

## Case Study

### Booster module for start-stop systems

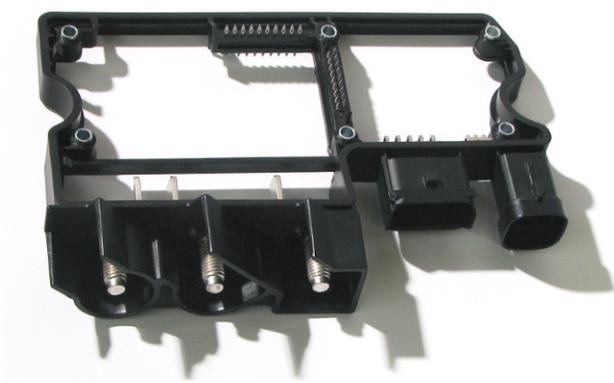


Figure 1 Booster module for the on-board electrical system

The **Continental** Automotive Group is one of the world's leading automotive suppliers. As a partner to the automobile and utility vehicle sector, Continental's HEV (Hybrid Electric Vehicle) Business Unit develops and manufactures innovative products and systems for the vehicles of tomorrow, which should combine individual mobility and driving enjoyment with safety, environmental responsibility and economic efficiency.

The market for start-stop systems is growing fast. With a newly developed booster module for the on-board electrical system (see Fig. 1), Continental has succeeded in making start-stop systems in vehicles even more convenient and efficient. The new module – known as the E-booster – is doing duty in the micro-hybrid systems of the French PSA Peugeot Citroën Group, specifically in their e-HDI engines.

Super-capacitors provide the surge in power of up to 1100 A that is needed to start the engine – a process that takes only 400 milliseconds. To make sure the engine starts without any noticeable vibrations or noise, an efficient booster module for the on-board electrical system is required. The electronics in the E-booster regulate re-charging of the super-capacitors.

**OEM:** PSA Peugeot Citroën

**Grade:** Pocan® B 4235

**Manufacturer:** Continental Automotive GmbH, Germany

These micro-hybrid systems can reduce fuel consumption in urban traffic by up to 15 percent.

The specifications submitted by Continental for the material included the following:

- Flame-retardant according to UL 94
- Good electrical properties
- Good dimensional stability
- High toughness
- High long-term service temperature

The flame-retardant LANXESS grade, Pocan B 4235 PBT, conforms to all of these requirements.

Furthermore, Continental received technical support from LANXESS in the form of mold filling and part warpage analyses conducted on the part. The relatively low warpage of Pocan B 4235 plays a very important part in this application. Benefitting from the information learned from the analysis, the part has particularly high dimensional stability, enabling printed circuit boards (PCBs) to be accurately positioned on the module during assembly.

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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.

#### 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.

#### 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.

#### Note:

The information contained in this publication is current as of March, 2012. Please contact LANXESS Corporation to determine if this publication has been revised.