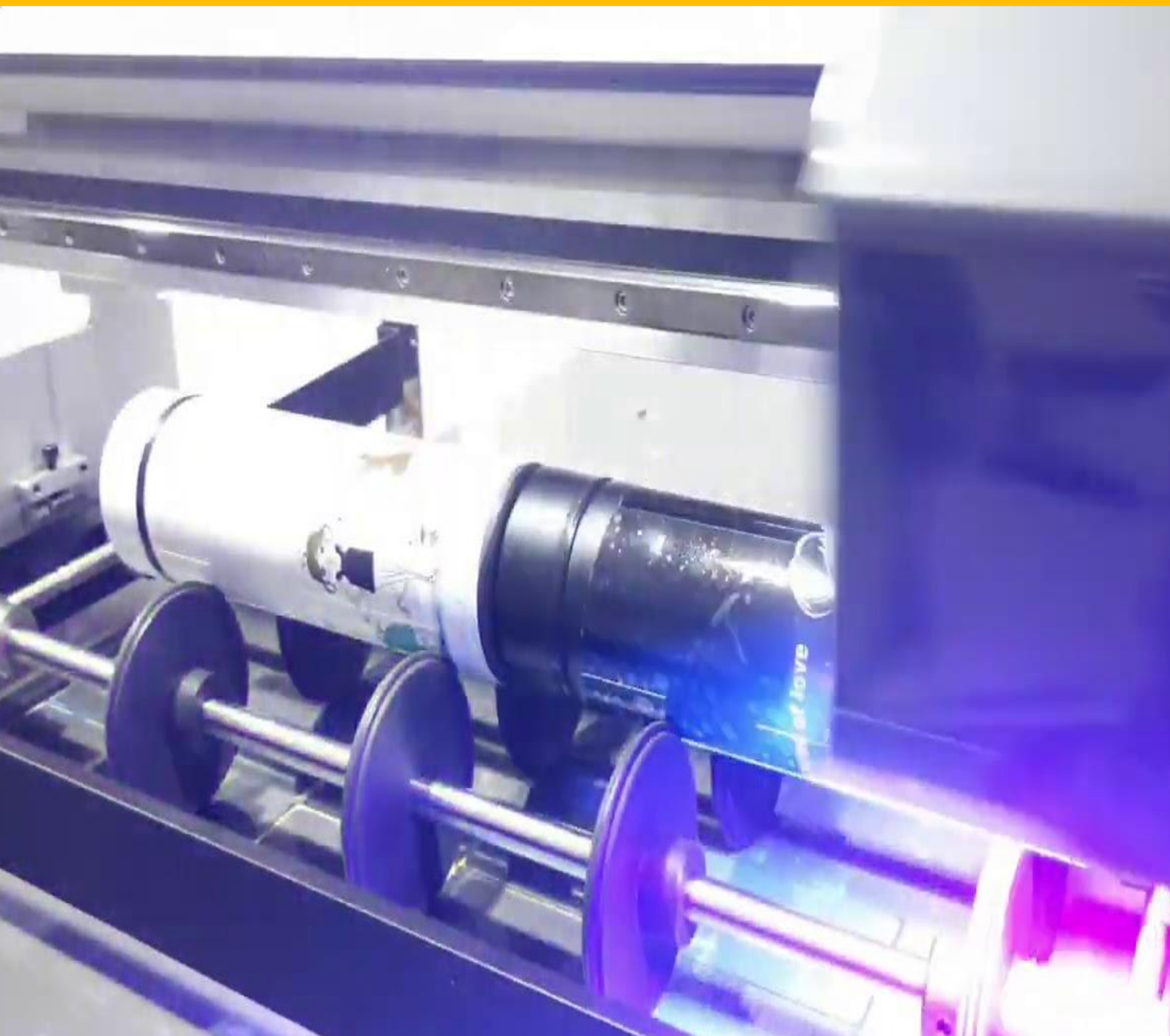


UV/EB CURABLE RESINS & ADDITIVES DUAL CURE PRODUCTS

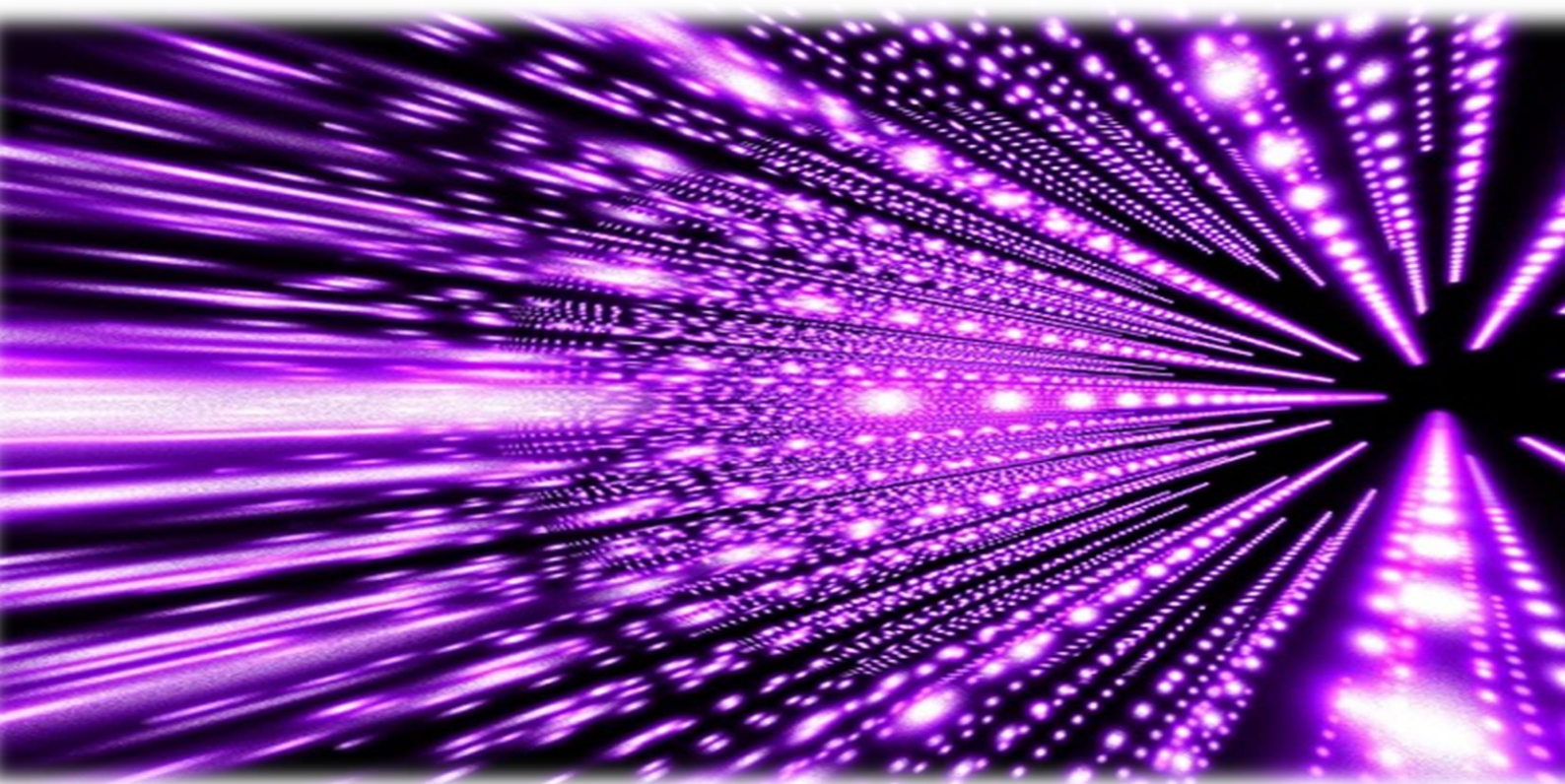




UV LED Curing: the energy-efficient solution

Our UV and energy hardening technology are highly innovative resins in based on our conviction. In conjunction with other coating systems, Dual-Cure products are developed which can be classed as extremely High Tech products.

In addition to their instantaneous drying times and zero VOC content, water-borne our UV resins are delivering outstanding performance 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, to providing a viable alternative to traditional urethanes in the growing flex flooring sector.



