

**PRELIMINARY PRODUCT INFORMATION**

**Bectron<sup>®</sup>**

**PB 3252 MR/PH 4916**

100:33

2-components polyurethane flexible system

**Application:**

Bectron® PB 3252 is suitable for many potting applications needing stability thermal shock. It is ideal for casting whole PCB to give where good protection against humidity aggressive chemicals shock and vibration are required.

**Processing:**

The system is a moderate viscosity system which can be applied in a continuous process with conventional mixing and dispensing equipment.

For manual batch application thorough mixing of the two components is essential and care is needed to avoid air bubbles.

Recommended curing should be above 20°C

- At Room Temperature 48 hours
- At 50-60°C 30 minutes with some days for full curing

To ensure satisfactory adhesion on the PCB surface the following should be checked:

- Use of residue-free flux
- ensure dry surfaces
- Check compatibility of the coating resin with the solder resist and solder paste.

**Description:**

Two component system which will produce a flexible compound suitable for potting and casting. It is based on polybutadiene and provides good flexibility at low temperature and superior resistance properties. It is resistant to organic and inorganic solvents with good adhesion. It cures with low shrinkage and good adhesion to most substrates. It is solvent free and does not damage components on the board. The cured material has high elasticity with flexibility and strength at low temperatures. Good electrical properties. Low glass transition temperature. The system is RoHS compliant (European directive 2002/95/EC) and the new RoHS Directive 2011/65/EU (RoHS 2) entered into force on 21 July 2011 and requires Member States to transpose the provisions into their respective national laws by 2 January 2013.

**Instructions:**

Add the appropriate quantity of hardener to the resin, mix carefully. Avoid air trapping. For some applications it can be useful to pre-heat the components and/or carry out a degassing step under vacuum of the mixture before casting.

**Curing/Post-curing:**

For a room temperature curing system post-curing allows fast stabilization of the material and obtainment of the best electrical and mechanical properties. During the curing process it is advisable to avoid thermal variations higher than 10°C/hour.

**Storage:**

Polybutadiene polyol resin and the isocyanate based hardener can be stored respectively for one year and six months in the original sealed containers stored in a cool, dry place. The hardener may present an increase in viscosity that does not change the cured system properties. The isocyanate may crystallize at low temperatures. To restore the original conditions, heat the material at 70-80°C avoiding local overheating. Before use, the product must be rehomogenized and cooled down at room temperature. Both components are moisture sensitive therefore it is good practice to close the vessels immediately after each use. Moisture absorption may cause the expansion of the product during application and/or the hardener may crystallize during storage. Note: pay attention to the instructions given in paragraph 8 of the safety data sheet.

**Handling precautions:**

Refer to the data sheet and comply with regulations relating to industrial health and waste disposal.

## TYPICAL SYSTEM CHARACTERISTICS

| Property                             | Conditions      | Method                 | Value       | UM   |
|--------------------------------------|-----------------|------------------------|-------------|------|
| Mixing ratio by weight               |                 | for 100 g resin        | 100:33      | g    |
| Mixing ratio by volume               |                 | for 100 ml resin       | 100:26      | ml   |
| Colour resin                         |                 |                        | Black       |      |
| Colour hardener                      |                 |                        | Pale yellow |      |
| Viscosity resin                      | 25°C            | IO-10-50 (ISO3219)     | 2.000÷5.000 | mPas |
| Viscosity hardener                   | 25°C            | IO-10-50 (ISO3219)     | 20÷60       | mPas |
| Density resin                        | 25°C            | IO-10-51 (ASTM D 1475) | 0,90÷0,94   | g/ml |
| Density hardener                     | 25°C            | IO-10-51 (ASTM D 1475) | 1,20÷1,22   | g/ml |
| Initial mixture viscosity at:        | 25°C            | IO-10-50 (ISO3219)     | 1.800÷2.800 | mPas |
|                                      | 40°C            | IO-10-50 (ISO3219)     | 1.200÷2.200 | mPas |
| Pot life (doubled initial viscosity) | 25°C            | IO-10-50 (ISO3219)     | 2÷4         | min  |
| Gelation time                        | 25°C (15ml;6mm) | IO-10-73 (*)           | 20÷40       | min  |
| Gelation time                        | 25°C 100ml      | IO-10-52a              | 5÷15        | min  |
| Demoulding time                      | 25°C (15ml;6mm) | (*)                    | 50÷70       | min  |
| Post-curing                          | 60°C            | (**)                   | (15)        | h    |

## TYPICAL CURED SYSTEM PROPERTIES

### Properties determined on specimens cured: 24 h TA + 15 h 60°C

| Property                              | Conditions | Method                 | Value                                      | UM                 |
|---------------------------------------|------------|------------------------|--------------------------------------------|--------------------|
| Density                               | 25°C       | IO-10-54 (ASTM D 792)  | 0,95÷0,99                                  | g/ml               |
| Hardness                              | 25°C       | IO-10-58 (ASTM D 2240) | 60÷70                                      | Shore A/15         |
| Glass transition (Tg)                 |            | IO-10-69 (ASTM D 3418) | -40÷-50                                    | °C                 |
| Water absorption (24h RT)             |            | IO-10-70 (ASTM D 570)  | 0,45÷0,55                                  | %                  |
| Water absorption (2h 100°C)           |            | IO-10-70 (ASTM D 570)  | 0,80÷1,00                                  | %                  |
| Max recommended operating temperature |            | IEC 60085 (***)        | 120                                        | °C                 |
| Dielectric constant at:               | 25°C       | IO-10-59 (ASTM D 150)  | 3,0÷4,0                                    |                    |
| Loss factor at:                       | 25°C       | IO-10-59 (ASTM D 150)  | 35÷45                                      | x 10 <sup>-3</sup> |
| Volume resistivity at:                | 25°C       | IO-10-60 (ASTM D 257)  | 2 x 10 <sup>15</sup> ÷8 x 10 <sup>15</sup> | Ohm x cm           |
| Dielectric strength                   | 25°C       | IO-10-61 (ASTM D 149)  | 21÷23                                      | kV/mm              |
| Flexural strength                     |            | IO-10-66 (ASTM D 790)  | n.a.                                       | MN/m <sup>2</sup>  |
| Strain at break                       |            | IO-10-66 (ASTM D 790)  | n.a.                                       | %                  |
| Flexural elastic modulus              |            | IO-10-66 (ASTM D 790)  | n.a.                                       | MN/m <sup>2</sup>  |
| Tensile strength                      |            | IO-10-63 (ASTM D 638)  | 4,0÷6,0                                    | MN/m <sup>2</sup>  |
| Elongation at break                   |            | IO-10-63 (ASTM D 638)  | 180÷220                                    | %                  |

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**Legenda:**

IO-00-00 = ELANTAS Europe's test method. The corresponding international method is indicated whenever possible.

nd = not determined na = not applicable RT = TA = laboratory room temperature (23±2°C)

Conversion units: 1 mPas = 1 cPs 1MN/m<sup>2</sup> = 10 kg/cm<sup>2</sup> = 1 MPa

(\*) for larger quantities pot life is shorter and exothermic peak increases

(\*\*) the brackets mean optionality

(\*\*\*) The maximum operating temperature is given on the basis of laboratory information available being it function of the curing conditions used and of the type of coupled materials. For further possible information see post-curing paragraph.

**Disclaimer:**

The information given in this publication is based on the present state of our technical knowledge but buyers and users should make their own assessments of our products under their own application conditions.

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