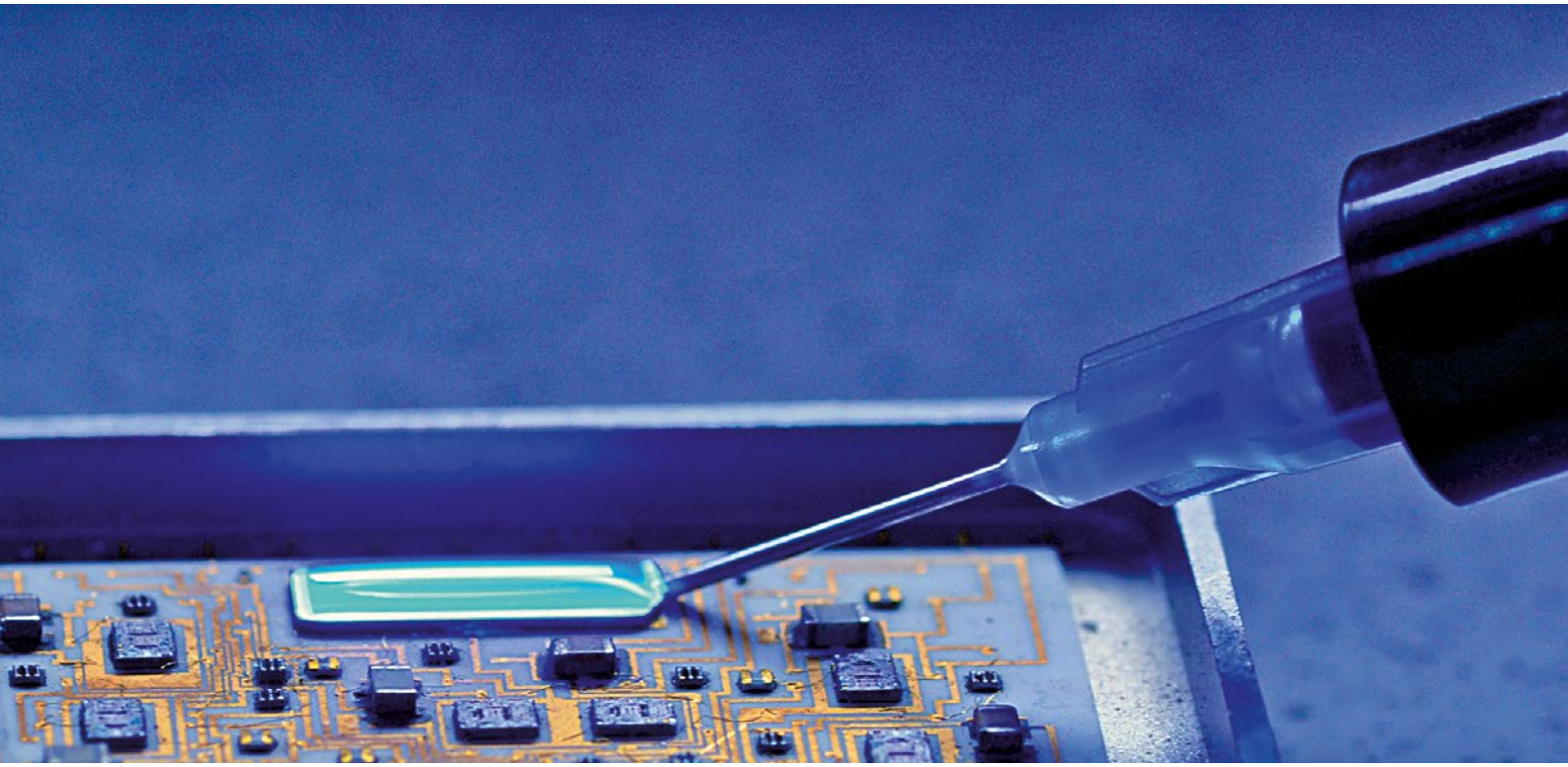
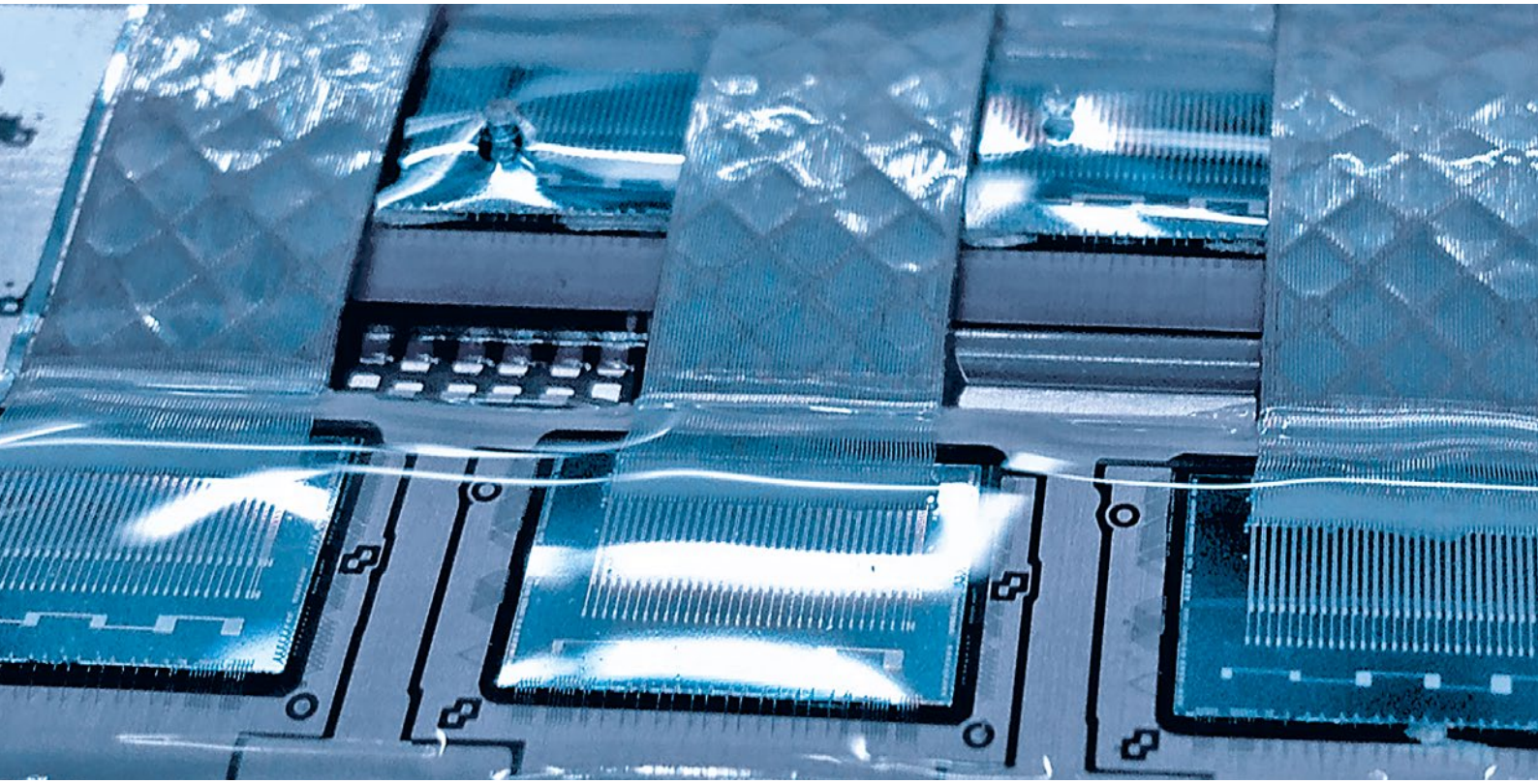
Polytec PT



