

## 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

**Material:** Pocan® DP 2004

**Molder:** Bals Elektrotechnik GmbH und Co. KG,  
Germany

**Industry:** Electric/Electronics

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/m<sup>2</sup>. 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).

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#### Developmental Product

Any product designated as a developmental product is not considered part of the LANXESS Corporation line of standard commercial products. Complete commercialization and continued supply are not assured. The purchaser/user agrees that LANXESS Corporation reserves the right to discontinue this product without prior notice.

#### Typical Properties

Property data is provided as general information only. Property values are approximate and are not part of the product specifications.

#### Flammability

Flammability results are based on small-scale laboratory tests for purposes of relative comparison and are not intended to reflect the hazards presented by this or any other material under actual fire conditions.

#### Health and Safety

Appropriate literature has been assembled which provides information concerning the health and safety precautions that must be observed when handling LANXESS products mentioned in this publication. Before working with these products, you must read and become familiar with the available information on their hazards, proper use, and handling. This cannot be overemphasized. Information is available in several forms, e.g., material safety data sheets (MSDS) and product labels. Consult your LANXESS Corporation representative or contact the Product Safety and Regulatory Affairs Department at LANXESS. For materials that are not LANXESS products, appropriate industrial hygiene and other safety precautions recommended by their manufacturer(s) must be followed.

#### Regulatory Compliance

Some of the end uses of the products described in this brochure must comply with applicable regulations, such as the FDA, NSF, USDA and CPSC. If you have any questions on the regulatory status of any LANXESS engineering thermoplastic, consult your LANXESS Corporation representative or contact the LANXESS Regulatory Affairs Manager.

#### Regrind

Where end-use requirements permit, regrind may be used with virgin material in quantities specified in individual product information bulletins, provided that the material is kept free of contamination and is properly dried (see maximum permissible quantities and drying conditions in product information bulletins). Any regrind used must be generated from properly molded/extruded parts, sprues, runners, trimmings and/or film. All regrind used must be clean, uncontaminated, and thoroughly blended with virgin resin prior to drying and processing. Under no circumstances should degraded, discolored, or contaminated material be used for regrind. Materials of this type should be discarded. Improperly mixed and/or dried regrind may diminish the desired properties of a particular LANXESS product. It is critical that you test finished parts produced with any amount of regrind to ensure that your end-use performance requirements are fully met. Regulatory or testing organizations (e.g., UL) may have specific requirements limiting the allowable amount of regrind. Because third party regrind generally does not have a traceable heat history or offer any assurance that proper temperatures, conditions, and/or materials were used in processing, extreme caution must be exercised in buying and using regrind from third parties. The use of regrind material should be avoided entirely in those applications where resin properties equivalent to virgin material are required, including but not limited to color quality, impact strength, resin purity, and/or load-bearing performance.

#### Color and visual effects

Type and quantity of pigments or additives used to obtain certain colors and special visual effects can affect mechanical properties.

#### Note:

The information contained in this publication is current as of October, 2008. Please contact LANXESS Corporation to determine if this publication has been revised.

