food packaging applications.
Joncryl 2350	semi-translucent	47.0	< 0.1	1,200	8.4	77	1.05	75	70	yes	Non-film-forming acrylic emulsion that provides viscosity-stable printing inks with excellent gloss and holdout.
Joncryl 2640	semi-translucent	49.0	0.4	500	8.2	52	1.02	- 18	< 5	no	Soft film-forming acrylic emulsion that provides early water resistance, gloss, and adhesion in inks for treated polyolefin film applications.
Joncryl 2646	semi-translucent	48.5	0.3	500	8.4	45	1.03	- 9	< 5	no	Cost-effective, film-forming acrylic emulsion that provides gloss, water resistance, and adhesion in inks on HDPE.
Joncryl 2660	semi-translucent	49.0	0.9	1,100	8.6	45	1.04	13	< 5	no	Film-forming acrylic emulsion that exhibits superior gloss, transparency, and printability in inks on HDPE and aluminum foil.
Joncryl 2664	translucent	43.5	13.8	550	9.3	170	1.03	16	< 5	yes	Film-forming acrylic emulsion for high-strength inks used in fine-line anilox printing.
Joncryl DFC 3030	translucent	47.4	< 0.1	1,150	7.9	64	1.04	- 27	< 5	yes	Soft film-forming acrylic emulsion that provides flexibility and water resistance in inks, overprint varnishes, and functional packaging coatings for food contact applications.
Joncryl DFC 3040	semi-translucent	46.0	<0.1	500	8.2	55	1.04	21	11	yes	Hard film-forming acrylic emulsion that provides rub and block resistance in inks, overprint varnishes, and functional packaging coatings for food contact applications.
Joncryl DFC 3050	opaque	48.2	< 0.05	850	8.3	49	1.04	99	> 80	yes	Non-film-forming acrylic emulsion that provides fast dry and block resistance in inks, overprint varnishes, and functional packaging coatings for food contact applications.

Joncryl RC emulsions (cont.)

Product	Appearance	Non Volatile (%)	Total VOC (% wt)	Viscosity @ 25°C (cps)	pH	Acid No. (NV)	Density @ 25°C (g/cm ³)	Tg (°C)	MFFT (°C)	Freeze-thaw Stable	Description and Applications
Joncryl ECO 2124	translucent	47.3	0.1	1,000	7.9	65	1.04	- 35	< 0	yes	Soft film-forming, glycol ether-free ^a , low VOC acrylic emulsion with good adhesion and flexibility for food packaging applications.
Joncryl ECO 2177	translucent	46.0	< 0.1	500	8.2	55	1.05	21	11	yes	Hard film-forming, glycol ether-free ^a , ultra low VOC acrylic emulsion providing rub and block resistance and adhesion in inks and overprint varnishes for food packaging applications.
Joncryl ECO 2189	opaque	48.0	< 0.1	600	8.3	50	1.05	98	> 80	yes	Hard, non-film-forming, glycol ether-free ^a , ultra low VOC acrylic emulsion providing fast drying, gloss, and holdout in inks and overprint varnishes on paper and paperboard for food packaging applications.
Joncryl HR 1620	translucent	40.0	< 0.4	100	9.6	120	1.04	N/A	< 10	yes	Film-forming acrylic emulsion for maximum heat release and water resistance in inks and overprint varnishes.
Joncryl HRC 1661	semi-translucent	47.0	0.3	500	8.3	54	1.02	- 42	< 0	no	High-performance, film-forming acrylic emulsion that provides rub and water resistance in overprint varnishes.
New Joncryl HSL 9010	translucent	45.0	< 0.1	70	7.3	60	1.03	-10	< 5	No	Acrylic copolymer emulsion for cardboard blister packs and flexible packaging.
New Joncryl HSL 9011	opaque	44.7	< 0.1	500	9.0	35	1.05	-30	< 5	No	Acrylic copolymer emulsion with low activation temperature for cardboard blister packs and flexible packaging.
New Joncryl HSL 9012	translucent	39.0	< 0.1	500	8.0	35	1.04	0	< 5	No	Acrylic copolymer emulsion for pharmaceutical blister lidding foil sealed against PVC, PVDC-coated PVC and PET.
Joncryl LMV 7031	semi-translucent	47.5	0.6	1,500	7.5	57	1.04	- 9	- 1	yes	Film-forming, low-maintenance, pH-stable acrylic emulsion that provides good water resistance and adhesion in flexo and gravure inks.
Joncryl LMV 7034	translucent	47.8	0.7	800	7.6	52	1.05	- 30	< 0	yes	Film-forming, low-maintenance, pH-stable acrylic emulsion that provides adhesion and water-resistant characteristics in inks for utility bag and other surface-print film and foil applications.
Joncryl LMV 7040	semi-translucent	45.5	0.3	750	7.3	115	1.06	28	< 0	yes	Hard film-forming, low-maintenance, pH-stable acrylic emulsion that provides film integrity, adhesion, and rub resistance in inks for paper, paperboard, and primed foil.
Joncryl LMV 7050	semi-translucent	47.5	< 0.2	950	7.3	85	1.06	98	80	yes	Non-film-forming, low-maintenance, pH-stable acrylic emulsion that provides fast drying and excellent resolubility in inks for paper and paperboard.
Joncryl LMV 7051	opaque	44.5	0.3	450	7.5	115	1.04	98	56	yes	Non-film-forming, low-maintenance, pH-stable acrylic emulsion that provides high gloss and holdout in inks for paper and paperboard.

^a The glycol ether level averages less than 0.002 wt%.

Joncryl colloidal emulsions

Joncryl colloidal emulsions' low cost-in-use makes them an excellent choice as a letdown resin for corrugated inks. They can also be used as a dispersion resin for carbon black, which makes it possible to manufacture a black corrugated ink using only one polymer. From low-cost brown box printing to medium-quality brand colors, Joncryl colloidal emulsions meet the formulator's need for balance of print properties and economy.

