# DSM expands water management range with new ForTii® Ace high-performance polyamide

Brass, copper, lead, and other metals have traditionally been used in faucets, water meter components and fitting systems. However, lead leaching into drinking water presents a major health risk, and regulations on permissible levels have been strengthened in Europe and the U.S., in recent years. This has driven the industry to look for alternative solutions that are completely lead-free.

DSM Engineering Plastics has introduced a glass-reinforced grade of high temperature-resistant ForTii® Ace polyamide for products used in water management. ForTii Ace joins the Xytron® polyphenylene sulfide (PPS) compounds and EcoPaXX® polyamide 410 already in use for water applications.

## ForTii Ace WX51-FC – a game changer in the water contact market

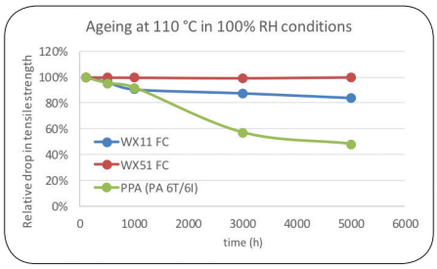
ForTii Ace WX51-FC was specifically developed for the most demanding drinking water contact applications, with long exposure to hot water of 100° C and above. The material, which has a 30% glass fiber content, has proven superior retention of properties in long term water contact.

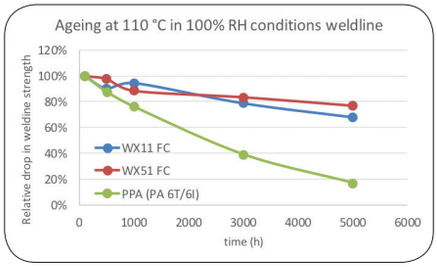
ForTii Ace is a PPA based on C4 (PA4T) chemistry with a high glass transition temperature (Tg) of 160° C; this is due to its high aromatic content – higher than any other commercial PPA. Even though, as with most other polyamides, the transition point decreases in the presence of water, the mechanical properties of ForTii Ace remain on a substantially higher level for the vast majority of the hot water applications than other alternative PPAs. These materials have on average a Tg of around 35° lower.

This superior high temperature resistance provides users in the water management industry with important extra advantages when designing parts in ForTii Ace WX51-FC. It's ideal for applications in long-term contact with water at temperatures of 100° C and even higher.

Certifications confirm that ForTii Ace WX51-FC has superior hydrolysis resistance, as well as overall resistance to chemicals and maintains its strength, for a much longer period than alternative materials

## Oxidative & hydrolytic stability measured in autoclave at 110° C / 100% RH




ForTii and ForTii Ace show superior oxidative behavior versus competition



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Parts injection molded in ForTii Ace WX51-FC demonstrate superior weldline strength retention after long term exposure to hot water—even at temperatures over 100° C. This is important in complex parts, where multiple flow paths can create numerous weldlines; these are typically areas of mechanical weakness, in any design.

Processability is another advantage for ForTii Ace WX51-FC. The combination of excellent mechanical properties and ease of processing provides users with more room for optimization and customization.

## ForTii WX11-FC – outperforming incumbent PPA solutions

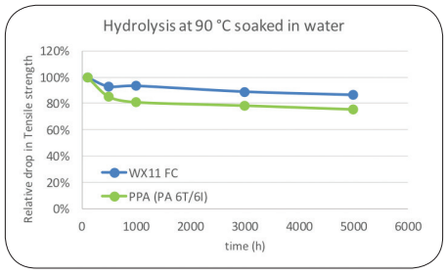
ForTii Ace WX51-FC complements existing grades of ForTii that DSM has developed for water management applications; such as, water heating systems, water meters, sanitary products, and small and large appliances. These include ForTii WX11-FC, another 30% glass reinforced product, based on the ForTii polymer and has a Tg of 125° C and is specifically designed for water management applications.

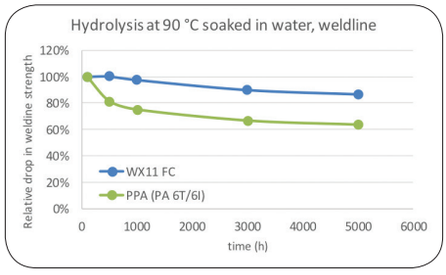
ForTii WX11-FC exhibits higher weldline strength than incumbent PPAs that typically require reinforcement levels of 35% to 40% to achieve similar mechanical performance. This results in lower tool wear and better surface finish. In addition, parts injection molded in ForTii WX11-FC warp less than other PPAs. No other high temperature polyamide flows as well as ForTii.

## DSM Solution Provider for the Drinking Water Contact Market

“DSM has over 25 years of experience in highly demanding automotive and electronics applications, where our material is required to meet and exceed very high temperature and stiffness requirements,” says Caroline Mitterlehner, Global Business Manager, EcoPaXX and Water Management. “Now, having expanded our scientific knowledge with ForTii, we are using this experience to expand into the drinking water contact market, which has its own very strict specifications, rules and regulations.”

## Hydrolysis resistance of ForTii soaked in water at 90° C for 5,000 hrs




ForTii (Tg of 125° C) shows superior strength retention with and without weldline versus competition (Tg of 125° C)

DSM’s scientists have a long history with high performance polyamide technology, beginning with Stanyl PA46 material and more recently with ForTii and ForTii Ace. With EcoPaXX PA410, ForTii and ForTii Ace PPA and Xytron PPS, DSM is now a full solution provider to the drinking water contact market.

### Contact us:

Want to learn about other water management applications that DSM offers? Or want to share your challenge with us? Contact your local DSM office.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