Automotive

SikaPower®-415P1

Moisture pre-curable, heat curing body shop sealant

Technical Product Data

Chemical base	Epoxy-PUR
Color (CQP[1] 001)	Black
Non-volatile compounds[3] (CQP 576)	> 97 %
Density uncured / Density after curing[3] (CQP 576)	1.4 / 1.45 kg/l approx.
Viscosity; 20 °C, rotation 10 s^{-1}, P/P 25 mm, 0.2 mm gap (CQP 584-2)	350 Pa·s approx.
Application temperature	25-40 °C (nozzle)
Skin formation (at 23 °C and 50 % relative humidity) / thermal pre-curing	3-4 h / 5 min 160 °C
Curing time / substrate temperature	25 min / 180 °C
Lap shear strength[2+3], at 2 mm (CQP 580-1,-6 / EN 1465)	1.5 MPa approx.
Tensile stregth[3+4] (CQP 580-5,-6 / ISO 527)	2 MPa approx.
Elongation at break[3+4] (CQP 580-5,-6 / ISO 527)	100 % approx.
Glass transition temperature[3], DMTA (CQP 509 / EN 61006)	-50 °C approx.
Shore A hardness[3] (CQP 574)	55 approx.
Service temperature, permanent	-40 to +90 °C
Shelf life, at 23 °C (CQP 584-1)	4 months

[1] CQP = Corporate Sika Quality Procedures
[2] DC 04 ZE 75/75 0.8 mm; 3 g/m^2 Anticorit RP 4107 S; adhesive layer: 25 x 15 x 2 mm; rate of extension: 10 mm/min.
[3] Pre-curing: 2 hours at ambient temperature, curing: 30 minutes at 180 °C.
[4] Rate of extension: 200 mm/min.

Description

SikaPower®-415P1 is a one-part, cold-applied, humidity or thermal pre-curable, heat-curing sealant based on epoxy and polyurethane.
SikaPower®-415P1 is designed for sealing of seams or joints for sheet metal assembly work and is cured with heat, e.g. in the electrocoat oven, to form an elastic thermoset. Pre-curing takes place at ambient temperature by the formation of a thin skin through exposure to moisture or application of heat. The formation of the skin is allowing good wash out resistance.
SikaPower®-415P1 is manufactured in accordance with ISO 9001 / 14001 quality assurance and with the Responsible Care program.

Product Benefits

- One part
- Elastic
- Adheres well to oily substrates
- Pre-curing by exposure to atmospheric moisture at ambient temperature
- Good resistance to washing out after pre-curing
- No additional equipment needed for pre-curing
- Suitable for sealing different metals, e.g. steel, aluminium, zinc coated steel etc.
- Can be electro- or powder coated after pre-curing
- Contains no solvents or PVC

Areas of Application

SikaPower®-415P1 is suitable for sealing seams (e.g. laser step seams) and joints for sheet metal assembly work. After application the sealant forms at ambient temperature a thin skin within approx. four hours on exposure to atmospheric moisture (approx. 50 % relative humidity), making it resistant to washing out.
The bonding of oily substrates (standard anti-corrosion treatment and deep drawing oils, approx. 3 g/m^2) is possible due to oil uptake during the heat curing that is an essential part of the application process.

Method of Application

SikaPower®-415P1 is applied by chop and check pumps. The sealant is applied in bead form with a recommended minimal layer thickness of 2 mm. After application the sealant must be flattened or spread.
SikaPower®-415P1 can be applied at ambient temperature (after sufficient tempering). The follower plate, the pump and the hoses must not be heated. To avoid seasonal variations in temperature the last third of the hoses and the nozzle can be heated up to 40 °C. During longer breaks (e.g. overnight or at the weekend) the equipment must be cooled down to ambient temperature and the system (follower plate and pump) depressurized. The viscosity is temperature-dependent (see Fig. 1).

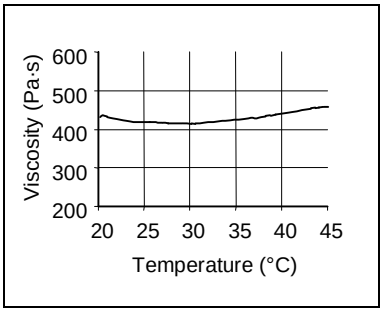

Figure 1: Viscosity as a function of temperature (CQP 584-1)

The material in opened containers and in the application equipment must be protected from moisture uptake (curing).
To avoid blisters the open time (at 23 °C and 50 % relative humidity) of the adhesive must not exceed 5 days before curing. By comparison with a standard rubber based sealant is the opentime longer, 21 days at 23°C and 50 % relative humidity are possible.
The containers (hobbocks and cartridges) should be stored in dry conditions at 23 °C. If the containers are stored at higher temperatures the shelf life will be reduced.
SikaPower®-415P1 is filtered with a mesh size of 500 µm before packaging.

Where assemblies sealed with SikaPower®-415P1 are to be powder-coated, the sealant must be pre-cured prior to coating. For tooling the sealant the use of Sika® Tooling Agent N is recommended. After use of the tooling agent a complete drying must be guaranteed.
The powder coating must be tested for compatibility by carrying out preliminary trials. It should be understood that the hardness and film thickness of the powder coating may impair the elasticity of the sealant and lead to cracking of the coating.
For advice on project specific application technique please contact System Engineering Department of Sika Industry.

Cure Mechanism

SikaPower®-415P1 forms at ambient temperature a thin skin within approx. four hours by the absorption of atmospheric moisture (at approx. 50 % relative humidity). The rate of cure depends both on temperature and elapsed time and must be completed within 5 days of application. The most suitable heat sources for fully curing respectively pre-curing are convection ovens; IR emitters or induction equipment may also be used. The maximum temperature must not exceed 220 °C for more then 10 minutes.

Further Information

Copies of the following publications are available on request:
- Material Safety Data Sheet

Packaging Information

Cartridge	300 ml
Hobbock[1]	23 l
Hobbock	50 l
Drum	192 l

[1] 280 mm diameter

Value Base

All technical data stated in this Product Data Sheet are based on laboratory tests. Actual measured data may vary due to circumstances beyond our control.

Local Restrictions

Please note that as a result of specific local regulations the performance of this product may vary from country to country. Please consult the local Product Data Sheet for the exact description of the application fields.

Health and Safety Information

For information and advice on the safe handling, storage and disposal of the chemical products, users shall refer to the most recent Material Safety Data Sheet containing physical, ecological, toxicological and other safety-related data.

Legal Notes

Further information available at:
www.sika.ch
www.sika.com

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