Easy-to-Matt

Soft-Feel Capable

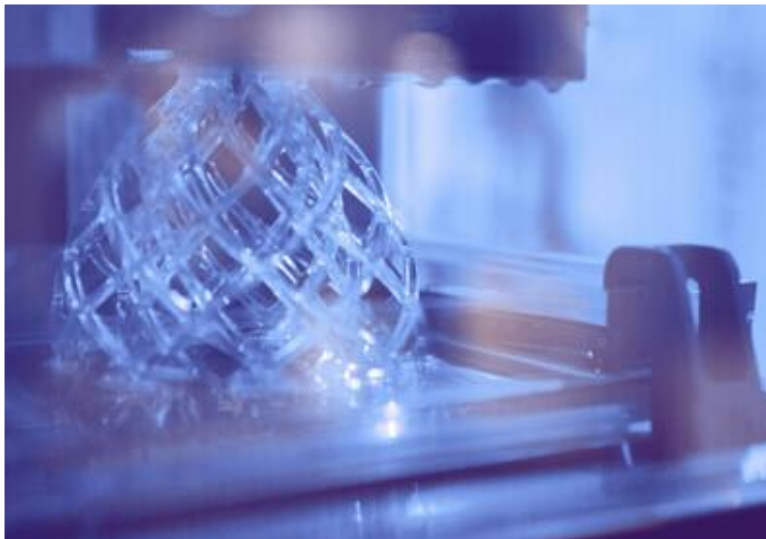
Superior Performance

UV-curable solutions for 3D printing

With the special liquid resins for UV-curable 3D printing, VaraRad UV offers an integrated portfolio of solutions:

- Custom formulations
- Engineered resins for a targeted performance
- Oligomers, monomers, cationic resins, photoinitiators, and additives

These specialty resins for 3D printing processes help additive manufacturers achieve exceptional freedom of performance design, high resolution, wave-length independency and enhanced processability. They also fulfill performance and regulatory requirements for a wide range of industrial uses such as medical, dental, electronics and sporting goods applications.



MUR 2509

VaraRad UV; UV-curable, solvent- water-based and solvent-free

Product	Supply Form [%]	Viscosity [mPa.s]/23°C	Main uses and characteristics
PUV 4561	55 in BA	2.500 – 4.000	Hydroxyl group containing polyester acrylate, curing with isocyanate and radiation (dual cure), non-adhesive and scratch-resistant, for non-yellowing coatings. OH=4.5
PUV 4500	100	40.000 – 60.000	Polyester acrylic resin for the formulation of UV and electron beam curing varnishes, lacquers, and paints. It is a nearly colourless resin with good reactivity. It forms elastic, scratch and chemical-resistant films with good adhesion properties even on plastic surface.
EUV 4000	100	4.000 – 6.000	Epoxy acrylate resin, high reactivity, hard, scratch resistant films, chemical resistant.
EUV 4300	100	12.000 – 18.000	Epoxy acrylate resin, high reactivity, hard, flexible, scratch resistant films, chemical-resistant, corrosion resistant.
EUV 4800	100	12.000 – 25.000	Low viscous, low odour epoxy acrylate for the production of UV/Electron beam curing varnishes and lacquers with high hardness, very high reactivity, good pigment wetting, forms hard scratch resistant, durable films, chemical resistant.
EUV 4405 W	40 in water	50 – 200	An aqueous anionic, UV curing, epoxy-modified polyurethane acrylic emulsion for plastic coatings.
EUV 5000	100	5.000 – 10.000 (80% in TPGDA)	Low viscous, low odour epoxy acrylate for the production of UV/Electron beam curing varnishes and lacquers with high hardness, very high reactivity, good pigment wetting, forms hard scratch resistant, durable films, chemical resistant.
EUV 5060 W	60 in water	500 – 1.500	An aqueous anionic, UV curing, epoxy-modified polyurethane acrylic emulsion. pH= 6.0
AUC 2954	57 in HDDA/BAC	1.000 – 2.000	Urethanized, long oil alkyd resin in HDDA./BuAc, cured with the help of photoinitiators (Omnirad TPO-L) by means of LED (395 nm).
AUC 2954	53 in HDDA	2.000 – 5.000	Urethanized, long oil alkyd resin in HDDA, cured with the help of photoinitiators (Omnirad TPO-L) by means of LED (395 nm).
AUC 1996	100	max. 70.000	An acrylic modified short oil alkyd, UV curing, for metal, wood, plastic coatings.
IT-UC 2455	100	-	Itaconic acid based, UV-curable polyester for coatings and UV-INK.
UV 1996	80 in HDDA	max. 70.000	An acrylic modified short oil alkyd, UV curing, for metal, wood, plastic coatings.
UC 2365	100	2.000 – 8.000	UV oil for the coating of wood. UC 2365 is particularly suitable for the production of parquet and maintenance oils. It is characterized by very good penetration.
AUC 2345	80 in TPGDA	20.000 – 30.000	An epoxy acrylate for UV coating systems. 2345 shows high gloss, high hardness and good reactivity. The product can be used in all UV/EB applications, e.g. paints, printing inks and OPV.
AUC 2345	100	40.000 – 60.000	An epoxy acrylate for UV coating systems. 2345 is characterized by its high gloss, high hardness and good reactivity off. The product can be used in all UV / EB applications, eg. as paints, inks and overprint varnishes.
PUV 2169	100	4.000 – 8.000 (80% in TPGDA)	A100% polyester-acrylate resin for UV-curing coating systems. 2169 has good adhesion to the following substrates such as wood and PVC. It can also act as a modifying component in printing inks and overprint varnishes be used.
PUV 2032	70 in NPG(PO)2DA	approx. 40.000	UV and isocyanate crosslinking, aliphatic polyester resin. Modification component to improve flexibility, adhesion and flow, increasing the surface hardness and chemical resistance.