Product	Appearance	Non Volatile (%)	Total VOC (% wt)	Molecular Weight (Mw)	Viscosity @ 25°C (cps)	pH	Acid No. (NV)	Density @ 25°C (g/cm ³)	Tg (°C)	MFFT (°C)	Freeze-thaw Stable	Description and Applications
Joncryl 100	clear to slightly hazy	36.5	< 0.1	30,000	2000	8.4	95	1.07	-7	15	no	Low VOC, universal grind and letdown acrylic colloidal solution for paper and envelope printing applications with reduced paper curling.
Joncryl 142	opaque	39.5	< 0.005	48,000	25	6.0	130	1.05	10	< 7	no	General purpose, acrylic colloidal emulsion designed as a sole vehicle for carbon black inks; also recommended as a letdown vehicle for organic pigment dispersions.
Joncryl 646	opaque	40.0	< 0.005	100,000	45	6.0	128	1.07	30	< 7	no	High molecular weight, cost-effective acrylic colloidal emulsion that maintains ink viscosity with a minimal amount of polymer in inks for corrugated board.
New Joncryl 652-A	opaque	50.0	< 0.001	19,900	100	2.5	136	1.10	105	< 5	yes	Colloidal emulsion that, when used as a modifying binder in water-based inks and overprint varnish applications, improves gloss, hardness, and heat resistance.
Joncryl 655	opaque	41.5	< 0.005	25,000	19	6.3	128	1.05	25	< 7	no	Low molecular weight acrylic colloidal emulsion designed as a sole vehicle in carbon black inks for paper; also recommended as a letdown vehicle for organic pigment dispersions.
Joncryl LMV 7014	opaque	34.0	< 0.1	45,000	< 100	4.0	201	1.08	50	< 5	yes	Low-maintenance vehicle, pH-stable, acrylic colloidal emulsion that provides excellent resolubility and good ink transfer in cost-effective, carbon black corrugated inks when used as a sole vehicle; also recommended as a letdown vehicle for organic pigment dispersions.



Joncryl FLX

Joncryl FLX is a resin series that was developed for surface print and lamination ink applications within the flexible packaging market. Inks based on the Joncryl FLX series are a cost-effective alternative to solvent-based inks and eliminate your customer's need to worry about U.S. EPA VOC restrictions and European VOC legislation.

Product	Appearance	Non Volatile (%)	Total VOC (% wt)	Viscosity @ 25°C (cps)	pH	Acid No. (NV)	Density @ 25°C (g/cm ³)	MFFT (°C)	Freeze-thaw Stable	Description and Applications
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Self-crosslinking acrylic emulsions

Joncryl FLX 5000-A	translucent emulsion	42.0	< 0.5	1,000	8.8	90.0	1.05	< 5	no	Self-crosslinking acrylic emulsion that has excellent balance of resistance and resolubility for surface printing applications, such as bread bags, frozen food bags, and heavy-duty bags.
New Joncryl FLX 5026-A	semi-translucent emulsion	44.0	<0.5	175	9.0	7.0	1.03	11	no	Self-crosslinking acrylic emulsion for surface printing on polyethylene and polypropylene substrates. Provides an excellent balance of printability and resolubility along with resistance properties.

Polyurethane dispersions

Joncryl FLX 5200	white emulsion	40.0	< 1.0	70	8.0	0.0	1.05	< 5	no	Polyurethane dispersion vehicle that provides water-based lamination inks with high bond strength and very good resolubility.
New Joncryl FLX 5201	translucent emulsion	40.0	< 1.0	100	8.5	0.0	1.05	< 5	no	Polyurethane dispersion vehicle that provides water-based lamination inks with high bond strength and very good resolubility.

Acrylic-PUD hybrid

New Joncryl FLX 5220	translucent emulsion	43.0	0.2	200	8.0	13.6	1.05	< 5	no	Acrylic-PUD hybrid specially designed for enhanced print performance in water-based lamination inks for medium- to heavy-duty applications, including retort packaging.
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Solvent-based resins

Solvent-based resins remain an essential solution in printing inks for flexible packaging. BASF offers different technologies with specific performance properties. For example, polyurethanes are becoming increasingly important in the market, addressing the need for high-quality packaging while substituting halogen-containing solutions. Solvent-based inks for flexible packaging permit more sustainable solutions by enabling packaging with a favorable footprint, like pouches replacing cans.

Good lamination bond strength and compatibility

Our Versamid PUR portfolio offers thermoplastic aliphatic polyurethanes that are highly suitable for lamination with reverse film printing as they show very good lamination bond strength, including after retort. The Versamid PUR portfolio can be formulated into inks that provide good flexibility and adhesion to various polyolefin, polyester, polymer-coated and metallized films. Versamid PUR products can be used as a pigment grind vehicle providing good flow and printability properties.



Versamid PUR resin solutions

BASF provides innovative high-performance polyurethane resin solutions for packaging inks. They are suitable for adhesive and extrusion lamination and surface printing inks in flexographic and gravure applications. They exhibit good solvent release with excellent smear resistance and adhesive/cohesive strength that can be used on a wide range of film substrates.

