

## Case Study

### Durethan® DP 2802/30 for blenders

PA 66, injection molding grade, 30 % glass fibers, halogen-free, GWIT 775 °C



Figure 1 Blender insert made of Durethan DP 2802/30

Plastics that are used near live parts in unsupervised domestic appliances such as refrigerators, washing machines and dishwashers are required to satisfy the IEC 60335-1 domestic appliance standard, which has recently been tightened. As soon as the current exceeds 0.2 amps, the glow wire test requirements specify a GWFI (glow wire flammability index) of 850 °C and a GWIT (glow wire ignition temperature) of 775 °C for all insulating materials. This is a huge obstacle for most polyamide grades. LANXESS has now developed a range of Durethan grades that satisfy the domestic appliance standard. Both the 30 % glass-fiber-reinforced DP 2802/30 and the non-reinforced DP 2801 satisfy IEC 60335-1. The two PA 66 grades achieve the minimum stipulated GWFI value of 850 °C and the minimum GWIT value of 775 °C. The flame-retardant additives of both polyamides are halogen- and phosphorus-free. Both materials have an excellent tracking resistance (CTI A) of 600 Volts.

One field of application for these two Durethan grades is in small domestic electrical appliances. For instance, the mixer insert in a blender made by BSH Bosch und Siemens Hausgeräte GmbH is manufac-

**Material:** Durethan® DP 2802/30  
**Molder:** BSH  
Bosch und Siemens Hausgeräte GmbH  
**Industry:** Appliance

tured from Durethan DP 2802/30. The GWFI of 960 °C and the GWIT of 775 °C were key factors in the selection of the material. Further requirements included UL 94V-2 classification and halogen-free flame retardance.

Great emphasis was placed on good flowability so that the molded parts could be injection-molded in short cycle times and with low wall thicknesses. Alongside its excellent mechanical and rheological properties, the high abrasion resistance of Durethan DP 2802/30 emerged as a key advantage.

A decisive factor in the design of the molded part was the triple gate on the toothed ring to achieve optimum roundness of the latter.

LANXESS also offers corresponding PA 6 grades.

DP 1852/30 contains 30 % glass fibers and has achieved V-0 classification. The GWIT of 775 °C is achieved at 0.75 mm, and a GWIT of 800 °C is even attained at greater wall thicknesses. The flame retardant component of DP 1852/30 contains halogen.

Durethan DP 1803/10 is a halogen-free glass-fiber-reinforced V-2 grade with a mineral-based flame retardant which achieves a GWIT of 775 °C in all



typical wall thicknesses. Additionally, this product achieves a tracking resistance of 600 volts, an HWI of 2, and an HAI of 0.

Durethan DP 1803/10 can thus be used in the field of insulation materials in accordance with UL 508.

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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.

