November 2024

APM Epicol 335 HS

Description	
System:	2-component or 1-component frozen adhesive
Colour:	dark red
Viscosity:	viscous
Solid bodies:	100% / solvent-free
Pot life:	24 hours
Curing:	120 °C 10 min or 150 °C 5 min
Temp. range:	- 55 °C to +250 °C continuous load
Temp. range:	- 55 °C to +350 °C short load

Specifications	
Directive 2011/65/EC:	RoHS compatible
EC No. 1907/2006:	compliant with REACH
ISO 10993:	complies with 10993-5

APM Epicol 335 HS is a two-component epoxy adhesive with outstanding temperature stability. APM Epicol 335 is typically used in the optics, glass fibre, electronics, semiconductor and medical sectors. APM Epicol 335 HS shows exceptional properties and long-term durability. The adhesive is also available as deep-frozen 1-component material.
The APM Epicol 335 HS shows the optimum curing with a change of colour during the curing process.

Properties of fluid adhesive	
Colour of resin component A:	clear
Colour of resin component B:	yellowish
Resin component (part A):	modified epoxy resin
Hardener component (part B):	modified amine hardener
Viscosity	
Mixture (25°C):	2000 – 3500 mPa*s
Mixture ratio A/B:	100 : 10 (weight)
Pot life at 25°C:	24 hours

Curing the adhesive		
Heating chamber	120 °C	10 min
Heating cabinet	150 °C	5 min

Material:	100% epoxy polymer
Colour:	dark red
Shore D (25°C):	80-90
Tensile shear strength (25°C):	> 15 N/mm^2
E-module:	>2270 MPa
Glass transition temp. (Tg; °C):	> 100°C
CTE below Tg:	64*10^{-6}
CTE above Tg:	189*10^{-6}
Decomposition temperature:	> 350 °C
Chlorine content:	< 900 ppm

Surface pretreatment / cleaning

Properties of cured adhesive

The surfaces to be bonded must be dry and free from dust, oil, separating agents and other impurities. The selected type of surface treatment depends on the requirements profile (cleanliness, mechanical strength, ageing resistance). Above all, mechanical pretreatment, e.g. grinding or sand-blasting, achieves an improvement in adhesion for metals and in many cases for non-ferrous surfaces as well. It is best to clean glass surfaces using the aqueous ultrasound cleaning method at raised temperature. Clean metallic surfaces with aqueous cleaners or clean solvents.
For these materials and in particular plastics, surface pretreatment using oxygen plasma has proven successful. Plasma treatment dries the surface and improves wettability. This achieves good adhesion of the adhesive. With plastics, the surface is also chemically modified. With poor adhesive plastics this produces an adhesive surface. Primers are no replacement for surface pretreatment. Adhesion and ageing resistance can also be improved by using primers.

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 at least 10 g of the mixture. After mixing it must then be free from streaks.

Adhesion with deep-frozen mixtures

Remove the deep-frozen adhesive from the deep freeze and allow it to reach room temperature in the air. This requires 5 to 10 minutes depending on the cartridge size. As soon as the cartridge is no longer covered with condensation and the adhesive is fluid, work can start with dosing.

Applying the adhesive

The ideal processing temperature is between 20°C and 28°C. Viscosity falls at higher temperature and pot life shortens.
Normally, the adhesive can be applied from the cartridge using a dosing device.

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 components have a maximum shelf life at temperatures between 15°C and 25°C. The shelf life of the two components is at least **12 months** under these conditions. Higher temperatures shorten the standard shelf life. Lower temperatures temporarily cause higher viscosity and may lead to crystallisation.

Deep-frozen 1-component adhesive (in cartridges) must always be stored at a temperature of below -40°C. At this temperature the mixture has a shelf life of at least **4 months**. Never defrost the cartridges, otherwise the pot life is shorter or the adhesive is already cured. As a result the product is always delivered with dry ice at -78°C.

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.