VaraRad UV; Urethan modified polymethyl (meth) acrylate for UV-curable

Product	Solvent	Supply Form [%]	Viscosity [mPa.s]/23°C	Main uses and characteristics
MUR R 2544	MMA / BuAC	43	max. 100	Urethane-modified polyalkyl (meth) acrylate resin having reactive, cycloaliphatic side chains, particularly suitable as a binder for the production of polymer concrete.
MUR 2481	MMA	48	max. 3.000	Urethane-modified polyalkyl methacrylate for engineered stone, solid surface and polymer concrete.
MUR R 1100	TPGDA	70	max. 10.000	A urethane-modified polymethyl methacrylate resin having reactive cycloaliphatic side chains for the production of radiation-curable coating materials.
MUR C 1200	tert.-butylmethacrylate (TBUMA)	76	450 – 550	A high solid, urethane modified polyalkyl(meth)acrylate resin with reactive, cycloaliphatic side chains, which is solved in tert.-butyl methacrylate. MUR C 1200 is suitable as a binder for the production of engineered stone and polymer concrete.
MUR R 2100	1,6-hexanediol-diacrylate (HDDA)	41	max. 500	Urethane-modified polymethyl methacrylate resin for the production of UV-radiation-curable coating materials.
MUR R 2200	MMA	36	max. 50	Urethane-modified Polymethyl methacrylate resin with reactive, cycloaliphatic side chains for the production of radically curable putties.
MUR 2453	TIEGDMA	70	10.000	Urethane-modified Polymethyl methacrylate for UV-systems coating.
MUR 2509	DPDGA	45	850 – 900	Urethane-modified polymethyl methacrylate resin dissolved in dipropylene glycol diacrylate (DPDGA) for 3D printing in the field of Stereolithography. (laser diode with 405 nm wavelength and 120 mW power)
UVM 2051	Solvent-free	100	max. 75	Thinner based on maleate / vinyl ether for UV-systems. UVM 2051 is a reactive diluent for radiation-curing systems, which is particularly well suited for the formulation of lacquers for printing on wood and paper.
UM 2480	TMPDA	70	max. 10.000	Urethane-modified. Polymethyl methacrylate for UV-systems coating.
HUM 2902	1,6-hexanediol-diacrylate (HDDA)	40	max. 150	High reactive, urethane modified. Polymethyl methacrylate for UV-systems coating, e.g. quartz and ceramic coating.
UM 2662	1,4-Butandiolmethacrylat	73	2.000 – 4.000	Urethane-modified Polymethacrylat for UV-coatings.
UM 2511	HEMA	61.5	450 – 550	Urethane-modified Polymethacrylat for UV-curable, low shrinkage engineered stone, solid surface and polymer concrete.
UM 2523	DPGDA	70	1.000 – 3.000	Urethane-modified Polymethacrylat for UV-curable coatings.
UMP 2555	TPGDA	70	max. 5,000	Urethane-modified Polymethacrylat for UV-curable coatings.
UMH 6145 UV	Solvent-free	100	55.000-75.000	An aliphatic urethane hexaacrylate, offers good elasticity, flexibility and fast curing speed. Exhibits good abrasion- and weather resistance. Used in overprint varnishes for wood, paper & board, UV-based plastic coatings and UV-based inks.
UM R 3100	HDDA	57	max. 5000	UV-curable coatings, as mortar cartridges resin.



