

Case Study

Conductive polyamide 6 for powder coating

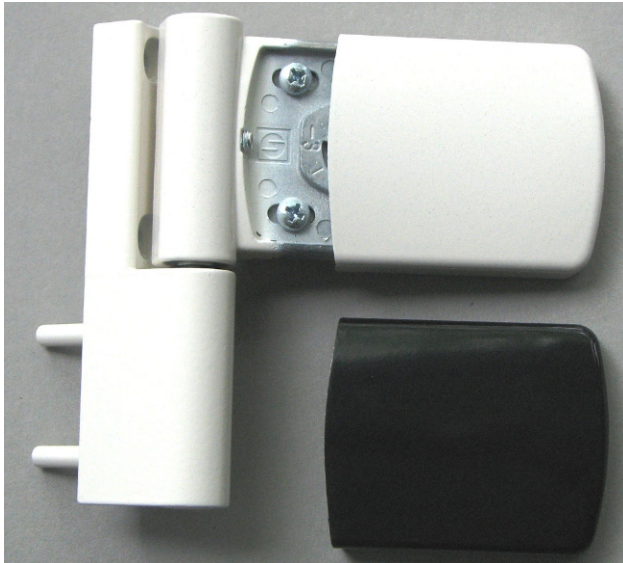


Figure 1 Door hinges

The conductive polyamide 6 Durethan BCF 30 X H2.0 from [LANXESS](#), which is already used in the production of conductive vehicle fuel filter housings and anti-static components for potentially explosive areas in coating lines, is also ideal for use in powder coating applications. This was confirmed by tests performed on a cap cover for door and window hinges made of die-cast zinc.

With a specific surface resistance of around 102 Ohm, the material is sufficiently conductive to allow an even layer of powder coating to be applied to the cover cap. There is therefore no need to pre-treat the component with a conductive primer. In addition, the material is capable of withstanding temperatures of around 180 to 200 °C for several minutes when the coating is baked. Due to its high heat resistance, the cap displays no noticeable distortion.

The caps are usually made of colored polycarbonate, while the door and window hinges are powder-coated

Manufacturer: Schüring GmbH & Co.
Fenster-Technologie KG, Germany

Grade: Durethan® BCF 30 X H2.0

separately. This leads to the problem of a color shade mismatch between the cap and the hinge. One possible solution is to use a plastic that can also be powder-coated. This way, the metal hinges and plastic cap would be assembled first before being coated electrostatically in a single step. In contrast to the standard solution, with Durethan BCF 30 X H2.0 just one coating step is required, ensuring a perfect color match for the metal and plastic components. The uniform look of the paint and surface is not affected by weathering, because only one coating system is used.

Durethan BCF 30 X H2.0 is reinforced with a 30 % mixture of glass and carbon fiber by weight. This contributes to the material's excellent conductivity. Unlike conductivity additives based on carbon black, which usually impair the mechanical properties and surface quality of polyamide 6, it has a negligible impact on the mechanical properties of the thermoplastic. With this material, users can benefit from virtually all of the advantages of standard polyamide 6 grades with

30 percent glass fiber reinforcement, such as Durethan BKV 30 H2.0, when designing complex technical components.

Following successful tests on the cover cap, LANXESS expects that the new material will be used in the serial production of components for powder coating. Processors benefit from all the strengths that powder coating offers over wet coating. This means that functional or decorative coatings, such as a metallic look, could be applied to suitable components.

Possible applications include polyamide chair bases and arm rests with a metallic surface in the furniture-making industry or coated window frames and modules in the construction industry. There is also considerable potential in applications that call for metal and plastic components to be combined and coated in a single shade of color. With powder coating, this can be achieved cost-effectively in a single step.

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Typical Properties

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

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 January, 2012. Please contact LANXESS Corporation to determine if this publication has been revised.