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Faster, more attractive, safer

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BÜFA has pushed the limits of its composite tooling system even further and has started a real revolution with a conductive gelcoat

Large tools with Class A surfaces can be taken care of in one day instead of three days. A tooling resin with hardening chemistry designed for easy processability, increased economic efficiency and high process safety, in spite of low VOC substances, significantly reduces ripples in the 1st layer of resin, and all of that can now be done at competitive prices: Those are just a few of the features with which the new composite tooling system from BÜFA Composite Systems GmbH & Co. KG, located in Rastede, wants to impress its users in the future. The real revolution in BÜFA's new tooling package, however, is the new conductive tooling gelcoat, which can efficiently eliminate electrostatic charges, thanks to intelligently designed Single Wall Carbon Nanotubes (SWCNT). That not only means easier and, above all, faster removal and less hassle when the molds are cleaned. At the same time, it also means lower scrap rates and increased component quality, due to minimized dust and dirt buildup. And occupational safety also benefits; massively.

Up to twelve simultaneous layers thanks to finely balanced chemistry

"Our current tooling systems have proven their value to customers for several years," explains Elmar Greiff, who developed the cutting-edge, dissipative gelcoat at BÜFA, "but of course, the raw material

base is being developed even further. As technology leaders in the field of tooling systems, we felt it was our duty to find out what we could achieve for our customers today by exploiting the new potential afforded by modern polymer chemistry". So, for example, the lower surface corrugation, with the tools from the new 1st layered BÜFA®-Resin-VE 0910, which, among other things, is made from improved material hardening. This keeps the dreaded shrinkage of the laminate to a minimum.

At the same time, the improved thermal stability allows the tool to last longer in thermally borderline applications (DSC TG_{mid}: 122° C instead of 87° C, as was the case with the previous product).

The new BÜFA®-VE-Tooling Resin 700-7100 is a vinyl ester resin with highly specialized low-profile additives and fillers that intelligently slow down the shrinking process, while at the same time accelerating and tempering the polymerization in an exceptionally well thought-out manner: Its hardening characteristics also allow uncomplicated processing of inexpensive two-layer laminates; at the same time, laminates of up to twelve layers (450 g/m² CSM each) are enabled in a single operation. That should accelerate the process of building particularly large tools beginning to make economic sense.

Of course, the new, hardened BÜFA resin has the best mechanical properties (Barcol: 41 at room temperature, 58 tempered).

Carbon Nanotubes for Tooling "2.0"

Ultimately, this state-of-the-art conductive gelcoat owes its performance to the addition of exceptionally small amounts of carbon nanotubes, which due to their small size are invisible, pull the resin through like tiny electrical cables and therefore allow it to conduct electricity without contributing even a trace of the disadvantages that graphite has, such as soot. The effective elimination of electrostatic charges reduces the force with which the molded part has to be removed from the tool. It also effectively prevents the annoying accumulation of dust and dirt, which ultimately equates to a reduction in scrap that is due to surface defects. If sanding should become necessary, this results in high-gloss surfaces, since SWCNTs, unlike graphite or soot particles, are far too fine to become an eyesore.

The practical side effect is that electrical discharges, which could otherwise injure workers and increase the risk of fire in the plant, are prevented. "The conductivity of our new gelcoat is so good that it can be used not only by traditional composite processors, but even in extremely strict EX-protected areas," says Greiff.

A quantum leap for the industry

"That's why we are very proud of our new tooling system Producing molds for large components in one step instead of taking two to three

days, and then being able to do so in a manner that provides improved surface properties, that's a quantum leap," Greiff explains.

"All this, combined with our innovative conductive gelcoat that further improves the economic rationale of toolmaking while simultaneously increasing the quality of the molded part: This is a feat that probably only an experienced tooling system provider like BÜFA can carry out. That's also what customers say: The product developer summarizes it by saying, "The initial feedback from the market has been extremely positive." "We are excited to see what our partners in the composites industry will make possible."

[Here you will find more detailed information regarding the new BÜFA®-Conductive-Tooling-System](#)

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