Lumora HEMA-TMDI

DIURETHANE DIMETHACRYLATE

It is mostly used in radiation curing formulations in varnishes, inks and adhesives, and dental compounds.

Novel Urethane-Dimethacrylate Monomers and Compositions for Use as Matrices in Dental Restorative Materials

Lumora HEMA-TMDI (Diurethane dimethacrylate) is a difunctional methacrylate monomer bearing urethane group. It is characterized by low volatility and high reactivity. Mostly used in radiation curing formulations in varnishes, inks and adhesives, and dental compounds.

SCOPE OF APPLICATION Adhesives, Personal care & Health care



SYNTHORA BondPro UV; Special primers / adhesion promoter for UV-coatings

Product	Properties	Non-volatiles [%]	Flash point [°C]	Solvent	Appearance / Use
BondPro UV 880	Adhesion promoter for anodised aluminium surfaces for subsequent printing with UV inks.	2.5	12	Propanol	Clear, low-viscosity liquid

SYNTHORA CureAdd UV; Special additive for UV-curing systems; solvent free

Product	Properties	Non-volatiles [%]	Colour / Gardner	Viscosity [mPa.s]/23°C	Appearance / Use
CureAdd UV 2084	Increase surface hardness	100	max. 2	max. 700	Modified solvent-free acrylic resin for UV-curable paints and coatings.
CureAdd UV 2251	RAD 2251 improves adhesion especially on metals and on glass.	80	max. 2	30.000 – 60.000	Special modified epoxy ester. The optimum addition amount is about 1% calculated on the binder.
CureAdd UV 2328	Surface slip & mar resistance, for non-aqueous formulations.	100	max. 2	-	Hydroxyl content silicon additive for 2 K-PUR, UV-curing lacquers and printing inks as well as other systems.
CureAdd UV 2400	A silicone based special paint additive.	100	max. 2	270 – 640	For water thinnable airdrying and stoving coatings and UV-lacquers and printing inks. Add 1400 is effective at very low concentrations for improving flow out, levelling and gloss, deairing and degassing, reducing cratering and orange peel, improving mar resistance and slip.
CureAdd UV 2010	Non-silicone flow levelling and wetting additive.	100	max. 2	High viscos liquid	Used in coatings and inks. Promotes flow, levelling and substrate wetting.
CureAdd UV 2450	Based on polydimethyl siloxane	100	max. 2	60 – 90	Additive for the reduction of surface tension in water dilutable and radiation curing paint systems. Improves substrate wetting of liquid paint systems even on difficult surfaces.

UV LED curing is the safe and eco-friendly alternative

UV LED curing technology is an innovative and emerging method of cure for many industrial markets.

With the right additives and resins, you can easily get the most out of your curing process with UV LED lamps.

- ✓ Shorter production cycles – complete and fast surface cure make faster production possible
- ✓ High compatibility – easy to incorporate with most acrylate monomers and oligomers
- ✓ Tough, hard and durable – final coatings are scratch and chemically resistant
- ✓ Eco-friendly curing – low temperature curing, low/zero VOC emissions, BPA-free structure and improved labeling

VaraCross Thin 2051

VaraCross Thin 2051 is a 100% thinner for UV-curable systems.

