

Epoxy-Systems HP-E5K, HP-E60K, HP-E120K

- Epoxy Adhesives

The Epoxy Adhesives HP-E5K, HP-E60K and HP-E120K are unfilled combinations of resin and hardener with processing times (pot life) of approx. 5 and 120 minutes.

Features:

- Cold-hardening, medium viscous, HP-E5K: applicable from 5°C
- Production of high performance bondings
- Very good wet-out of substrate surfaces
- Free of solvents and filling agents, if required fillers can be added (for gap-fillings etc.)
- Bondings are resistant against oil, grease, moisture, diluted acid or lyes and several solvents

- They adhere metal, wood, rubber, ceramic, rigid foams and many plastics.
 → For additional advice, please refer to our website www.hp-textiles.com

Application Areas:

HP-E5K: Fast curing Epoxy Adhesive, „5 minutes-epoxy“, usable as an adhesive for repairs

HP-E60K, HP-E120K: Adhesives for trade and industry, boat building, aircraft construction, structural adhesives with good long-term properties, for larger areas and bonding of veneers or stone, For the production of skis and boards (also in heated hydraulic presses up to 150°C)

Please note:

The resin components of HP-E5K, HP-E60K and HP-E120K are identical and the hardeners can be mixed among themselves.

All components are free of Nonylphenol, DETA and they do not contain benzyl alcohol or other reactive diluents!

Processing Data:

		HP-E5K	HP-E60K	HP-E120K
Colouring		slightly yellow / clear		
Mixing ratio (resin : hardener)	[by weight]	100:100 (1:1)	100:50	
	[by volume]	100:100 (1:1)	100:60	
Mixing viscosity (at 23°)	[mPa s]	8.000 <i>(medium viscous)</i>	2.100 <i>(medium viscous)</i>	10.000 <i>(medium viscous)</i>
Pot life time (at 25°C)	[minutes]	5	60	120
Hand-tight	[minutes]	10	-	-
Functional strength (100g/23°C)	[h]	2	16	24
Functional strength (100g/80°C)	[minutes]	-	20	30
Functional strength (100g/150°C)	[minutes]	-	5	5 - 8
Processing temperature (minimum)	[°C]	5	15	15
Surface resistivity	[Ω]	10 ¹² - 10 ¹³		
Coefficient of linear expansion	[mm/mm*K]	70 - 90 *10 ⁻⁶		

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Raw Material Data:

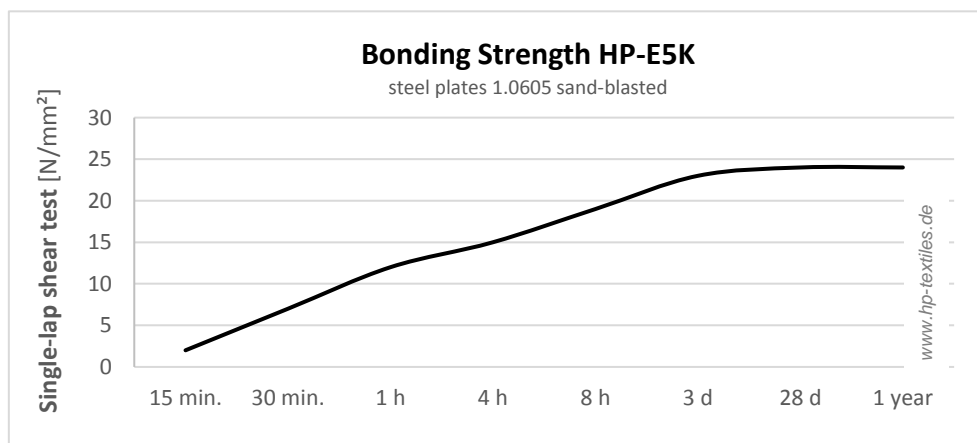
		RESIN	Method
Viscosity (at 25°C)	[mPa s]	7.000 - 9.500	HP.07.0003
Density (at 20°C)	[g/cm³]	1.16 - 1.19	HM.07.0002
Epoxy-Equivalent	[g/EQ]	180 - 190	HM.07.0013

HARDENER

		HP-E5K	HP-E60K	HP-E120K	Method
Viscosity (at 25°C)	[mPa s]	7.000 - 9.500	150 - 350	ca. 15.000	HP.07.0003
Density (at 20°C)	[g/cm³]	1.16 - 1.19	0.93 - 0.97	0.94 - 0.98	HM.07.0002
(NH)-Equivalent	[g/EQ]	180 - 190	90 - 100	90 - 100	HM.07.0014

		HP-E5K	HP-E60K	HP-E120K
Heat resistance <i>-without tempering-</i>	[°C]	80	60	80

Physical data / Curing Process HP-E5K:



Curing time at 20°C		HP-E5K	Method
Tensile strength / hardening 30 min	[N/mm²]	5	DIN 53455
Tensile strength / hardening 24 h	[N/mm²]	15	DIN 53455

Physical Data / Curing Process HP-E60K and HP-E120K:

Bonding strength (tensile shear test at 20-25°C)		HP-E60K	HP-E120K	Method
Resistance to peeling (steel)	[N/mm²]	4 - 7	4 - 7	DIN 53282
E-Modulus	[kN/mm²]	2 - 5	2 - 4	DIN 53452
Heat resistance approx. <i>-without tempering-</i>	[°C]	60	80	PM.01.008
Steel, 7 days / 20°C	[N/mm²]	21	25	DIN 53283
Steel, 30 minutes / 120°C	[N/mm²]	29	31	DIN 53283
AlCuMg, 7 days / 20°C	[N/mm²]	14	18	DIN 53283
AlCuMg, 30 minutes / 120°C	[N/mm²]	26	31	DIN 53283

Safety Instructions:

The safety instructions can be found on the respective container.

