

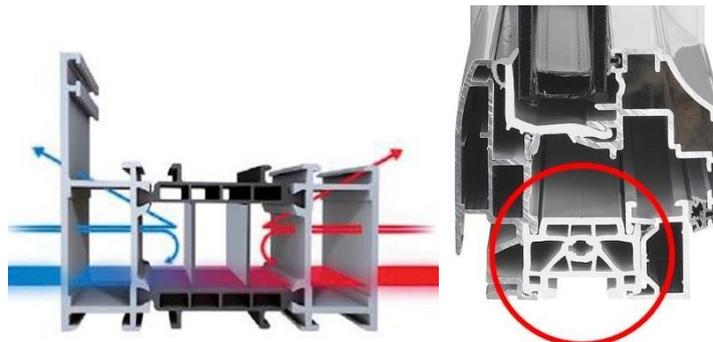
## A EUROPEAN LEADER IN PVC COMPOUNDS CONTINUES TO INNOVATE & STRETCH THE LIMITS OF PVC!

Benvic Europe is a pioneer in PVC formulations in addition to aluminium door and window frame profiles. For more than 20 years, this independent compounder has been supplying formulations specially designed for thermal breaks, which have gradually become an indispensable part of aluminium framing.

These thermal strips are NF certified, which attests of their constant performance and durability, thus addressing the highest demands of aluminium window designers and manufacturers.

The existing Benvic ER019 product line has been NF certified for the last 8 years and is available in 4 colours (black and anthracite, but also light grey and white). The products are offered as compounds (pellets) or as dry-blends (powder). The range is manufactured by the Group's three factories, to provide customers with optimal service on a European scale.

The formulations were developed to keep ahead of changing regulations, offering greater durability and further optimizing them to address specific customer needs, whether the demands relate to tooling, the increasing complexity of the profiles, the productivity requirements or the consistency of their performance over time.



