

Deliver the value in braking

ECO+ solutions in an extended range of applications by outstanding properties of Arnitel® C

By Paul Habets, Dr. Paul van den Heuvel; DSM

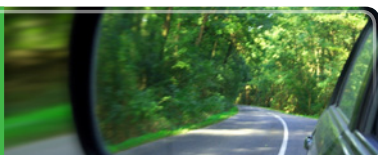
The unsurpassed high heat performance of DSM's Arnitel C thermoplastic copolyester (TPC) combined with its built-in flexibility offers significant benefits for producers of tubes and hoses - and opens up perspectives for new ecologically sound applications, replacing metals as well as other plastics and rubbers.

Driven by the need to introduce increasingly more environmentally friendly vehicles, the global automotive industry continues to seek both weight reductions and improved performance. Whilst weight reductions can be achieved through metal replacement, greater parts integration and higher material performance can also make a significant contribution, as more compact and efficient engines generate higher peak and long-term temperatures.

Arnitel C TPC from DSM Engineering Plastics is now being recognized by the industry as the material of choice for under-the-hood tube and hose applications. With the best high-heat performance of any TPC, combined with hydrolysis resistance that surpasses that of many other elastomers, Arnitel C applications are delivering significant benefits over those applications in metal, plasticized polyamide (PA) and rubber. In all cases, the use of Arnitel C increases design flexibility and offers the ability to reduce weight at significantly lower costs.

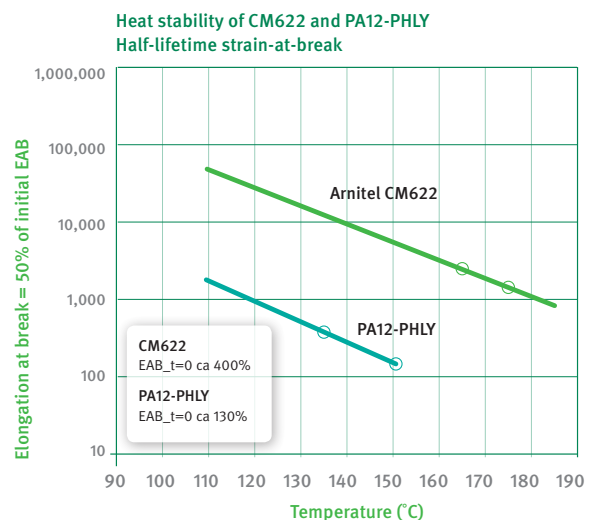
Eco+ benefits

- Weight reduction
- Plasticizer free



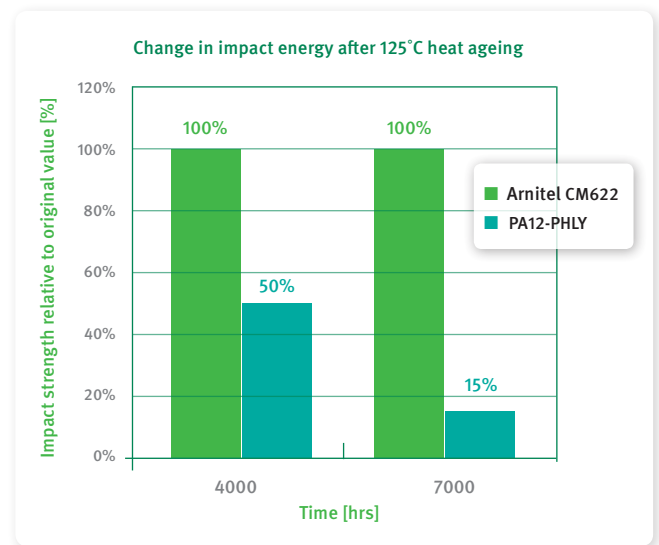
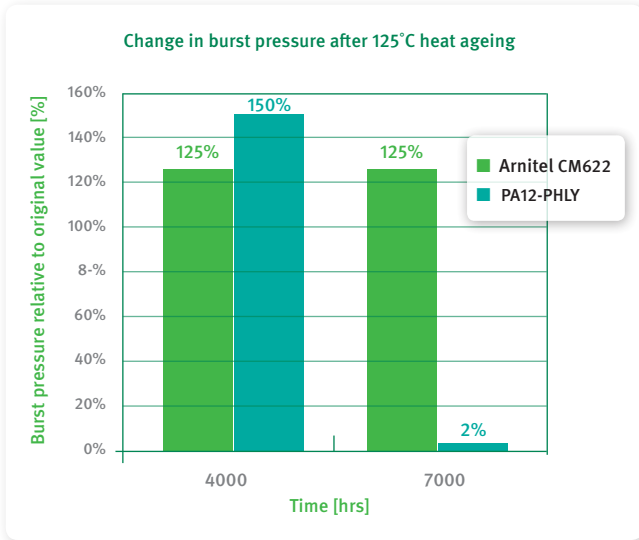
According to Dr. Paul van den Heuvel, who is responsible for Arnitel Product Development at DSM's Global Research & Technology, space under-the-bonnet is at a premium, whilst weight reduction remains crucial: "Arnitel C has the right credentials to replace metal and high temperature nylons. In applications such as vacuum hoses for brake systems Arnitel C can offer distinct advantages in terms of design freedom and lower weight."