VaraCross Thin 2051 is thinner based on maleate / vinyl ether for UV-systems. VaraCross Thin 2051 is a reactive diluent for radiation-curing systems, which is particularly well suited for the formulation of lacquers for printing on wood and paper.

Technical Data:

Non volatile content	solvent free
Color, Gardner, DIN ISO 4630	max. 5
Viscosity @ 25°C, Rheometer, DIN EN ISO 3219	< 75 mPa.s
Acid value, on solid, DIN EN ISO 3682	< 1 mg KOH/g
Delivery form	100%

UV-curable resins for printing inks, paper & board packaging, and more

Energy curing can produce high-performance printing inks, as well as coatings for flexible, paper, board, wood and even metal packaging.



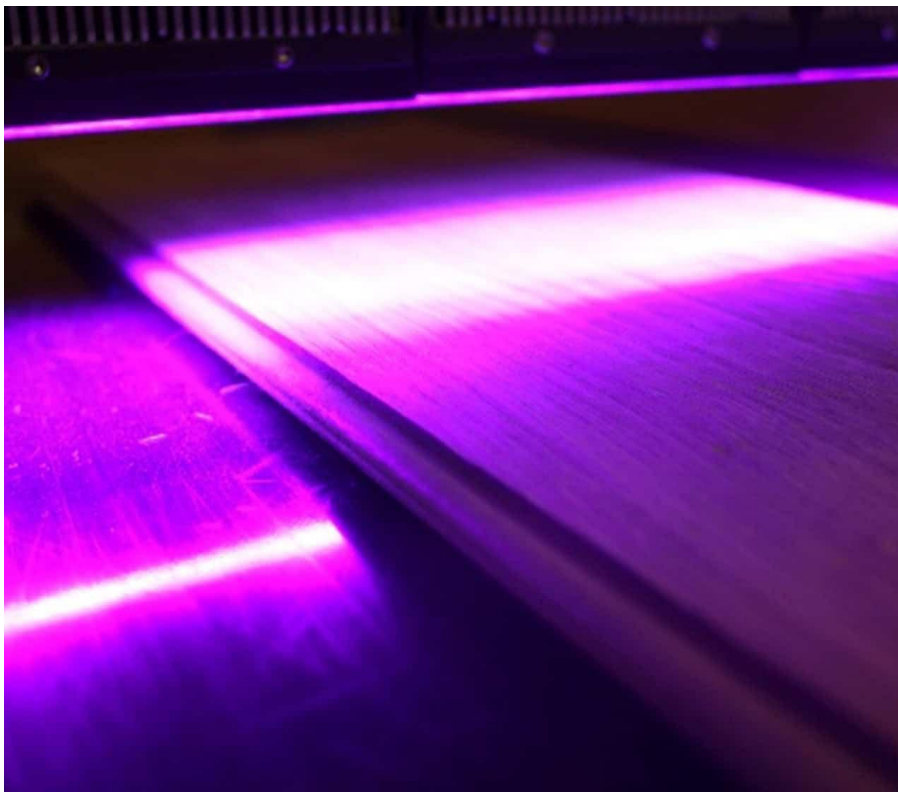
VARENA CHEMICAL is a global company in the intermediates, coating, adhesives, inks and composite and solid surface resins, thermoset compounds, gel-coats and niche specialties and specialty additives for coatings and inks.

VARENA CHEMICAL is known for its superior quality and impressive range of products and with its excellent distribution network it can provide first-class service to customers whatever their market. Customer Service and Technical Service teams are renowned for their customer focus, offering the best service even after products have left manufacturing.

The group strives to keep customers satisfied, assisting them in producing premium quality products every time they use its products.

Product innovation is important for the group's business and it's the reason for which it constantly works with customers to find solutions to problems.

Introducing new or improved products ensures that **VARENA CHEMICAL** continue not only to deliver what the market wants and needs, but also when it is wanted and needed.



INNOVATIVE TECHNOLOGIES FOR RESINS & ADDITIVES
DR. IRANKHAHI CHEMICAL COMPANY