Product	Urethane Type	Non Volatile (%)	Solvents	Viscosity @ 25°C (cps)	NC Compatible	Tin, TDI Free	Application			Description and Applications
							Surface	Lamination	Retort	
Versamid PUR 1010	aliphatic	35.0	21% 1-propanol 44% n-propyl acetate	850		✓	✓	✓	PUR ink resin suitable for flexo and gravure printing of standard and medium performance packaging applications. Provides excellent cohesion, adhesion, and flexibility to a variety of substrates, such as polyolefin, polyester, polymer-coated, and metalized films. Excellent solvent release and good pigment dispersion capability.	
Versamid PUR 1011	aliphatic	35.0	45% 1-propanol 20% butyl acetate	1,075		✓	✓	✓	Versatile PUR ink resin for standard and medium performance packaging applications. Provides excellent cohesion, adhesion, and flexibility to a variety of substrates, such as polyolefin, polyester, polymer-coated, and metalized films.	
New Versamid PUR 1032	aliphatic	45.0	40% ethanol 15% ethyl acetate	1850		✓	✓	✓	Versatile PUR ink resin for standard and medium performance packaging applications. Provides excellent cohesion, adhesion, and flexibility to a variety of substrates, such as polyolefin, polyester, polymer-coated, and metalized films. Excellent solvent release and good pigment dispersion capability.	
Versamid PUR 1120	aliphatic	42.0	48% 2-propanol 10% n-propyl acetate	575	✓	✓	✓	✓	Nitrocellulose compatible ink resin for standard and medium performance packaging applications. Provides good hardness and heat seal resistance in addition to excellent adhesive and cohesive strength.	
Versamid PUR 2011	aliphatic	35.0	45% 1-propanol 20% butyl acetate	1,000		✓	✓	✓	✓	Suitable for medium and high performance lamination packaging applications. Provides good hydrolysis resistance and excellent adhesion to various barrier films, in addition to enhanced pigment dispersion capabilities.
New Versamid PUR 2110	aliphatic	35.0	45% 1-propanol, 20% n-propyl acetate	800		✓		✓	✓	PUR ink resin for medium and high performance lamination packaging applications, including retort. Provides excellent bond strengths before and after retort. Superior printability, pigment dispersion, and opacity
New Laroflex® HS 9000	polyester	70.0	n-propanol	2,000	✓	✓		✓		High molecular weight polyester resin designed as a letdown vehicle for NC-based inks that give high strength, high solids, and good bond strength. Provides excellent solventless adhesive resistance to prevent print distortions during lamination.

✓ Applies

Energy-curable systems

We are continuously expanding our Laromer portfolio for the fast-growing UV and electron beam (EB) curable ink and overprint varnish market. The technology offers significant advantages, such as instant curing for increased productivity or high performance in resistance properties and gloss, to name just a few. Our energy-curable Laromer portfolio meets the demand of increasingly stringent legislative requirements and helps to continue the conversion to more sustainable solutions.

Ensuring safety

The UV food packaging market is a highly dynamic one, with new technologies at the forefront. For instance, UV curing has been dominated by mercury lamps, but with LEDs a new rival has emerged that continues to make strong technical progress. BASF remains fully committed to the UV food packaging market by providing all necessary data for food contact compliance. Today, our Laromer portfolio offers food-contact-compliant solutions and we continuously work on innovative new products.



Laromer oligomers

BASF offers oligomers for energy-curing inks and overprint varnishes. Cured inks and overprint varnishes formulated with Laromer oligomers provide performance attributes, such as good adhesion, good pigment wetting, high reactivity, good resistance to chemicals, and fast cure rate.

Product	Type of Resin	Diluent (content)	Functionality (calculated)	Relative Molar Mass (calculated, g/mol)	Viscosity @ 25°C (cps)	Hydroxyl Value (approx. mg KOH/g)	Hardness	Elasticity	Reactivity	Abrasion Resistance	Chemical Resistance	Scratch Resistance	Weathering	Description and Applications
Epoxy acrylate														
EA 8765 R	aliphatic		2.0	330	600 - 1,200	330	■	■■■■	■■■■		■			Partially water-soluble, flexible, and highly reactive.
New EA 9138	aromatic	TPGDA (25%)	2.0		10,000 - 20,000		■■■■	■■	■■		■■■■	■■■		Excellent reactivity, resistant to chemicals and hardness.
LR 8986	aromatic		2.4	510	3,000 - 6,000	170	■■■■■	■■■■	■■		■■■■			Low viscosity, free of diluents, and resistant to chemicals.
LR 9019	aromatic		2.4	580	15,000 - 25,000	175	■■■■	■■■■	■■■■■		■■■■			Very highly reactive and resistant to chemicals.
LR 9023	aromatic	DPGDA (15%)	2.4	480	2,000 - 5,000	150	■■■■	■■	■■■■		■■■■			Diluted version of LR 9019.
Polyester acrylate														
PE 44 F			3.0	940	2,000 - 5,000	80	■	■■■■	■■		■■■			Free of diluents, low viscosity, low odor, and flexible.
PE 55 F			3.1	750	25,000 - 45,000	70	■■	■■■■	■■■■	■■■	■■■			Well-balanced properties, leads to a tough film.
PE 56 F			3.1	750	20,000 - 40,000	70	■■	■■■■	■■■■	■■■	■■■			Better compatibility with reactive diluents compared to PE 55 F.
PE 8800			3.0	900	4,000 - 8,000	80	■■■■■	■■	■■		■■■■			Hard, resistant to chemicals, and low odor.
PE 8981			3.0	1,300	4,000 - 14,000	80	■	■■■■	■■■■■		■■■			Very highly reactive, flexible, with good sanding properties.
PE 9024			2.6	1,100	10,000 - 30,000	70	■■	■■■■	■■■■		■■■			Compatible with nitrocellulose.
PE 9079			3.4		2,000 - 4,000 @ 60°C	50	■■	■■■■	■■■■		■■■			Highly viscous, pronounced elasticity and toughness.
PE 9105			4.0		150 - 400	60	■■	■■	■■		■■■			Good substrate wetting, low viscosity.

■■■■■ superior ■■■■ excellent ■■■ very good ■ good

Laromer oligomers (cont.)