The key benefits of Arnitel C – a continuous use temperature rating of 3,000 hrs at 175°C, with a peak temperature of 225°C, and its inherent high flexibility – make the material ideal for other applications, both in automotive and other sectors such as Heating, Ventilation & Air Conditioning (HVAC).



Arnitel C is now being introduced for under-the-hood applications, replacing PA12, PA11 and PA 6.12 as well as metals. A number of tube manufacturers and OEMs are involved in tests and new applications in both cars and trucks. Indications are that the benefits are significant.

Paul Habets, Global Segment Manager Extrusion Specialties at DSM says that although Arnitel C TPC was originally developed to replace fluoropolymers in under-the-hood high heat wire & cable applications, the material can also be used in other extrusion applications for which excellent heat resistance, flexibility and chemical resistance are required: “We believe that there may be opportunities for new pipe and tube applications away from the automotive industry, where Arnitel’s heat resistance and long-term flexibility can also help to deliver outstanding results.”



DSM has a strong track record of co-developing new applications – and the company works with many leading producers to introduce new and breakthrough applications in a large number of industries around the world. With extensive application know-how and an excellent understanding of industry needs, DSM has the facilities to innovate and adapt materials and applications.

About Arnitel C TPC

Arnitel C provides an excellent combination of superior high and low temperature performance, flexibility and good chemical resistance. Its outstanding processability enables extrusion processes with higher line speeds and better dimensional control than competitive materials.

Arnitel C offers the following benefits

- Best high heat aging properties of all TPCs
- Continuous Use Temperature 3000 hrs at 175°C
- Plasticizer free
- Excellent mechanical properties
- Very good chemical resistance

DSM Engineering Plastics

If you'd like to know more about DSM in automotive and its products please contact:

DSM in Automotive
www.dsm.com/automotive

Arnitel®
www.arnitel.com

Outperforming metal, plasticized PA and rubber

Arnitel C offers significant weight-savings compared to metal. Apart from a direct weight reduction of up to 80%, cost-effective Arnitel solutions offer greater flexibility, require no corrosion protection, or other after treatment, whilst its lower processing temperatures help to effect energy savings.

Plasticizer free Arnitel C delivers an equally impressive range of benefits over plasticized PA, ranging from unmatched mechanical properties, to higher peak and continuous use temperatures, enabling it to be placed closer to the heat source without requiring heat shields or packaging. Arnitel C is freely available and can be processed on standard equipment. Because it is plasticizer free it is fully recyclable.

Compared to rubber, Arnitel C will remain flexible throughout its lifetime with added benefits including additional weight savings, greater design freedom and full recyclability.