UV- and dual-curing adhesives

for frictional connections in electronics, electrical engineering, optics and medical technology

Product brochure



Light-curing adhesives are primarily used in connection technology where rapid curing is required. These one-component products cure at room temperature within seconds after irradiation with UV light. This allows very short cycle times, even with large numbers of pieces.

The use of purely UV-curing adhesives requires that at least one of the components to be joined has sufficient UV permeability or the adhesive surface can be exposed directly to a UV source. For components that have shadow zones and therefore cannot be exposed completely, dual-curing adhesives are suitable, which, in addition to curing with light, have a second curing mechanism. Here, thermal, anaerobic or humidity post-crosslinking systems are available.

Different applications and processing conditions

UV-curing adhesives are generally optimized for specific applications and operational conditions. Therefore, a wide range of viscosities (from low viscosity, capillating to non-sag and gap-filling) and mechanical properties (soft, flexible to high strength) are available. Depending on the properties of the product, the application can be carried out through dispensing or jetting.

Applications for UV and light-curing adhesives

UV and light-curing adhesives are used, for example, in the following areas:

- **Loudspeaker assembly:** bonding of membrane and coils
- **Electronics:** dam & fill for encapsulation and protection of sensitive components
- **Electrical engineering:** embedding of passive components
- **Displays:** optical bonding, mounting of cover plates
- **Automotive:** active alignment of camera modules (CCM)
- **Optics:** bonding of field and ancillary lenses, fiber optic couplers
- **Watch industry:** bonding of watch glasses in metal and plastic housings

Advantages of adhesives

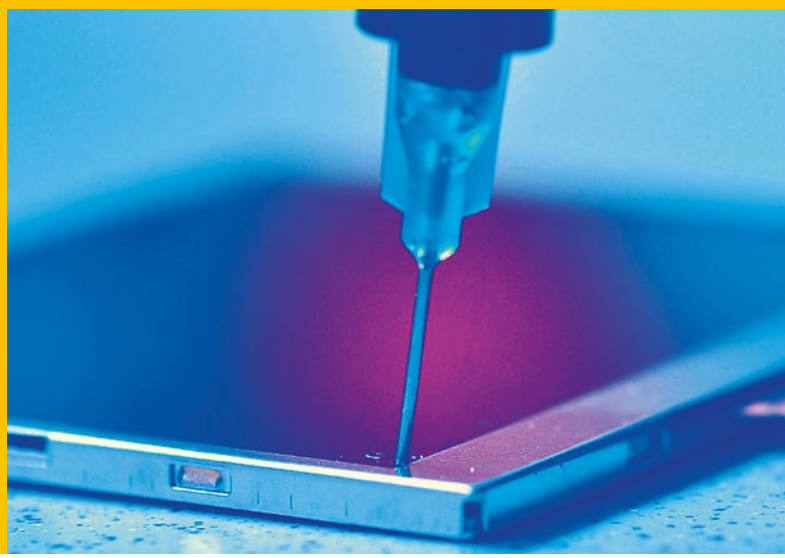
UV-curing bonding as an alternative to conventional joining technology allows for the joining of any – even difficult – material combinations, such as plastic-metal or metal-glass connections. Since the adhesives are cured at room temperature, there is virtually no thermal stress during curing.