Product	Type of Resin	Diluent (content)	Functionality (calculated)	Relative Molar Mass (calculated, g/mol)	Viscosity @ 25°C (cps)	Hydroxyl Value (approx. mg KOH/g)	Hardness	Elasticity	Reactivity	Abrasion Resistance	Chemical Resistance	Scratch Resistance	Weathering	Description and Applications
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Urethane acrylate

UA 19 T	aliphatic	TPGDA (35%)	2.0	950	14,000 - 32,000	10	■ ■	■ ■ ■ ■	■		■		■ ■ ■ ■	Low yellowing and flexible at room temperature and temperatures below 0°C.
UA 8987	aliphatic	HDDA (30%)	2.3	580	4,000 - 6,000	11	■ ■ ■ ■	■ ■	■ ■		■ ■ ■ ■	■ ■	■ ■ ■ ■	Scratch and weather resistant for outdoor applications.
UA 9033	aliphatic	LR 8887 (30%)	1.7	1,230	15,000 - 25,000	6	■	■ ■ ■ ■ ■	■ ■ ■ ■	■ ■ ■ ■	■ ■		■ ■ ■ ■	Highly flexible, highly reactive, and good adhesion.
UA 9047	aliphatic	n-butyl acetate (20%)	> 6.0		2,000 - 7,000	10	■ ■ ■ ■	■ ■	■		■ ■ ■ ■ ■			Physical drying, best performance when UV cured at high temperature.
UA 9072	aliphatic	TBCH (30%)	1.7		2,000 - 15,000 @ 60°C	6	■	■ ■ ■ ■ ■	■		■ ■			Extremely flexible, best strain-stress behavior.
UA 9089	aliphatic		2.0		10,000 - 30,000	3	■ ■	■ ■ ■ ■	■ ■		■ ■		■ ■ ■ ■	High elasticity, excellent adhesion to PVC, weathering resistance, and low yellowing

Polyether acrylate

LR 8863	ethoxylated TMP-triacrylate		3.0	450	50 - 100	10	■ ■ ■ ■	■	■		■ ■ ■ ■			Low viscosity, low yellowing, and low odor diluent.
PO 43 F			2.4	430	200 - 400	100	■ ■ ■ ■	■ ■	■ ■		■ ■ ■ ■			All-purpose resin, resistant to chemicals.
PO 8967			2.6	380	120 - 190	50	■ ■ ■ ■	■ ■	■ ■		■ ■ ■ ■			Low viscosity version of PO 43 F, good surface cure.
PO 8982			2.7	600	150 - 300	70	■ ■ ■ ■	■ ■	■ ■		■ ■			Partially water-soluble, spray viscosity adjustable.
PO 9102	propoxylated (2.0) neopentyl glycol diacrylate		2.0		10 - 20	1	■ ■	■ ■	■		■ ■			Good substrate and pigment wetting, low viscosity.

Polyether acrylate (amine-modified, free of monomers)

PO 77 F			2.9	690	1,000 - 3,000	120	■	■ ■ ■ ■	■ ■ ■ ■		■ ■ ■ ■			Very highly reactive, versatile resin, good sanding properties.
PO 94 F			3.5	750	300 - 600	55	■ ■	■ ■ ■ ■	■ ■ ■ ■ ■		■ ■ ■ ■ ■			Very high reactivity and good pigment wetting.
PO 8996			2.9	480	50 - 90	30	■ ■	■ ■	■ ■ ■ ■		■ ■ ■ ■			High reactivity, very low in color and viscosity.
New PO 9103			2		2,500 - 4,000	163	■	■ ■ ■ ■	■ ■ ■ ■		■ ■			Highly reactive, good adhesion to plastics.

■ ■ ■ ■ superior ■ ■ ■ excellent ■ ■ very good ■ good

Laromer oligomers (cont.)

Product	Type of Resin	Diluent (content)	Functionality (calculated)	Relative Molar Mass (calculated, g/mol)	Viscosity @ 25°C (cps)	Hydroxyl Value (approx. mg KOH/g)	Hardness	Elasticity	Reactivity	Abrasion Resistance	Chemical Resistance	Scratch Resistance	Weathering	Description and Applications
Water-based														
PE 22 Aqua	polyester acrylate	water (50%)	2.2	700	150 - 500		■ ■	■ ■	■ ■		■ ■ ■ ■			Good chemical resistance, physical drying properties, hardness and low yellowing.
PE 55 Aqua	polyester acrylate	water (50%)	2.2	700	250 - 650		■ ■	■ ■ ■ ■	■ ■ ■ ■		■ ■ ■ ■			Hard, resistant to chemicals, with good sanding properties.
UA 8983 Aqua	aromatic urethane acrylate dispersion	water (60%)	0.7	10,000	50 - 300		■ ■	■ ■ ■ ■ ■ ■	■ ■		■ ■			Low yellowing version of UA 9060.
UA 9059 Aqua	aliphatic urethane acrylate	water (30%)	1.8		6,000 - 11,000		■	■ ■ ■ ■ ■ ■	■ ■		■			Excellent physical drying properties, easy to formulate.
UA 9064 Aqua	urethane acrylate dispersion	water (62%)			20 - 250		■ ■ ■ ■ ■ ■	■ ■	■ ■		■ ■ ■ ■ ■ ■			Good chemical and scratch resistance, excellent block resistance.
UA 9095 Aqua	urethane acrylate dispersion	water (60%)	2.2		50 - 500		■ ■ ■ ■	■ ■	■ ■		■ ■ ■ ■ ■ ■			Excellent adhesion on wood, very flexible, excellent "coin-test" results.
New UA 9134 Aqua	aliphatic urethane acrylate	water (60%)	4.9		5-350		■ ■ ■ ■ ■ ■	■ ■	■ ■		■ ■ ■ ■ ■ ■			Good grain enhancement on wood, excellent adhesion on PVC.
WA 9057 Aqua	acrylated acrylic emulsion	water (60%)			10 - 200		■ ■ ■ ■	■ ■ ■ ■	■ ■		■ ■ ■ ■			Good chemical and scratch resistance, excellent block resistance.
Special energy-curable														
PO 9026	nano-modified polyether acrylate		1.5	450	600 - 1,500		■ ■ ■ ■ ■ ■	■	■ ■		■ ■ ■ ■	■ ■ ■ ■		Contains 50% non-crystalline nano-silica, very scratch resistant.
PR 9013	modified polyether acrylate		1.5	1,700	45,000 - 70,000	25	■ ■ ■ ■	■	■		■ ■			Excellent pigment wetting properties, low in shrinkage.
PR 9052	polyester resin	TMPTA (60%)	3.7	800	4,000 - 8,000		■ ■ ■ ■	■	■ ■	■ ■ ■ ■	■ ■ ■ ■			Best Taber** Abrader (S33/S42) resistance in combination with aluminum oxide.
New PR 9119	polyester resin	TMPTA	5.5		5,000 - 9,000	18	■ ■ ■ ■	■	■ ■		■ ■ ■ ■			Low yellowing, good abrasion resistance, easy to matte.
UP 35 D	unsaturated polyester	DPGDA (45%)	3.5	950	3,000 - 6,000		■ ■	■ ■ ■ ■	■ ■		■ ■ ■ ■			Low yellowing, good chemical resistance and sanding properties.
New UP 9118	unsaturated polyester	DPGDA/TMPTA (42%)	4.5		26,000-31,000	7	■ ■ ■ ■	■	■ ■ ■ ■		■ ■ ■ ■			Hard, good chemical resistance, easy to matte.
Dual cure														
PR 9000	isocyanato acrylate		2 + 2 NCO		1,000 - 1,400		■ ■	■	■		■ ■			Contains NCO- and UV-reactive groups within one molecule.

