

3D printed Star Wars toys made from compostable WillowFlex re-paintable with biodegradable watercolors

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When Berlin-based BioInspiration decided to 3D print a few iconic Star Wars toys in honor of *The Force Awakens*™ theatrical release, they knew the objects would be as green as possible, being made with their innovative and compostable WillowFlex 3D printing filament. What they didn't know was that not only can their 3D printed material hold biodegradable watercolor paint, but that it can be washed and repainted for future use, making these Star Wars 3D prints as awesome as they are eco-friendly.





There is currently a lot of **innovation happening in 3D printing filaments**, yet by far one of the most important trends is the move towards **greener, biodegradable and eco-friendly filaments**. If 3D printing is the future of how things will be made, then it is absolutely essential that we give equal attention not only to what kinds of things we *can* make, but what we are making those things *with*. Yes, flexibility, mechanical properties and even conductivity are excellent features for the next generation of 3D printing materials, but if we aren't making environmental concerns a top priority, none of these revolutions will really matter in the long run, when we're struggling to find more landfill space while dealing with the effects of pollution, toxic contamination, and global warming.

To that end, Berlin-based organic materials company **BioInspiration**, in collaboration with Kansas-based Green Dot and 3dk.berlin, has developed a 3D printing filament that fulfills two essential needs within the 3D printing market: a material that has excellent structural properties—including being flexible, heat resistant *and* cold resistant—while also being made from entirely compostable raw materials that have passed both US and EU standards for compostability.

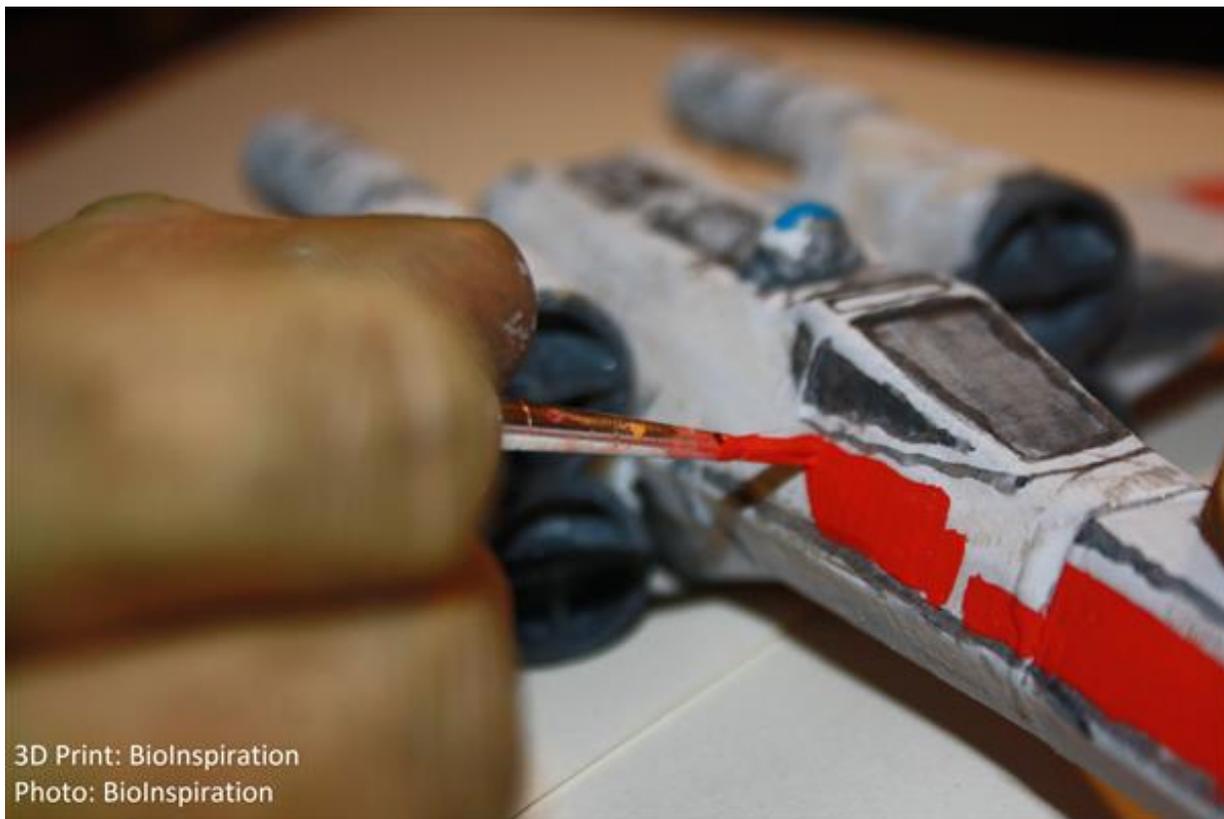


WillowFlex

The World's First Flexible 3D Print Filament
made from Compostable Raw Materials.

When this material, known as WillowFlex, hit the market thanks to a successful Kickstarter campaign last summer, it was instantly recognized as something of an “organic materials evolution”™. While there are 3D printing filaments made from recycled materials, they are often quite standard in terms of properties, and don’t offer much more than your usual ABS or PLA—the main benefit of using them is the personal satisfaction of knowing that you’re doing your part to help the environment. Yet WillowFlex is different in that it combines good intentions with outstanding performance.

Made from an odor-free non-GMO cornstarch, the compostable and upcyclable elastometric bioplastic has a biodegrading level of 90% within just six months (given the right conditions). It also maintains integrity at temperatures up to 100°C, and stays flexible even in sub-zero, -15°C cold, meaning that it can be used to make a wide variety of 3D printed objects that you can feel good about using in your everyday life. Yet much like nature itself, this is a material that just keeps on giving: not only is it green as-is, but it can be painted and finished with equally earth-friendly products.



While painting two iconic 3D printed Star Wars toys, an X-Wing from the original trilogy and the melted Darth Vader mask from the current episode VII, both of which were 3D printed in the soft-cream Natural Color shade, BioInspiration co-creators Brian Crotty and Thorsten Perl sought out paint options that would be as environmentally neutral as possible, and here they made an important discovery: the matte-surface of WillowFlex could easily hold biodegradable watercolor paints, and even be washed and re-painted. This means that if they eventually decide to

discard their 3D printed objects, they can rest easy knowing that every element, from the material to the paint, will not harm the environment. This also makes them safe for use at home and in schools.

“We were surprised [at] how accepting the material is! One of the first things we tried was the ecological watercolors from my son’s backpack. And it bonded well to the WillowFlex toy,” said Perl, CVO and Co-founder of BioInspiration. “And because it is watercolor - if you want to change the painting of your 3D printed toy, you can just wash it away and paint again. Let your creativity flow to Sustainability!”



3D Print: BioInspiration
Photo: Stefan Vydra

WillowFlex is currently available for purchase in 10 different colors, and given its excellent balance between eco-

friendliness and unique physical properties, itâ€™s an extremely promising material for the movement towards sustainable 3D printing practices. Itâ€™s also a wonderful example of how the answers to many of our nature-related issues can come from nature itself. â€œWe see over and over that nature has a way of surprising us,â€ said CEO Brian Crotty. â€œWe work with materials that follow the lead of nature,â€ add the developers on the website. "Natural raw materials, locally grown in living soilsâ€; these cradle-to-cradle materials will change our view on resources forever.â€