

Case Study

Socket combinations made from (PBT+PC)-blend – low warpage with chemical resistance



Figure 1 AMAXX[#] Socket combinations

Offering “Plugs for the World” has made [Mennekes Elektrotechnik GmbH & Co. KG](#) one of the world’s leading manufacturers of standardized industrial plugs and sockets. This family business based in Kirchhundem in the Sauerland region of western Germany markets its products in over 90 countries. Its AMAXX[®] range provides ideal socket combinations for all kinds of applications. When deciding on a housing material for the latest addition to this range, Mennekes opted for a non-reinforced, elastomer-modified blend of polybutylene terephthalate and polycarbonate (PBT+PC) from LANXESS. This thermoplastic from the Pocan product family was chosen primarily because of its excellent resistance to a large number of chemicals and its low warpage.

Material: Pocan[®]
Manufacturer: MENNEKES
Elektrotechnik GmbH & Co. KG

This makes it possible to produce components with outstanding dimensional stability.

The (PBT+PC)-blend is much more resistant to fuel vapors, greases and many cleaning agents than for example PC, which is also used as a housing material. A further benefit is the blend’s good UV stability. Because the housing components are relatively large, the blend’s good flowability pays off during processing, producing molded parts with a smooth, flawless surface that is easy to clean. The low isotropic shrinkage levels of the (PBT+PC)-blend, its minimal warpage and low water absorption yield components with excellent dimensional stability, ensuring a tight seal. This helps the housings remain impervious to splashing water, dust etc. and enables



them to comply with protection types IP44 to IP67 (IP = International Protection).

Thanks to the dimensional stability of (PBT+PC)-blend under heat – it has an HDT (Heat Distortion Temperature) A value of 70 °C – the housing components demonstrate adequate stiffness at elevated temperatures. The blend also benefits from good impact resistance at temperatures as low as -25 °C. This ensures that the housing components are able to withstand the rough treatment they receive on a

daily basis, including knocks and bumps. The thermoplastic's good electrical insulating properties are also demonstrated by its high dielectric strength and tracking resistance.

Another key factor leading to the choice of this flame retardant-free material was its compliance with the EU's RoHS (Restriction of the Use of certain Hazardous Substances in Electrical and Electronic Equipment) and WEEE (Waste Electrical and Electronic Equipment) directives.

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