

April, 2015

## APM Epicol 295

Description	
System:	2-comp. or 1-comp. frozen adhesive
Colour:	transparent, yellowish
Viscosity:	low viscosity
Solid bodies:	100% / solvent-free
Pot life:	180 minutes
Curing:	at room temperature or in oven
Temp. range:	-55°C to +85 °C, up to +150°C seal

Specifications	
APM number:	103005
EC No. 1907/2006:	compliant with REACH
Directive 2011/65/EC:	RoHS compatible

APM Epicol 295 is a liquid transparent epoxy adhesive. The adhesive is available as a 2-component adhesive or as a frozen 1-component adhesive which has to be stored in a freezer below -40°C. Epicol 295 is typically used in optics for low-tension plastic, metal or glass bondings. Bond lines of 0.10 mm and below is typical. However as a potting compound it can be applied with a layer thickness of up to 10 mm depending on the dimensions of the parts to be bonded, the temperature range and the difference in thermal expansion. Epicol 295 is also used to adhere plastic or glass displays and as an adhesive and/or potting compound for electronic devices or sensors.

Properties of fluid adhesive	
Colour of resin component A:	transparent
Colour of resin component B:	transparent, yellowish
Resin component:	mod. epoxy resin
Hardener component:	mod. amine hardener
Resin viscosity (25°C):	500 mPa.s
Hardener (25°C)	300 mPa.s
Mixture (25°C):	400 mPa.s
Mixture ratio A/B:	100 : 35 GT
Pot life at 25°C:	180 minutes

### Mixing the adhesive components

The two adhesive components are weighed in the clean mixing beakers in the specified mixing ratio. The components must be machine mixed (Speedmixer) or manually without admixing air bubbles. To obtain a perfect mixture, produce between 10 g and 50 g and mix it homogeneously.

### Adhesion with deep-frozen mixtures

Remove the frozen adhesive from the Freezer at -40°C and allow it to reach room temperature within a few minutes, depending on the cartridge size. As soon as the cartridge is no longer wet with condensation and the adhesive is fluid, dispensing can start.

### Curing the adhesive

Room temperature	25°C	48 hours
Heating cabinet	40°C	24 hours
Heating cabinet	60°C	6 hours

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

### Properties of cured adhesive

Colour:	transparent, yellowish
Shore A (25°C):	60
Tensile strength (25°C):	1.4 N/mm <sup>2</sup>
Elongation at rupture (25°C):	30 %

### 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. Organic solvents may lead to component destruction or stress cracking in plastics. For this reason, avoid use of aggressive solvents such as acetone, ketones and esthers. Comply with the official safety regulations when handling combustible solvents.

Cured adhesive can only be removed mechanically. The adhesive becomes very soft at temperatures over 100 °C.

### Deep-frozen cartridges

Processing 2-component adhesives poses risks to adhesive bond quality which is not tolerated in certain applications, e.g. space, aviation, electronics or medical technology. The individual components may become crystallised during storage or might separate from the filler; the mixing ratio may be incorrect, the mixture inhomogeneous or air bubbles may become admixed with the adhesive mixture.

All these risks can be avoided if the mixing process if small quantities of adhesive (up to 55 cm<sup>3</sup> cartridges) are used and the pot life is not too short (> 30 minutes). If the deep-frozen 1-component version of the same adhesive is used, the adhesive components are decrystallized, homogenized, degassed, machine mixed and filled in cartridges without air bubbles. The cartridges can be stored below -40°C from 2 to 12 months without loss of quality.

The adhesion process with frozen cartridges is simple and robust since the adhesive is processed as a 1-component adhesive. Frozen adhesives are used whenever the quality of the bond must be guaranteed and the quantity of adhesive used does not justify use of a 2-comp. mixing machine.

### Compliance

Epicol 295 and all its constituents comply with the requirements of RoHS and REACH guidelines. Always comply with the safety data sheet when handling the adhesive.

### 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.

### Disposal

The liquid components of the adhesive must be disposed of as hazardous waste in the same way as synthetic resin or paint components. Under no circumstances mix large quantities (> 100 g) of the components for curing since the curing process is strongly exothermic and could result in the mixture heating up to a dangerous extent. 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 cases our General Terms and Conditions of Business shall apply.