■ ■ ■ ■ ■ superior
 ■ ■ ■ ■ excellent
 ■ ■ ■ very good
 ■ ■ good

Laromer reactive diluents

The polymerizable groups of BASF's Laromer monomers allow them to be used as a crosslinking component in energy-curable inks and overprint varnishes, where they act as reactive diluents. Cured inks and overprint varnishes formulated with Laromer reactive diluents provide performance attributes, such as good adhesion and film hardness, very good reactivity, fast cure rate, low shrinkage, and good flexibility.

Product	CAS Number	Relative Molar Mass (approx, g/mol)	Density @ 25°C (g/cm ³)	Viscosity @ 25°C (cps)	Level of Stabilizer (ppm MeHQ)	Alpha Color (max)	Abrasion Resistance	Scratch Resistance	Adhesion	Corrosion Protection	Applications							
											Coatings				Inks			Weathering
											Furniture & Flooring	Building Products	General Industrial	Transportation	Offset	Flexo	Screen	
Laromer DPGDA dipropylene glycol diacrylate	57472-68-1	240	1.05	8	350 ± 50	150	✓				✓	✓	✓	✓	✓	✓	✓	
Laromer HDDA hexanediol diacrylate	13048-33-4	230	1.02	6	200 ± 50	150					✓	✓	✓	✓	✓	✓	✓	
Laromer LR 8887 trimethylpropaneformal mono-acrylate	66492-51-1	200	1.09	40	1,000 ± 100	200	✓		✓	✓	✓	✓		✓	✓	✓	✓	
Laromer POEA phenoxyethyl acrylate	48145-04-6	190	1.10	8	200 ± 50	70			✓	✓			✓	✓	✓	✓	✓	
Laromer PPTTA ethoxylated (5.0) pentaerythritol tetra-acrylate	51728-26-8	530	1.14	< 190	900 ± 100	100					✓		✓	✓			✓	
Laromer TBCH 4-t-butylcyclohexyl acrylate	84100-23-2 .282-104-8	210	0.94	9	200 ± 50	100			✓	✓		✓	✓	✓	✓	✓	✓	
Laromer TMPTA trimethylolpropane triacrylate	15625-89-5	300	1.10	130	200 ± 50	70	✓	✓			✓	✓	✓	✓	✓	✓	✓	
Laromer TPGDA tripropylene glycol diacrylate	42978-66-5	300	1.04	11	350 ± 50	70					✓	✓	✓	✓	✓	✓	✓	

✓ Applies

* All products registered with REACH and TSCA. All other countries, please contact your BASF representative.



Additives

Energy-curable systems

Solvent-based resins

Water-based resins

At BASF,
we create chemistry

Additives

As a world leader in the global chemical industry, BASF offers a wide array of high-performance additives that support a broad spectrum of applications across many different industry sectors. These unique raw materials help enable performance-driven products meet the latest and most stringent application requirements.

Our portfolio comprises a broad technology base of dispersing agents, defoamers, wetting and flow control agents, rheology modifiers, and film-forming agents.

With global manufacturing capabilities, a strong research and development platform, full-service regional technical laboratories, pre-screening capabilities and a team of knowledgeable, experienced experts, BASF can shorten your development time to bring new formulations to market.

Joncryl additives

Controlled particle size wax emulsions imparting rub and scuff resistance to water-based inks and overprint varnishes.

Tinuvin UV absorbers & light stabilizers

UV absorbers and light stabilizers for water-based, solvent-based and energy-curable inks and overprint varnishes.

Tinopal® optical brighteners / tracers

Highly fluorescent molecules used either as an optical brightener to mask or counteract yellowness or as a tracer to provide an optical method for detecting non-pigmented coating.

Irgastab® and Lignostab® in-can stabilizers

In-can stabilizers enhance shelf-life stability during ink storage and maintain stable viscosity.

Irgastab and Irganox® antioxidants

Antioxidants minimize discoloration and the long-term effects of oxidative degradation of the binder in inks, coatings and adhesives.

Efka®, Dispex®, Dispex Ultra dispersing agents

Dispersing agents wet and stabilize pigments and other particles within formulations. They represent an essential component as they provide color strength, gloss, viscosity stability and prevent sedimentation of particles.

Efka and Rheovis® rheology modifiers

Rheology modifiers make it possible to adjust the flow behavior of formulations.

Efka and Hydropalat® wetting agents and surface modifying agents

Wetting and flow control agents provide adequate wetting properties, enhance component compatibility and surface flow.

Slip and rub control agents provide a formulation with strong slip and surface smoothness effects.

Efka and FoamStar® defoamers

Defoamers focus on establishing a perfect balance between excellent foam suppression, high compatibility, long-term efficiency and easy handling.