The right product for your application

UV-curing adhesives from Polytec PT are based on epoxy, acrylate and/or hybrid systems. These cure on exposure within a very short time and show excellent adhesion to glass, metals and most plastics.

The fluorescent properties of some adhesives also allow for cost-effective process control (optical inspection) of the bonding assemblies under UVA.

The UV adhesives in the Polytec portfolio also differ, among other things, in their curing systems. Depending on the adhesive, curing is radical, cationic or dual.



The following table provides a partial overview of various product and material properties:

Curing mechanism	**Pure UV-curing**		**Dual-curing**	
Chemical base	**Acrylate & hybrids**	**Epoxy**	**Acrylate & hybrids**	**Epoxy**
High-strength	UV 2101 UV 2108 UV 2133 UV 2195 UV 2144	UV 2237	UV 2137 DC UV 2157 DC UV 2322 DC UV 2341 DC	UV 2249 DC UV 2214 DC
Flexible	UV 2181 ME UV 2121	–	–	UV 2257 DC
Biocompatible	UV 2108 UV 2181 ME	–	–	–

Variations and customer-specific developments

Are you unable to find a product with certain characteristics? Many of these adhesives are also available as a lower viscosity or thixotropic variant. We also develop customer-specific products according to your specifications. Please contact us.

UV light sources

Polytec PT UV adhesives can be cured with gas discharge lamps or UV LEDs. We are happy to offer you suitable UV LED light sources, from battery-powered portable lights for laboratories and small series to systems capable of being integrated into production lines.

UV- and dual-curing adhesives

Description	Processing properties						Typical applications/comments
Parameter	Chemical basis	Color	Density	Viscosity approx.	Max. temperature	Hard-ness	
Unit			g/cm³	mPa s	°C	Shore	
UV 2101	Acrylate hybrid	Transparent	1,1	900	120	D67	Ideal for glass-glass, glass-metal bonding, yellowing resistance, refractive index 1.50
UV 2108	Acrylate	Transparent	1,1	200*	80	D70	Very good adhesion to many plastics, biocompatible, fluorescent, refractive index 1.44
UV 2121	Acrylate	Red	1,1	4800	n.b.	A20	Highly flexible, suitable for applications such as loudspeaker bonding (membrane-chassis)
UV 2133	Methacrylate-hybrid	Grey	1,8	35000**	160	D80	Highly-filled, paste-like, high TG (>100 °C), very good chemical and moisture resistance, thermal conductivity 0.6 W/mK
UV 2137 DC	Methacrylate/ acrylat	Transparent	1,1	850	120	D80	Ideal for sealing and protecting, dual-curing (thermal curing from 90 °C)
UV 2144	Epoxy/ acrylate hybrid	Transparent	1,1	15000	150	D83	Very high TG (167 °C), surface-dry, low water absorption
UV 2157 DC	Acrylate hybrid	Opaque	1,1	650	120	D68	High-strength for glass-glass, glass-metal bonding, dual-curing (thermal post-curing from 90 °C)
UV 2181 ME	Acrylate	Transparent	1,1	4500	80	A70	Flexible, above all for plastic bonds, biocompatible, refractive index 1.51
UV 2195	Acrylate hybrid	Transparent	1,1	7500***	120	D75	Universal product for glass, metal and plastic bonds, surface-dry, refractive index 1.50
UV 2237	Epoxy	Transparent	1,1	1200	150	D80	Self-leveling, surface-dry, cures itself with incomplete exposure
UV 2249 DC	Epoxy	Yellowish, opaque	1,1	1500***	150	D81	Thixotropic gel-like, surface-dry, low outgassing, thermal post-curing possible
UV 2257 DC	Epoxy	Slightly opaque	1,1	300	130	D73	Flexible, surface-dry, very good adhesion to plastics, thermal post-curing from 120 °C
UV 2322 DC	Acrylate/ PU-hybrid	Opaque	1,1	9000	150	D65	Dual-curing (humidity post-crosslinking), good adhesion to glass, metals and plastics, thixotropic
UV 2341 DC	Acrylate/ PU-hybrid	Opaque	1,1	800	150	D62	Dual-curing (humidity post-crosslinking), good adhesion to glass, metal and plastics, low viscosity

Shear rate: $10s^{-1}$ / $60s^{-1}$* / $100s^{-1}$** / $400s^{-1}$***

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