Press Release

New TPU with good signal penetration

Plastics for uninterrupted 5G reception

Covestro supplies polycarbonates and films for new mobile network

The new mobile communications standard 5G is advancing steadily. This development is also increasing the demand for materials that facilitate and ensure the high transmission rates for 5G signals. This includes the new Desmopan® 7000 thermoplastic polyurethane (TPU) from Covestro. It exhibits high transparency for 5G frequencies, thus reducing signal losses. The product is therefore highly suitable for 5G applications, for example in protective covers for cell phones.

In comparison to the previous 4G standard, 5G technology enables higher network speeds, shorter data runtimes (latency), lower power consumption and more stable connections. In order for users to reap the full benefits, devices must be equipped with cases that transmit signals with as little interference as possible. This is especially true for the thin protective covers of smartphones. In this application, the low dielectric constant (Dk) and low dielectric loss (Df) of the new TPU series prove to be very beneficial.

In addition, products of the Desmopan® 7000 series are also known for their inherent shock- and vibration-absorbing properties, which are typical of TPU plastics. They also feature superior abrasion resistance and flexibility over a wide temperature range, as well as good elasticity across the entire hardness range. Cell phones that are equipped with them are therefore also well protected against mechanical impact. In product developments, the fact that the TPU adheres well to other plastics such as polycarbonate or acrylonitrile butadiene styrene (ABS) is a major advantage.

Multilayer films for robust backsides
Smartphones for 5G reception require more space for antennas than their previous counterparts, and manufacturers must also replace metallic backs with other materials to ensure uninterrupted data exchange. Makrofol® SR multilayer polycarbonate films with an acrylic top layer are the ideal choice for requirements such as these. They are permeable to 5G radio signals and mechanically extremely robust.

They also offer a great deal of design freedom: The films can be used to create cost-effective, attractive back covers with a look comparable to that of glass. Various technologies are available for this purpose, such as fine 3D structuring, non-conductive vacuum metallization, screen printing, letterpress molding and others. Apart from a variety of decorated and textured designs, the film surfaces also feature very pleasant feel.

**Polycarbonate for modern radomes**
The development of the 5G infrastructure also entails a tightly meshed network of new, increasingly complex antennas. To protect the outer domes – the radomes – from the effects of the weather, Covestro has developed impact-modified polycarbonates that feature outstanding mechanical performance even at low temperatures, UV resistance, and design flexibility owing to their high processability.

They offer low Dk and Df values that ensure homogeneity in signal transmission and protect state-of-the-art electronics in active antenna units, micro-base stations and routers during outdoor use – throughout their ten-year service life. As such, they help to ensure the return on investment in the 5G network infrastructure.

**About Covestro:**
With sales of EUR 10.7 billion in 2020, Covestro is among the world’s largest polymer companies. Business activities are focused on the manufacture of high-tech polymer materials and the development of innovative, sustainable solutions for products used in many areas of everyday life. In doing so, Covestro is fully aligning itself to the Circular Economy. Its main customers are the automotive and transport industries, the construction industry, the furniture and wood processing industries, and the electrical, electronics, and household appliance industries. Other sectors include sports and leisure, cosmetics, healthcare and the chemical industry itself. As of the end of 2020, Covestro produces at 33 sites worldwide and employs around 16,500 people (converted to full-time positions).

**Forward-looking statements**
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