



Technical Data Sheet

PX700K/BK

Product Description

Epoxy resin PX700K/BK is a general purpose flame retardant potting and encapsulating compound. PX700K has a long usable life and may be hot or cold cured. Approved to UL94-V0 at 1.5mm thickness the system exhibits a good surface finish, high electrical strength, good thermal conductivity, Low exotherm and low cure shrinkage. The semi-flexible nature of the system allows thermal expansion without cured stress. This makes PX700K/BK compatible with most circuit board components and materials over an extended temperature range. Adhesion is excellent to most plastics and substrates.

Product Features

- High electrical insulating characteristics
- Good thermal conductivity
- Low shrinkage
- High adhesion
- Flame retardant to UL94-V0
- Good chemical and water resistance
- Semi-rigid

The combination of the above properties and the ease of use of the material will lend itself to a wide range of applications. The flame-retardants in PX700K are of a non-halogen type and do not contain heavy metals. It is available in bulk, kits and twinpack form. The standard colour is black but other colours are available on request.

Method of Use

Twinpacks

Twinpacks are pre-weighed resin and hardener components contained in a tough flexible film, separated by a removable clip and rail. Once the clip and rail is removed the resin and hardener can be thoroughly mixed within the bag and is then ready for use. Mixing will normally take ~ 3 minutes depending on the operator and viscosity of the material. Twinpacks are ideal for small to medium production runs, prototyping and on-site or field use. The twinpack weight /volume may also be tailored to a specific size on request. As the twinpacks are pre-weighed, and are mix in the bag arrangements it results in a safer operation and reduced waste compared to weighing and mixing bulk product by hand.

Bulk Material

If in bulk form the resin (part A) should be mixed with the hardener (part B) in the ratio:

9.4: 1 by weight 5.3: 1 by volume

PX700K is a filled system and formulated to avoid sedimentation. If sediment is found after storage, this must be re-dispersed in the original container before being used. Failure to do so may result in defective product. Long-term sedimentation will be aggravated by storage above 25°C and should be avoided. Light sediment may be re-dispersed by carefully warming (to avoid distortion of the clip and rail) and kneading the pack; or if in bulk or kit form gently mixing with a paddle or spatula. In bulk or kit form evacuation may be necessary for best results.

Kits

In kit form, resin and hardener are provided in separate containers to the correct ratio. In most cases, pour the hardener into the larger resin container and use it as a mixing vessel. Stir well using an appropriate mixer until homogeneous.

Note: Incomplete mixing will be characterised by variable or partial cure (even after extended time periods).

Specification:

| Resin RX700K | | | Hardener HX700K | | |
|--------------|---------------|--------------|-----------------|-------------|---------------|
| Colour | Black | - | Colour | Amber | - |
| Density | 1.78 - 1.82 | g/ml | Density | 0.98 - 1.03 | g/ml |
| Viscosity | 80000 - 20000 | m.Pa.s@ 25°C | Viscosity | 300 - 400 | m.Pa.s @ 25°C |

Cure Schedule: PX 700K/BK

| Temperature | Minimum cure | Full cure |
|-------------|--------------|-----------|
| 20°C | 24 hours | 1 week |
| 60°C | 2 hours | 4 hours |
| 80°C | 1 hour | 2 hours |

The above are typical values and will vary depending on the cured mass and application. Hotter temperatures may be used for faster cure but will result in higher post cure shrinkage and higher cure exotherm. Experimentation and testing is suggested to avoid side effects. For maximum properties a post cure may be required - call Robnor Technical Service Department for advice.

Typical Properties of mixed system

| | |
|-------------------------------|----------------|
| Mixed system colour | Black |
| Mixed system viscosity @ 25°C | 12500 m.P.a.s. |
| Usable life - 150g mass 25°C | 120 minutes |
| Gel time - 150g mass @ 25°C | 360 minutes |

Typical Properties of cured system

| | |
|-----------------------------------|---|
| Water absorption (7 days @ 23°C) | 0.46% |
| Oxygen index | 38 |
| Flammability @ 1.5mm | UL94-VO |
| Shore D hardness | 80 |
| Flexural strength | Semi-flexible |
| Tensile strength (MPa) | 7.5 |
| Compressive yield strength (MPa) | > 16 |
| Thermal conductivity | 1.0 W/m K |
| Co-efficient of thermal expansion | 45 ppm |
| Operating temperature range * | -40 to +120°C (continuous service) + 140°C (short term exposure limit) |
| Volume resistivity | 12 x E10 ohm.cm |
| Electric strength | 14.2 kV/mm |
| Dielectric constant @ 100 Hz | 2.9 |
| Dielectric constant @ 1 kHz | 2.8 |
| Dielectric constant @ 10 kHz | 2.7 |

*application & geometry dependent

Storage and Shelf Life

Twinpacks stored in cool dry condition between 10 and 25°C will have a shelf life of at least one-year. Bulk material stored in the original unopened containers will also have a shelf life of one year. Once used the containers must be kept sealed to prevent effects from water, air or contaminants.

Cleaning

All equipment contaminated with mixed material should be cleaned before the material has hardened. Robnor Resins TS130 is suitable non-flammable cleaning agent, although other solvents may be found suitable. TS130 will also remove cured material provided it is allowed to soak for a number of hours.

Health and Safety

Epoxy resin systems may cause sensitisation by skin contact or inhalation may be corrosive, harmful or toxic. It is therefore strongly recommended that skin and eye contact is avoided by the using of appropriate personal protective equipment; such as gloves, safety glasses or goggles and overalls. Wash any contamination from the skin immediately and thoroughly and do not eat, smoke or drink in the working vicinity. Under normal working conditions a good source of ventilation is adequate, however if the material is heated then local exhaust ventilation (LEV) may be required especially for curing ovens. The above is given as a guide only; please refer to RX/HX700K health and safety data or our Technical Service Department for individual/specific advice.

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