Joncryl additives

BASF additives are used to enhance the performance of surface printing ink and overprint varnish formulations. Joncryl Wax emulsions improve rub and scuff resistance with minimal loss of gloss. Our crosslinker, Zinc Oxide Solution #1, can be used to improve the chemical and heat resistance of water-based formulations.

Product	Appearance	Non Volatile (%)	Total VOC (% wt)	Wax Particle Size (µm)	Viscosity @ 25°C (cps)	pH	Density @ 25°C (g/cm ³)	Melting Point of Wax (°C)	Freeze-thaw table	Description and Applications
Joncryl Wax 4	opaque emulsion	40	< 0.005	4.00	1,000	9.0	0.94	110		Large particle size polyethylene wax dispersion that imparts rub and scuff resistance to water-based inks at low use levels.
Joncryl Wax 26	translucent emulsion	25	3.3	0.05	10	9.8	0.99	130	no	Small particle size polyethylene wax emulsion that improves rub resistance of water-based inks, overprint varnishes, and functional packaging coatings with no significant loss of gloss.
Joncryl Wax 28	tan emulsion	34	3.5	0.08	50	9.2	1.00	132	no	Small particle size polyethylene wax emulsion that improves rub resistance of inks, overprint varnishes, and functional packaging coatings with no significant loss of gloss.
Joncryl Wax 120	tan emulsion	34	< 0.005	0.08	400	9.0	0.98	56	no	Small particle size, very low VOC polyethylene/paraffin wax emulsion for water shedding, heat release, and low COF in overprint varnish and functional packaging coating formulations.
Zinc Oxide Solution #1	clear, water-white solution	15	< 0.005		5	11.4	1.22		yes	Zinc ammonium carbonate solution for aqueous inks, overprint varnishes, and functional packaging coatings where improved heat resistance and film hardness are desired.

Tinuvin UV absorbers & light stabilizers

Signage, graphics, magazines and packaging are often over lacquered with a protective coating (overprint varnish) to improve durability. BASF offers a broad selection of UV absorber (UVA) additives, which can easily be incorporated into water-based, solvent-based, or energy-curable overprint varnish formulations. Due to their high photostability, broad spectral coverage and very high extinction, Tinuvin UVAs provide excellent performance by filtering harmful UV light and protecting the underlying image against fading. In addition, the varnish itself can be protected against light degradation (cracking, loss of gloss, delamination, etc.) with the addition of Tinuvin hindered amine light stabilizers (HALS) in the formulation. Alternatively, they can be added directly into the ink formulation to help protect the colorant and binder against photo-oxidation, which will also increase the lifetime of the image.

Product	Physical Form	Melting Range (°C)	Solubility/Miscibility @ 20°C (g/100g)							Applications				Description and Applications
			mineral spirit / toluene	xylene / methyl isobutyl ketone	methyl amyl ketone / methyl ethyl ketone	butyl acetate / ethyl acetate	ethyl Cellosolve* acetate / butyl Cellosolve* acetate	butyl Carbitol* / Texanol**	water	Digital Inks	Overprint Varnish	UV Curing	Adhesives	

2-(2-hydroxyphenyl)-Benzotriazole UVA (BTZ)

Tinuvin 171	liquid		> 50 > 50	> 50 > 50	> 50 > 50	> 50 > 50		> 50 na	<0.01	✓	✓			Ideal UVA for photographic applications when initial yellowing must be kept to a minimum.
Tinuvin 328	solid	79 - 83	14 33	34 27	25 14	15 16	14 25	14 35	<0.01				✓	Offers high solubility and good UVA protection for adhesives.
Tinuvin 928	solid	109 - 113		> 50 na	30 na	> 30 na	10 9.5		<0.01	✓	✓		✓	Premiere BTZ for photo-permanence and for its ability to provide high UV blocking power over a broad spectral range.
Tinuvin 1130	liquid		na > 50	> 50 > 50	> 50 > 50	> 50 > 50	> 50 > 50	> 50 > 50	<0.01	✓	✓		✓	Excellent spectral coverage in UVA and UVB region. Easily incorporates into water- and solvent-based inks.

2-Hydroxyphenyl-s-triazine UVA (HPT)

Tinuvin 400	liquid		na > 50	> 50 > 50	> 50 > 50		> 50 > 50	> 50 > 50	<0.01	✓	✓	✓	✓	A general purpose, easy to incorporate UVA with high photo-permanence. It is especially useful in blocking light in the short wavelength spectral region (below 320nm) most preferred for UV curing applications.
Tinuvin 460	solid	93 - 102			na 5.7	4.3 3.2			<0.01	✓	✓	✓	✓	Excellent photo-permanence. Provides broad UV light blocking power, yet without affecting coloristics. Ideal for inks and OPVs.
Tinuvin 477	liquid									✓	✓	✓	✓	Designed as a red-shifted UVA. It blocks light up to 400 nm. Often used in combination with Tinuvin 400 for optical applications and in color-sensitive applications, where protecting color long term is critical.
Tinuvin 479	solid									✓	✓	✓	✓	A general purpose, easy to incorporate UVA with high photo-permanence. It is especially useful in blocking light in the short wavelength spectral region (below 320nm) most preferred for UV curing applications.

Note:

For EB cure applications, use light stabilizer packages as needed.

For UV cure applications, please contact your BASF representative to assist with light stabilizer package optimization.

*Cellosolve and Carbitol are trademarks of The Dow Chemical Company.

**Texanol is a trademark of the Eastman Chemical Company.

Tinuvin UV absorbers & light stabilizers (cont.)

