

Case Study

Gearbox oil sumps made of Durethan® AKV 35 H2.0 901510



Figure 1 All-plastic gearbox oil sump ZF 6HP26/32

The gearbox oil sump made of the LANXESS engineering plastic Durethan® AKV 35 H2.0 has been in series production since 2002.

This was the first oil sump to be made entirely of plastic, with all the metal parts being replaced by plastic ones. [IBS Filtran](#) worked with LANXESS and ZF Friedrichshafen to develop this oil sump, which was first installed in the automatic transmission of the BMW 7 Series (E65/E66). Today, it is used in a range of BMW, Aston Martin, Jaguar, Ford and Land Rover models (see Figure 1).

The oil sump combines various functions. It serves as an oil collector as well as filter housing. Integrated magnets absorb metallic contamination.

The material chosen for the oil sump was the high-performance polyamide Durethan® AKV 35 H2.0.

Material: Durethan® AKV 35 H2.0 901510

Molder: [IBS Filtran GmbH](#), Germany
ZF Friedrichshafen, Germany

Industry: Automotive

It offers the best combination of stiffness, strength and resistance to automatic transmission oils at both subzero temperatures and high continuous operating temperatures.

Furthermore, because the plastic oil sump is made of Durethan® AKV 35 H2.0, it is 50 % lighter than corresponding metal ones.

Durethan® AKV 35 H2.0 has the following impressive properties:

- High stiffness and strength
- Very good impact strength, as proven in special tests using simulated stone impact
- Very good resistance to chemicals and heat
- Very good long-term heat resistance, particularly to aggressive automatic transmission oils
- Low tendency to shrinkage and warpage
- Ideal practical thermal expansion coefficients compared with aluminum



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The manner in which you use and the purpose to which you put and utilize our products, technical assistance and information (whether verbal, written or by way of production evaluations), including any suggested formulations and recommendations, are beyond our control. Therefore, it is imperative that you test our products, technical assistance and information to determine to your own satisfaction whether they are suitable for your intended uses and applications. This application-specific analysis must at least include testing to determine suitability from a technical as well as health, safety and environmental standpoint. Such testing has not necessarily been done by us. Unless we otherwise agree in writing, all products are sold strictly pursuant to the terms of our standard conditions of sale. All information and technical assistance is given without warranty or guarantee, and is subject to change without notice. It is expressly understood and agreed that you assume and hereby expressly release us from all liability, in tort, contract or otherwise, incurred in connection with the use of our products, technical assistance and information. Any statement or recommendation not contained herein is unauthorized and shall not bind us. Nothing herein shall be construed as a recommendation to use any product in conflict with patents covering any material or its use. No license is implied or in fact granted under the claims of any patent.

Typical Properties

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

Note:

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Page 2 of 2 - this document contains important information and must be read in its entirety | Edition 26.08.2008 | TI 2006-045 US

