

## Case Study

### Truck bumpers with new material - tailor-made (PBT+PET)-blend replaces SMC



Figure 1 Truck bumpers Eurocargo by IVECO

**IVECO**, one of the world leaders in commercial vehicles, is using bumpers made from Pocan<sup>®</sup> TS 3220 for the third generation of its Eurocargo model. The glass fiber reinforced and elastomer-modified (PBT+PET)-blend from LANXESS has been tailor-made especially for this application and can be injection molded. The bumper was previously made using sheet molding compound (SMC) technology. This thermoplastic enables components to be produced without time-consuming post-molding treatment and is around 20 percent lighter. What's more, the resultant surface quality is so good that the body part can also be used without a painting. The bumper is injection molded by Martinplast S.p.A. in San Martino Alfieri, Italy.

SMC components require a great deal of post-molding treatment. For example, flash needs to be removed and holes that have become clogged need to be opened up again. The components also require a coating to achieve good surface quality. This means they have to be pretreated with primer and often need to be polished, too. Especially when relatively high

**OEM:** IVECO  
**Material:** Pocan<sup>®</sup> TS 3220  
**Manufacturer:** Martinplast S.p.A., Italy  
**Industry:** Automotive

numbers of parts are involved, Pocan<sup>®</sup> TS 3220 is a much more cost-effective solution. It produces bumpers that require no post-molding treatment with a very low reject rate and short cycle times. Two more of the blend's strengths compared to SMC are its outstanding toughness and good resilience at low temperatures. This makes the component extremely resistant to minor damage. The excellent flowability of the (PBT+PET)-blend comes into its own when manufacturing the very large component, which has external dimensions of 220 x 70 x 30 centimeters.

The blend's excellent coatability is a further advantage because some Eurocargo bumper models are painted. Thanks to the material's outstanding stiffness, a tread can be integrated in the component without the need for metal reinforcements. This supports the driver's entire weight, for example when cleaning the windshield. Another benefit of Pocan<sup>®</sup> TS 3220 is its good chemical resistance to road salt, fuel, greases, oils, coolant, insect cleaner sprays and other substances typically encountered by motor vehicles.



LANXESS provided Martinplast with a great deal of assistance when it came to designing and constructing the bumper. It calculated both the thermal expansion and how the bumper deforms under stress. This enabled "critical" areas to be strengthened us-

ing targeted localized reinforcements. The mold filling process was also simulated using Moldflow® analyses to optimize the gating concept and minimize component warpage.

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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 May, 2009. Please contact LANXESS Corporation to determine if this publication has been revised.