Product	Physical Form	Melting Range (°C)	Solubility/Miscibility @ 20°C (g/100g)							Applications				Description and Applications
			mineral spirit / toluene	xylene / methyl isobutyl ketone	methyl amyl ketone / methyl ethyl ketone	butyl acetate / ethyl acetate	ethyl Cellosolve* acetate / butyl acetate	Cellosolve* acetate	butyl Carbitol* / Texanol**	water	Digital Inks	Overprint Varnish	UV Curing	

Hindered amine light stabilizers (HALS)

Tinuvin 123	liquid		> 50 > 50	> 50 > 50	> 50 > 50	> 50 > 50			<0.01	✓	✓		✓	Low basicity amino-ether (NOR) HALS that provides protection against cracking and color change.	
Tinuvin 152	solid											✓	✓	Good for UV/EB applications.	
Tinuvin 249	liquid									✓	✓	✓		Low viscosity and general purpose. Ideal for polar inks, coatings and adhesives.	
Tinuvin 292	liquid		> 50 > 50	> 50 > 50	> 50 > 50	> 50 > 50		> 50 > 50	<0.01	✓	✓	✓	✓	Good for a variety of applications. It also can be dispersed into water-based inks.	
Tinuvin 622	solid												✓	Polymeric HALS, exhibiting low migration.	
Tinuvin 770 DF	solid	81 - 85					na 24		<0.01					✓	HALS with indirect food contact approval.

NEAT additive preparations for water-based applications

Tinuvin 123-DW (N)	liquid									✓	✓		✓	Non-interacting and hydrophobic HALS for water-based formulas.
Tinuvin 400-DW (N)	liquid									✓	✓	✓	✓	Ideal for UV curing; protects against UV light with minimal yellowing.
Tinuvin 477-DW (N)	liquid									✓	✓		✓	A red-shifted HPT light absorber, which is ideal for thin water-based coatings and inks.
Tinuvin 479-DW (N)	liquid									✓	✓	✓		Very hydrophobic HPT absorber that is delivered in a water-miscible preparation. It delivers a high level of protection in the critical 300-340 nm region.
Tinuvin 5333-DW (N)	liquid									✓	✓	✓	✓	A blend of high-performance UVA/HALS, which resists wash-out, for high durability outdoor applications.
Tinuvin 9945-DW (N)	liquid									✓	✓	✓	✓	A BTZ light absorber, which is solvent-free, label-free; ideal for water-based formulas.

Note:

For EB cure applications, use light stabilizer packages as needed.

For UV cure applications, please contact your BASF representative to assist with light stabilizer package optimization.

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**Texanol is a trademark of the Eastman Chemical Company.

Tinopal optical brighteners / optical tracers

Tinopal products are highly fluorescent molecules. They are used primarily as optical brighteners to mask or counter-act yellowness (especially in white inks) and make colors brighter. UV-A (like black light, 365 nm) excitation produces strong blue light emission from them. The Tinopal products are also widely used as a “tracer” (especially in adhesives and clear coating applications), so they can provide an optical method for detecting non-pigmented coating (as in overspray or in determining the proper registration during application). The Tinopal products are generally not considered photo-permanent, so they are recommended for indoor use only or in sealers.

Product	Physical Form	Applications					Description and Applications
		Solventborne	Waterborne	Inks	OPV	Adhesives	
Tinopal NFW Liquid	liquid		✓	✓	✓	✓	Approx. 20% solution of 4,4'-bis(2-sulfostyryl)-biphenyl disodium salt.
Tinopal OB CO	solid	✓		✓	✓	✓	Non-ionic, 2,5-thiophenediyl bis(5-tert-butyl-1,3-benzoxazole).
Tinopal SFP	solid		✓	✓	✓	✓	Water-soluble stilbene-based optical brightener.

In-can stabilizers

In-can stabilizers are critical to enhance shelf-life stability during storage of an ink. They are important in maintaining stable viscosity. They are mainly used in reactive resins, such as UV/EB-curable inks, coatings and adhesives. They are especially useful in UV-curable inkjet inks and in 2K acrylic adhesives.

Product	Physical Form	Applications					Description and Applications
		Solventborne	Waterborne	Inks	OPV	Adhesives	
Irgastab UV 22	liquid solution	✓		✓	✓	✓	An anaerobic free-radical scavenger (quinone derivative) dissolved in GPTA monomer. It is used mainly for UV/EB applications.
Lignostab 1198	solid	✓	✓	✓	✓	✓	100% active. Can be used in either non-aqueous or water-based formulas. Often used synergistically with Irgastab UV 22 and with secondary antioxidants, like Irgafos® 126 phosphite.

Antioxidants

Antioxidants are used as process aids and are key to minimizing discoloration and the long-term effects of oxidative degradation of the binders in inks, coatings, and adhesives. The Irganox antioxidants work to scrub away peroxy radicals and minimize the formation of hydroperoxides (which are key contributors to yellowing, etc.). Irgafos® phosphites, hydroxyl amines and thiosynergists help high-temperature performance. The Irganox and Irgafos products often work synergistically as thermal stabilizers.

Product	Physical Form	Applications					Description and Applications
		Solventborne	Waterborne	Inks	OPV	Adhesives	
Irganox 245-DW	liquid solution		✓			✓	A water-based emulsion of a sterically hindered phenolic antioxidant (40% active).
Irganox 1010	solid	✓				✓	Widely used antioxidant for adhesives and for low-migration applications.
Irganox 1035	solid	✓		✓	✓	✓	Contains both hindered phenol and thio synergist. Used mainly in UV/EB applications.
Irganox 1076	solid	✓		✓	✓	✓	Widely used antioxidant for resins used in inks and adhesives.
Irganox 1520 L	liquid / solid	✓	✓			✓	An efficient antioxidant for both non-aqueous and water-dispersible formulations. Used mainly in adhesives.
Irganox 1726	solid	✓				✓	An efficient antioxidant, especially for adhesives.
Irganox B 225	solid	✓				✓	A blend of Irganox 1010 (a hindered phenol, primary antioxidant) and Irgafos 168 (a phosphite, secondary antioxidant designed), which targets the termination of hydroperoxides and minimizes thermo-oxidative degradation.
Irganox PS 800	solid	✓				✓	A thiosynergist heat stabilizer. Most often used in combination with a phenolic antioxidant, such as Irganox 1035.
Irgastab FS 301	solid	✓		✓	✓	✓	Phenol-free processing stabilizer system.