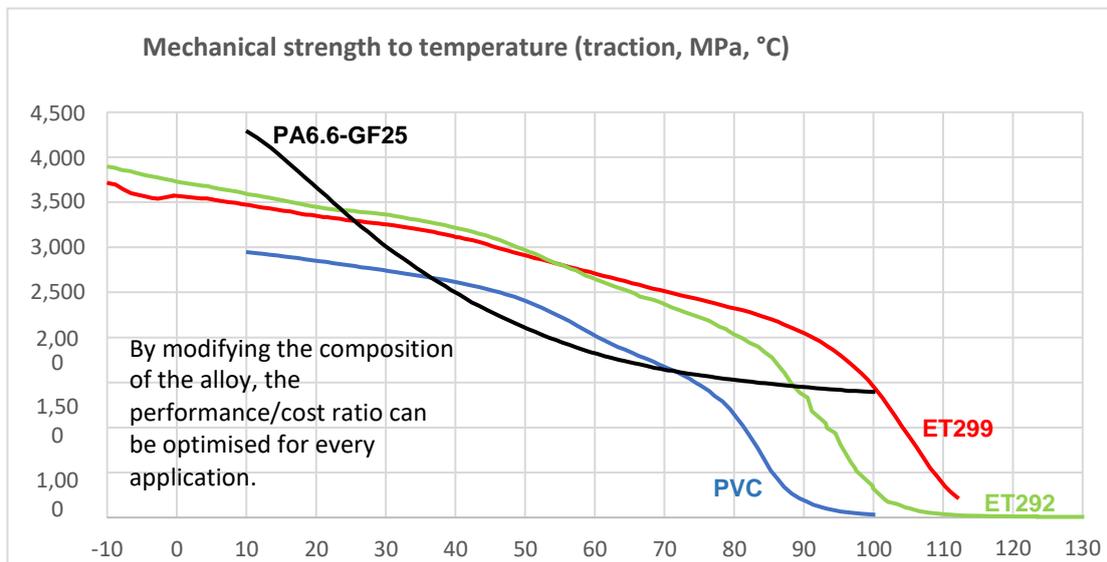
*Thermal break principle*

*Example of thermal break*

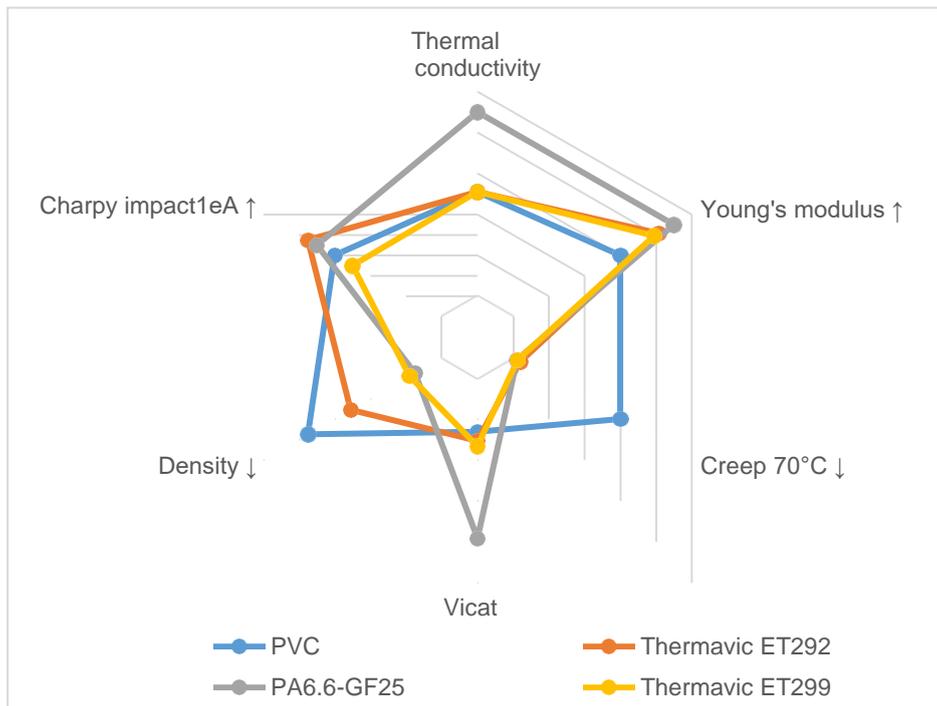
The aesthetic, environmental and regulatory environment of window frames has called for higher energy performance and larger glazed areas, meaning thermal breaks with a larger section, more heavily compartmented and capable of withstanding higher demands. To address this need, higher thermal and mechanical performances were required since PVC was reaching its limits (lower rigidity and higher creep above 70°C).

In order to enable its customers to continue to use economically advantageous thermoplastics in this more demanding environment, the R&D department of Benvic Europe worked hand-in-hand with its customers and aluminium system designers to develop a new range of heat resisting alloys, the THERMAVIC® ET290 series.

By raising the softening temperature above 90°C while increasing stiffness also at ambient temperatures, profiles made of Thermavic® ET290 will bear higher loadings and continue to maintain their performance above 70°C.



The Thermavic® ET290 series combines a higher performance level at a competitive cost with lower density, high productivity, better dimensional stability, without jeopardising the traditional advantages of our PVC solutions (in particular the very low thermal conductivity of 0.17 W/K.m, low shrinkage, co-extrusion of PVC seals, assembly by structural bonding, weatherability and resistance to water, bending, machining, painting). This range of alloys was designed to be processed on existing PVC tools, although minor tool adjustments may be needed to optimize productivity or versatility. As always, profiles reaching the end of their life cycle and production scraps can be reused after grinding in several production cycles, giving the material a life span of more than 50 years.



Thermavic® ET290 has successfully passed positive evaluations by CSTB (ET292/0900, black) with regards to the NF252 standard. It is already available in black, white as well as RAL 7037 and 7040 grey. Thermo-mechanical data is available upon request to simulate mechanical strength and optimise the design of profiles (maintaining the strength of the PVC profile while reducing thickness and weight for example).