

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

Manufacturer: IBS Filtran GmbH & Co. KG,
ZF Friedrichshafen

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 aluminium

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Unless specified to the contrary, the values given have been established on standardized test specimens at room temperature. The figures should be regarded as guide values only and not as binding minimum values. Kindly note that, under certain conditions, the properties can be affected to a considerable extent by the design of the mold/die, the processing conditions and the coloring.

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