Case Study

Pocan® DP 2004 for electrical distribution boxes

PBT, injection-molding grade, non-reinforced, halogen-free, GWIT 800 °C

Figure 1 Electrical distribution box made of Pocan DP 2004

Electrical distribution boxes are classified as sensitive components in industrial and domestic applications as defined by electrical and fire prevention directives. It is crucial to select the right plastics. Lanxess Deutschland GmbH provides materials suitable for producing electrical distribution boxes in its Pocan (polyester) range.

Pocan DP 2004 is one of the few halogen-free thermoplastic polyesters that are commercially available. In key electrical properties, it is superior to equivalent halogen-containing materials. The tracking resistance to CTI has achieved the highest PLC classification (> 600 V), which significantly reduces the risk of short circuits and equipment faults resulting from leakage currents. Pocan DP 2004 is also highly corrosion-proof.

In terms of mechanical properties, it is noted for its good impact strength, stress-cracking resistance and high outer fiber strain at maximum force.

The fire behavior of the material is equally impressive. Pocan DP 2004 passes the glow wire test for determining the GWFI (glow wire flammability index) at the maximum glow wire temperature of 960 °C. It also achieves a GWIT (glow wire ignition temperature) value of 800 °C for all typical wall thicknesses, which means that the product meets the extended IEC 60335-1 standard for domestic appliances. It has achieved a PLC classification of 2 in the HWI test and 0 in the HAI test at 0.75 millimeters, and can thus be used in a wide variety of insulation material applications (UL 508). The material is also ideally suited to laser inscription. Pocan DP 2004 is used, for example, in the electrical distribution boxes manufactured by Bals Elektrotechnik GmbH und Co. KG, which is based in Kirchhundem in Germany.

Pocan DP 2004 is a non-reinforced PBT grade. Pocan DP 4035 is a reinforced grade that also contains a halogen-free flame retardant component. It is a PBT/PET blend reinforced with 30 % glass fibers. Its modulus is 9,000 MPa, and its unnotched Izod impact strength is 35 kJ/m². Like DP 2004, the DP 4035 is also a V-2 grade with an HWI classification of 2 and an HAI classification of 0. As such, it is also suitable for use in insulation materials in accordance with UL 508. The tracking resistance of DP 4035 equates to PLC class 1 (400 – 599 Volts).

Pocan® is a registered trade name of Lanxess Deutschland GmbH

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Unless specified to the contrary, the values given have been established on standardized test specimens at room temperature. The figures should be regarded as guide values only and not as binding minimum values. Kindly note that, under certain conditions, the properties can be affected to a considerable extent by the design of the mould/die, the processing conditions and the coloring.

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