Formulation additives

Dispex, Rheovis, Hydropalat, Efka, FoamStar

BASF is a premiere provider of formulation additives for the printing ink industry, including digital inks. These unique products enable performance-driven formulations, which meet the latest and most stringent environmental regulations. The portfolio comprises a broad technology base of dispersing agents, wetting agents and surface modifiers, defoamers, rheology modifiers, and film-forming agents. Many of our additives have been classified as fit for indirect food contact.

Product	Non Volatile (%)	Total VOC (% wt)	Acid No. (NV)	Amine #	Water-based	Solvent-based	UV Curable	Description and Applications
Dispersants								
Dispex AA 4040 NS	43		0	0	✓			Ammonium polyacrylate polymer dispersing agent for WB UV inorganic pigments and fillers.
Dispex AA 4144	35		0	0	✓			Sodium polyacrylate, highly effective pigment dispersing aid for WB UV inorganic pigments, even at low dosages.
Dispex Ultra FA 4480 NU	80		0	0	✓			Universal, non-ionic dispersing and wetting agent improves color development, acceptance, and gloss.
Dispex Ultra PX 4585	50		0	20	✓			Acrylic block copolymer that demonstrates high efficiency in stabilizing pigments and wide compatibility with many WB resin systems, which make it ideally suited for resin-free pigment concentrates. Benchmark dispersant for carbon blacks.
Efka FA 4611	100	<0.1	129	0		✓	✓	Solvent-free dispersing agent, with excellent stabilization of inorganic pigments, notably TiO ₂ . Achieves strong reduction in mill-base viscosity, even with high pigment and filler loadings.
Efka FA 4666	52	48	140	0		✓	✓	Inorganic pigment dispersant for SB and UV inks and OPV's. In UV systems produces low and stable viscosity in low gloss formulations with high loads of silica based flatting pigments. Especially effective in low gloss applications with Laromer PO 9026.
Efka PX 4310	50	50	0	19		✓		50% active acrylic block copolymer dispersant, offering high efficiency in stabilizing pigments and wide compatibility with solvent-based resin systems. Highly suitable for carbon blacks and resin-free dispersions.
Efka PX 4701	> 97	< 3	0	40		✓	✓	100% active acrylic block copolymer dispersing agent, well-suited for high-performance pigments and resin-free pigment concentrates in UV-curable printing inks and inkjet inks offering long term storage stability.
Efka PX 4703	> 99	< 1	0	56		✓	✓	100% active acrylic block copolymer dispersing agent, suited for high-performance pigments in UV oligomer and monomer formulations that are less polar than those used with Efka PX 4701.
Efka PX 4733	> 97	< 2.5	0	25		✓	✓	100% active tin-free dispersant for UV flexo and offset systems. Specifically for phthalo blue and green pigments.

✓ Applies

Formulation additives (cont.)

Product	Non Volatile (%)	Total VOC (% wt)	Acid No. (NV)	Amine #	Water-based	Solvent-based	UV Curable	Description and Applications
Wetting Agents								
Hydropalat WE 3220	> 99	< 1	0	0	✓		✓	Silicone surfactant, 100% active wetting agent. Strong reduction of surface tension, limited surface slip, great for over-coatability.
Hydropalat WE 3475	75	6	0	0	✓			Sulfosuccinate wetting agent, strong reduction of dynamic surface tension, benchmark wetting agent for OPVs. To manage foam consider using with Foamstar SI 2240.
Hydropalat WE 3650	> 99	< 1	0	0	✓		✓	100% active modified alkoxyate wetting agent, excellent dynamic surface tension reduction, low foam stabilization.
Hydropalat WE 3966	100	< 1	0	0	✓			Powder form surfactant, prevents pigment shock during grind letdown, easy to blend with other powders.
Surface Slip								
Efka SL 3257	> 99	< 1	0	0	✓	✓	✓	Modified polysiloxane slip additive, 100% active. Provides surface slip and mar resistance.
Efka SL 3200	> 95	< 1	0	0	✓	✓	✓	Modified polysiloxane slip additive, 100% active. Broad FDA and Swiss compliance.
Defoamers								
FoamStar SI 2210 NC	100	1	0	0	✓			Persistent defoamer for non-pigmented and low-pigmented inks and adhesives and UV-curable systems.
FoamStar SI 2213	100	< 0.1	0	0	✓			Highly effective siloxane based defoamer with excellent compatibility. For printing inks in let down stage and OPV's. Can be used press-side due to ease of incorporation.
FoamStar SI 2240	100	< 0.1	0	0	✓			Well-suited for production of pigment concentrates due to its excellent stability under high shear conditions. Minimizes macro and micro foam from the grind process and offers concentrates with low viscosity. Extended food contact compliance and global country registrations.
Foamaster NO 2306	100	< 0.1	0	0	✓		✓	Non-mineral-oil and non-silicone based defoamer.
Efka PB 2744	> 99	< 0.5	0	0		✓	✓	Ultra-low VOC, silicone and mineral oil free defoamer recommended for UV systems.
Efka SI 2022	< 10	> 90	0	0		✓	✓	Modified polydimethylsiloxane-based defoamer, ~10% active for UV that can tolerate some solvent. Low-shear incorporation.
Rheology Modifiers								
Rheovis AS 1130	30	< 1	0	0	✓			Highly efficient low-shear ASE thickener, highly shear thinning. Excellent for anti-sag and anti-settle in spray and pigment slurries formulations.
Rheovis AS 1337	30	< 1	0	0	✓			High shear viscosity building ASE thickener that imparts Newtonian flow profile for improved flow and application film weight consistency under prolonged shear.

✓ Applies



Wakazomer	Xilcha	Zinzer
Silhadzomer	Sad	zu HerrTreuPA.
Kalidzomer	NGu	Wbat
Tidzomer		

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