



Arnitel®

Thermoplastic Copolyetherester (TPC)

**Expersts in
Plastics distribution**

What are TPEs?

Thermoplastic Elastomers (TPE) combine the following properties:

- The polymer is processable like typical thermoplastics:
 - processes like: injection moulding, extrusion and blow moulding are possible
 - recycling is possible
- The mechanical properties are comparable to rubbers:
 - flexibility (low stiffness)
 - elasticity (compression set, tension set)

TPE's are not a specific class of materials but rather a property profile that might be obtained through different concepts!

Types of Arnitel®

Type Arnitel	Soft block	Major properties
Arnitel E	polyether	Good mechanics, general purpose.
Arnitel P	polyether	Good low temperature properties. Good water vapor transmission.
Arnitel UT	polyether	Very good water vapor transmission.
Arnitel U	polyether	Very good heat resistance.
Arnitel C	polycarbonate	Very good heat + hydrolysis resistance.
Arnitel ECO	Biobased SB	Biobased Arnitel.
Arnitel XG	polyether	Halogen free flame retardant.

Arnitel® Key Properties - 1

Property	Features
Elasticity	Arnitel is one of the most elastic TPEs. Its hysteresis loop is small compared to e.g. TPU
Thermal properties	Arnitel retains its mechanical properties at very low temperatures of -45°C right up to 150°C
Yield stress	Arnitel can withstand very high burst pressures and retains its properties better at higher temperatures than competitive materials
Fatigue resistance	Arnitel has out-standing resistance to flexural fatigue both at high temperatures (ex. Up to 150°C) and sub-zero temperatures (ex. -45°C).
Heat ageing	Arnitel E types show a good resistance in heat ageing tests. The Arnitel C series shows outstanding heat ageing properties.
Chemical resistance	Arnitel has very good chemical resistance, especially to automotive greases and oils, but also to household chemicals.

Arnitel® Key Properties - 2

Property	Features
Fungus resistance	Arnitel is not attached by fungi easily, while many TPUs show this problem. This makes Arnitel an excellent choice for outdoor applications.
CO2/O2 permselectivity	Arnitel shows a very low O2 permeability combined with a very high CO2 permeability.
Water vapors permeability	Arnitel is very permeable to water vapors, but it is water tight. As such it can be used in membranes for breathable clothing.
Adhesion	Arnitel can be over-molded on other plastics to give a soft-touch feel combined with good mechanical properties, and for enhancing grip to improve torsion transport.
UV resistance	Arnitel shows good UV resistance and a much better color stability than e.g. TPU.

European food contact approval

EL250

EM400, EM400-B

EM460

EL550, EM550

EL630, EM630

EL740, EM740

VT3108, VT3118

PL380, PM381

VT3104

ECO M700



Fresh fruit and vegetable packaging

* Technically also other Arnitel grades can get food contact approval

Arnitel® Regulatory aspects

Medical USP class VI approval

EL250

EM400

EM460

EM550

EM740

PL381

PL460

VT3104



Wound care



Surgical gowns

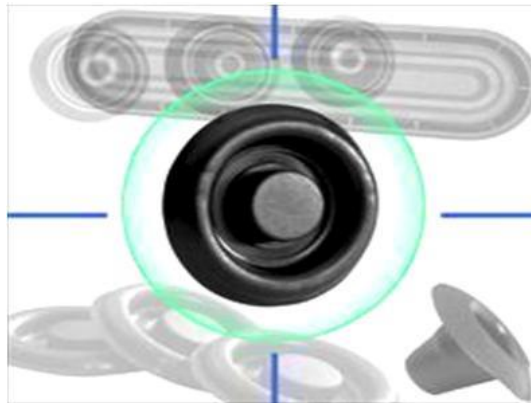
Why Arnitel[®] in food packaging applications?

- Food contact approval
- Very wide temperature range of use (freezer to oven)
- Good heat stability (good mechanical properties at very high temperatures)
- No sticking of food to Arnitel ECO
- Good oxygen permeability (color of food after cooking or smoking is dark)
- High water vapor transmission rate (no moisture in package)
- High CO₂ transmission rate (positive atmosphere in package)



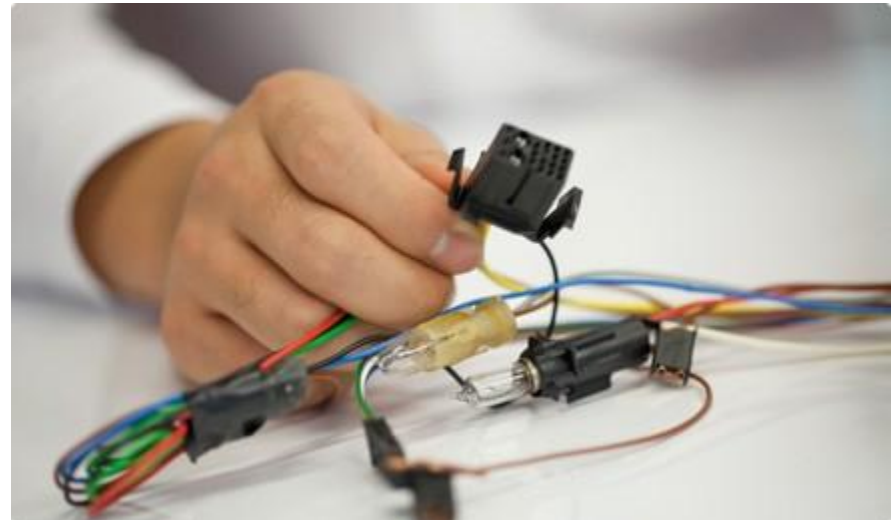
Why **Arnitel**® in automotive applications?

- Excellent low temperature ductility ensures safe deployment.
- High temperature stability; 30 minutes at 180 ° C painting line.
- Easy processing, fast cycle times
- Good fatigue properties.
- Grease, oil and fuel resistant.
- Temperature range of - 40° C to +135° C.



Why Arnitel[®] in automotive cable applications?

- Very high continuous use temperature
- Very good heat ageing properties (3000h, 150° C)
- Flame retardant (also halogen free)
- Easy processing compared to ETFE
- Low outgassing (headlamp cables)
- Grease, oil and fuel resistant.
- Temperature range of - 40° C to +135° C.



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Why Arnitel[®] in breathable film applications?

- Excellent water vapor transmission rate (MVTR)
- 100% barrier against bacteria and virus
- Good chemical resistance (sterilization possible)



- Excellent MVTR
- Waterproof.
- UV resistance
- Flexibility.
- Easy processing

nexeo[®]
solutions