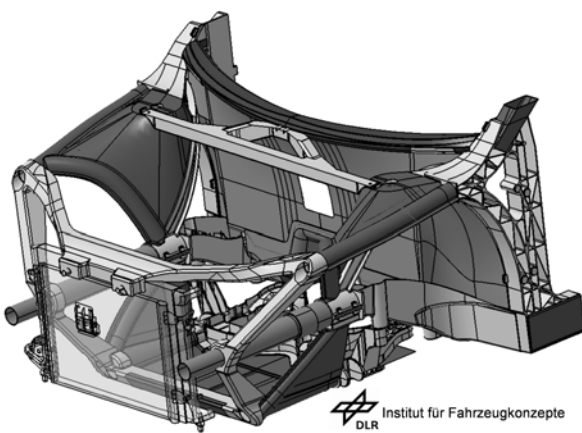


VESTAMELT® – Cathode Dip-Coatable Adhesion Promoter Makes Hybrid Components Even Lighter and More Rigid



Evonik has expanded its expertise in the automotive sector and developed an adhesion promoter system that improves the performance of hybrid components and allows customers to use up to 25% less material.

- cathode dip-coatable
- predictable performance
- formable
- enhanced component rigidity
- corrosion protection (possible to replace cathode coating)
- weldable
- enhanced design freedom
- stable – can be stored in semi-finished state
- coatable
- less material needed, so components are lighter weight and less costly

How it works

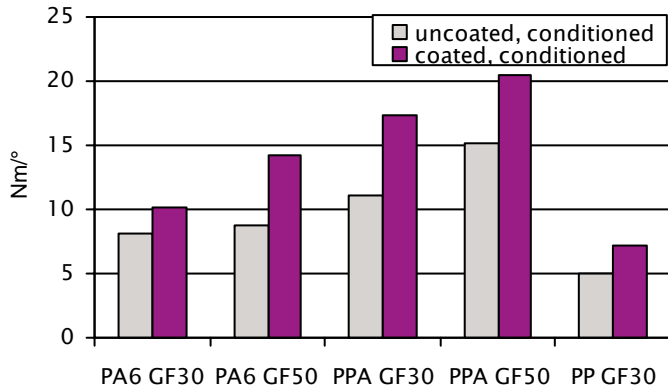
VESTAMELT® X1333-P1 is a copolyamide-based adhesion promoter specially modified to create an exceptional bond on metallic and polymer surfaces. It avoids the typical disadvantages of existing hybrid components like warpage, different shrinkages and the missing adhesion of metal and plastic components. VESTAMELT® X1333-P1 ensures

- a strong bond between metal and plastic
- prevention of leaks at flow lines
- compensation of different shrinkage conditions
- minimization of distortion

VESTAMELT® X1333-P1 is applied to a metallic substrate and thermally pre-vulcanized to prevent a wash-out effect during the injection-molding process. The coating retains its thermoplastic character, allowing components to be formed without damaging the coating. In the injection-molding process, VESTAMELT X1333-P1 adhesion promoter creates a firm bond between metal and molding compound. A downstream tempering step (e.g., cathode dip coating) ensures complete thermal crosslinking of the adhesion promoter and maximum performance of the entire component.

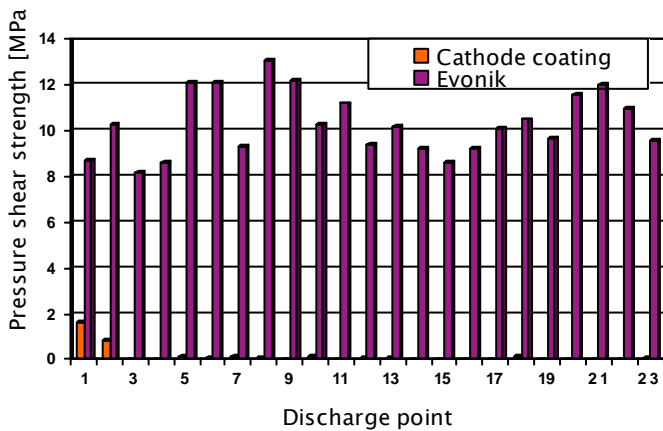
Stiffness in torsion

The stiffness in torsion and also the below described pressure shear strength were tested at a real front-end module. The figure shows the comparison of an uncoated module with a VESTAMELT® coated module.



Pressure shear strength

For this measurement 23 different samples were discharged from a front-end module and tested. The figure shows the comparison of a KTL-coated module with a VESTAMELT® coated module.



Fields of application

The use of VESTAMELT® X1333-P1 as an adhesion promoter in hybrid components is not limited to the automobile industry: it can also add value in many other fields. Concrete solutions can be developed for the following industries:

- Automobile (front-end modules, roof rails, seat cross bars, etc.)
- Construction (facade elements)
- Electronics (plug contacts)
- Cellular radio (cell phone housings)
- Mechanical engineering (lightweight construction)

VESTAMELT® X1333-P1 has already proven in a host of customer projects that it can significantly improve the performance of hybrid components, especially rigidity. The adhesion promoter gives designers greater freedom, since they can use up to 25 percent less material when they design new components. Despite this substantial weight reduction, the material retains the requested properties.

Processing

Coil coating

Complete metal coils can be coated with VESTAMELT® X1333-P1 by means of the coil coating process. The components can then be shaped as desired and encapsulated by injection molding with a polymer molding compound (e.g. PA6-GF30, PP-GF30, PBT, ABS, etc.).

Electrostatic coating

In electrostatic spray coating, preformed components are partially or completely coated with VESTAMELT® X1333-P1 and then sintered to form a strong connection with the metallic surface. The component is then overmolded with a polymer injection-molded compound and tempered, if necessary, to leverage the full performance of the thermally crosslinked adhesion promoter.

Form of supply

VESTAMELT X1333-P1 is supplied as a **liquid coating** in metal containers.

We also offer VESTAMELT X1333-P1 as a **powder**, with a particle-size distribution of 0-80 µm, in 20 kg sacks on pallets.

Evonik markets the VESTAMELT® adhesion promoter system worldwide. Our proven quality management system guarantees the high quality of all products, from product development, through production, all the way to quality assurance. Our system is certified to ISO 9001:2000 and is continuously optimized. Over the years, a number of customers have tested our system and verified its superiority.



We would be happy to work with you on your new project and develop a custom-tailored solution for your component.

We look forward to discussing your plans in greater detail.

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