

A High Quality Look with VESTAMID® Decorative Films

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- Films from high-performance polymers under the hood
- Polyamide films in 3D design

Dr. Ursula Keil
Marketing Support
Phone +49 2365 49-9878
Fax +49 2365 49-5992
ursula.keil@evonik.com

Marl, Germany – Decorative films made with VESTAMID® compounds from the High Performance Polymers Business Unit of Essen, Germany-based Evonik Industries are replacing the coatings on engine covers, giving them a sophisticated metallic look. In sports equipment, VESTAMID® films have already been successfully used for many years as protective and decorative elements, offering impressive possibilities for ever new and elaborate designs.

High demands in the engine compartment

Parts of the engine compartment must withstand punishing high temperatures, chemicals, and mechanical stress. For heavily used surfaces, therefore, only films made from high performance polymers are suitable as an alternative to coatings. A dual-layer system of VESTAMID®, consisting of a white base film of polyamide 612 with a silver colored upper film layer of a polyamide 12 based compound, is resistant to chemicals and scratching, and can withstand temperatures of up to 150°C without any deterioration in mechanical properties. Film adhesion for in-mold lamination by injection with, for example, polyamide 6 or polyamide 66 is so good that the film cannot be separated from the substrate when an attempt is made to strip it off. The two-layer composite is used as a cost-effective continuous system; a degree of deformation of up to 300% is possible. It also allows attainment of high color density, so that even in highly stretched areas the usually black material of the injection molded part does not show through. In contrast to coatings, the thickness does not vary (cf. coating shadow), and the finished part therefore

Evonik Degussa GmbH
High Performance Polymers
45764 Marl
www.degussa-hpp.com

Management Board
Dr. Klaus Engel (chairman),
Dr. Alfred Oberholz,
Ralf Blauth,
Dr. Manfred Spindler,
Heinz-Joachim Wagner,
Patrik Wohlhauser

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Dr. Werner Müller

Registered Office: Düsseldorf
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acquires a sophisticated metallic finish as well as surface protection.

Polyamide films in 3D design

Films made from VESTAMID®—polyamide 12 and polyamide 12 elastomer—are now very widely used as protective and decorative elements for skis, snowboards, and tennis and badminton rackets, and in special sports shoes. The drivers behind this development are the need for more cost effective and environmentally friendly coating processes, and, most importantly, freer and more individual design and improved surface protection. Here again, the advantages over the competitive thermoplastic compounds are good chemical resistance, high impact strength at low temperatures, and low temperature dependence of the mechanical properties. Additionally, the films have high scratch resistance and good resilience, and are easily processed thanks to a constant property profile. The low water uptake of PA 12 is advantageous in processing: intermediate storage of films before printing, for example, is unproblematic.

Films made from VESTAMID® can be printed using all the conventional processes. In the case of transparent films, however, decoration by sublimation printing is most widely used: hot pressing of patterned thermal transfer paper causes the color pigments to sublime and penetrate the film to a depth of up to 300 micrometers. The film itself then serves as a protective layer, so that the sublimed decoration is much more resistant to external influences than surface printing on competing materials.

The latest development in design, used as ski uppers, is a VESTAMID® film with 3D design embossed into the film from both the front and back. Apart from the absolute constancy of film thickness that is essential here, a correctly set soft–hard interface plays an especially important role: the film must be soft enough at

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the surface for embossing, but must also possess enough rigidity for constancy of processing.

Figure caption:

The well-balanced properties of the VESTAMID® molding compounds used allow three-dimensional embossing of the film.



Company information

Evonik Industries AG is the creative industrial group which operates in three highly profitable, promising business areas: Chemicals, Energy and Real Estate. Evonik is a global leader in specialty chemicals, an expert in power generation from hard coal and renewable energies, and one of the largest private residential real estate companies in Germany. Our strengths are creativity, specialization, continuous self-renewal, and reliability.

Evonik Industries is active in over 100 countries around the world. In fiscal 2006 around 43,000 employees generated sales of €14.8 billion and operating Profit (EBIT) of over €1.2 billion. Evonik plans to enter the capital market in the first half of 2008.

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