These safety instructions are to be taken as being of greatest importance. Do not allow children to handle. Prevent inhalation of the fumes and contact with the bare skin. Wear approved protective gloves and goggles. If ingested do not eat, drink or smoke. During the hardening process, energy can be released in the form of heat, hence a cooling/heat exchanging should be provided in order to prevent hot spots. Only mix the components in the recommended proportions in accordance with the instructions.

Surface Pre-treatment:

Before bonding, surfaces need to be cleaned and degreased with acetone or silicone remover. Do not use petrol, paint thinner or spirit because they may contain small amounts of wax and oil!
Please note: Some plastics are not resistant to acetone!

Many metallic surfaces need to have a mechanical treatment (sanding) to roughen the surface and to remove rust.

As a general rule: Clean and degrease surfaces before and after grinding!

Application Instructions:

We recommend tests be performed for trials and suitability for the particular type of application. The system should only be used in the mentioned temperature conditions. The relative air humidity should not be above 70%.

In respect of the safety instructions the epoxy and hardener should be mixed in a suitable mixing vessel in accordance with characteristics given in the data sheet. Deviating from the mixing recommendations can lead to incomplete hardening and through that loss of performance.

Ensure that the edges are well mixed using a stirring stick or a propeller type mixer. Localized signs of hardening indicate insufficient stirring and mixing of the components. Mixing of larger amounts (more than 100g) and higher temperatures (higher than 20°C) reduce the pot life time.

Note: If the temperature in the process goes above 40°C then it is not possible to continue further, as the process will lead to a loss of certain characteristics and properties. Increased temperatures can be reduced by pouring the mixture into a flat painting tray.

Apply the mixture onto the mould that has to be adhered. Epoxy adhesives do not give off volatile components and therefore pressure onto the bonding while hardening is not necessary. Extensive bondings and parts that are under tension need a lot of pressure so that there is enough contact between the parts that have to be adhered together. Extensive parts are also fixed by the pressure and you can achieve better results.

Our epoxy adhesives have a very low shrinkage. That is why it is not necessary to crimp the components with high pressure! It is enough to fix them during the hardening time.

HP-E5K, HP-E60K and HP-E120K can basically be used as an adhesive without fillers. For many gluing applications, it is useful to add fillers. For example glue lines with more than 1mm should be reinforced with short fibres (e.g. Cotton Flocks HP-BF1 or with Glass-Fibres HP-GS3 or HP-GS6).

Exemplary formulation for a filled adhesive, formulated with HP-E60K

	HP-E60K	(resin)	:	50g
+		(hardener)	:	25g
+	HP-PK22	(thixo-agent)	:	2g
+	HP-BF1	(cotton flocks)	:	20g
+	HP-PK22	(perhaps add more until desired consistency)		
			=	approx. 100g adhesive

Cleaning Work Tools:

Unhardened product remains can be removed from tools by means of acetone or Thinner XB. Tools should be given a good airing after being cleaned with these solvents, in order to prevent the solvent from being retained until the tool is used again in a process. Hardened remains can only be removed by mechanical means.

Storage:

Threaded container tops should be kept free of material remains. Do not exchange tops/lids. With optimal storage conditions, shelf-life should be beyond 12 months. Higher resistance against crystallization.

However, at very low temperatures, a crystallization of the hardener may occur. The process is reversible e.g. by heating it in a water bath to 40-60°C. A complete melting is important. Storage and processing with air admission may lead to carbamate formation (white coloration).

Deliverable Quantities:

Plastic containers with safety fastening in several quantities. Larger containers can be obtained upon request!

Disposal:

Do not dispose of through the sewerage system, on areas of open water, or in the soil. Non-hardened remains of the product should be disposed of as hazardous waste. The hardened product waste should be treated as building rubbish or household rubbish.

Further Information:

Further application information can be obtained from our website, by selecting Product Info on the homepage. Please do not hesitate to contact us by telephone if you have further queries.

Information presented herein has been compiled from sources considered to be dependable and is accurate and reliable to the best of our knowledge and belief but is not guaranteed to be so. It is the user's responsibility to determine for himself the suitability of any material for a specific purpose and to adopt such safety precautions as may be necessary. We make no warranty as to the results to be obtained in using any material and, since conditions of use are not under our control, we must necessarily disclaim all liability with respect to the use of any material supplied by us. We recommend tests be performed for trials and suitability for the particular type of application.

With the newest printing of this data sheet the previous version loose validity!