

May 2016

## APM Unocol 110 / Unocol 110 LV

Description	
System:	UV/VIS light-curing adhesives
Adhesive type:	modified urethane acrylate
Colour:	beige
Viscosity:	liquid/thixotropic
Solid bodies:	100% / solvent-free
Curing:	UV light/blue light
Temp. range:	-20 °C to +80 °C

Application / specifications		
APM number:	102483	Unocol 110
	103786	Unocol 110 LV
Application:	glass processing	
Adhesion:	glass / metal / ceramics	
Directive 2011/65/EC:	complies with RoHS Directive	
EC No. 1907/2006:	complies to REACH requirements	

Unocol 110 is a 1K-UV-curing adhesive. The filled acrylate adhesive is used as a temporary adhesive or protective coating. The adhesive swells with heat or hot water and thereby comes loose from the substrate without residue. The adhesive can be cured in seconds with UV light or visible light.

Use of Unocol 110 / 110 LV:

- Polishing lenses and prisms
- Processing of glass and ceramics
- As a protective coating in glass processing
- Cutting and processing in the semiconductor industry

The adhesive has stronger adhesion on glass or metal than blocking pitch or wax ordinarily used for temporary adhesion. Parts bonded with Unocol 110 can be quickly detached again by being submerged in boiling water or by heating up in an oven 125 °C. The advantage of Unocol 110 is the long shelf life of the liquid adhesive at room temperature with the possibility of rapid curing under UV light or visible blue light.

Properties of fluid adhesive	
Colour:	beige
Characterisation:	1K-UV/VIS acrylate
Viscosity (25°C):	35 - 45 Pa.s
Viscosity Unocol 110 LV:	15 - 20 Pa.s
Density (25°C):	1.2 g/cm <sup>3</sup>

Clean metallic surfaces with aqueous cleaners or clean solvents. The adhesive can be completely cured within a few seconds by exposure to UV light at a wavelength of 365 nm or blue light at a wavelength of 405 nm. In places where light fails to reach the adhesive, the adhesive remains liquid. If none of the substrates are transparent, Unocol 110 cannot be used. Instead of Unocol 110 use the 2K system Epicol 110.

### Surface pretreatment / cleaning

The surfaces to be bonded must be dry and free from dust, oil, separating agents and other impurities. It is best to clean glass surfaces using the aqueous ultrasound cleaning method at elevated temperature.

### Curing the adhesive

UV light 365 nm	10 mW/cm <sup>2</sup>	15 minutes
UV light 365 nm	1000 mW/cm <sup>2</sup>	10 seconds
Blue light 405 nm	10 mW/cm <sup>2</sup>	15 Minutes
Blue light 405 nm	1000 mW/cm <sup>2</sup>	10 seconds

After the adhesive is cured, the parts can be further processed. However, the bond only achieves optimum strength and resistance after a few days.

### Applying the adhesive

The ideal processing temperature is between 20°C and 28°C. Viscosity falls at high temperature. It is not necessary to store the adhesive in the refrigerator after opening the container. Normally, the adhesive can be applied from the cartridge using a dosing device. The adhesive can also be applied with a steel needle or a spatula. Optimum mechanical strengths are achieved with adhesive thicknesses of 0.1 – 0.2 mm. The adhesive can be easily cured up to a layer thickness of 0.5 mm. A uniform adhesive thickness can be ensured by defined pressing or by inserting spacers, e.g. glass fibres or plastic beads.

### Properties of cured adhesive

Colour:	beige
Shore A (25°C):	80
Thermal conductivity:	
Therm. Expansion (0–40 °C)	

### Cleaning the adhesive

Residue from non-cured adhesive on the substrates and processing equipment can be removed or cleaned using a solvent such as isopropanol or acetone.

Cured adhesives can be greatly swollen by heating up to a temperature above 125 °C or by submerging in hot water.

### Separating bonded parts

The typical application temperature range in a dry climate is between -20 °C and +85°C.

At a temperature of +125 °C the adhesive is very soft and the filler included swells strongly, which causes a separation of the bonding. If the bonded part is submerged in water, the adhesive already swells at 80 °C. If the detachment of the adhesive is to be fast, the water must be simmering. In order to prevent water stains on the substrate during drying, this can also be submerged in isopropanol first and then dried.

### Safety instructions

Avoid contact with skin and eyes. When applying the adhesive, always wear gloves and safety goggles. If adhesive comes into contact with the skin, do not use solvents to remove. Instead wash the affected area (hands) with warm water and soap and then dry. Liquid adhesive irritates on contact with the eyes and may lead to permanent eye damage. Before use, please observe the instructions in the safety data sheet.

### Storage

The adhesive has the best shelf life at temperatures between 8°C and 25°C. The adhesive shelf life in its unopened original packaging is at least 12 months under these conditions. Higher temperatures shorten the standard shelf life. Lower temperatures cause a temporary higher viscosity.

### Compliance

Unocol 110 and all its constituents comply with the requirements of the RoHS Directive and REACH regulations. Always comply with the safety data sheet when handling the adhesive.

### Procurement

The light-sensitive adhesive is available in black standard cartridges of 5 / 10 / 30 or 55 cc. Unocol 110 can also be supplied to customer requirements filled in containers.

### Disposal

The liquid components of the adhesive must be disposed of as hazardous waste in the same way as synthetic resin or paint components. Cured adhesive is disposed of as hazardous waste in the same way as thermosetting plastics depending on local legal requirements or as domestic waste.

The specifications in this data sheet are based on meticulous tests and our previous experience in everyday practice. They are non-binding instructions, in the same way as our application advisories are also non-binding, whether verbal, in writing or by trials since we cannot accept any liability due to the wide variety of possible influences during processing and application. APM Technica AG disclaims all other explicit or implicit warranties, conditions and terms, be they of real or legal nature, including those which refer to usual market quality, their suitability for a particular use, satisfactory quality or observance of third-party trademarks. APM Technica excludes all liability to the extent permitted by law – whether arising from contract, quasi contract or tort (including negligence) – for direct, indirect and consequential damages, punitive damages awarded by court, loss of business of all kinds, loss of information or data or any other financial losses which may result from the sale, installation, maintenance, use, performance, failure or interruption of operation of the product or in connection therewith, even if we were informed of the possibility of occurrence of such damages. Data and other specifications concerning the nature and suitability of our products are non-binding general conditions and specifically represent no guarantee of certain characteristics. We advise you to perform your own adequate tests to determine the suitability of our products for your specific application. The user is himself responsible for defining the suitability of production methods mentioned in the technical data sheet for his purposes and for taking precautionary measures which are suitable to protect assets and persons from any danger which may occur during the handling and usage of these products. In all other respects our General Terms and Conditions of Business shall apply.