



TECHSEAL

Seals and Gaskets



Reinventing sealing technology

Automotive and
multipurpose seals
and gaskets

AMORIM CORK COMPOSITES

Cork, an exceptional raw material

Cork is the outer bark of the cork oak tree (*Quercus suber* L.), the 100% natural plant tissue covering the trunk and branches.

It consists of a honeycomb-like structure of microscopic cells filled with an air-like gas and coated mainly with suberin and lignin. One cubic centimeter of cork contains about 40 million cells.

Cork is also known as "nature's foam" due to its alveolar cellular structure. It has a closed-cell structure making it lightweight, airtight and watertight, resistant to acids, fuels and oils, and impervious to rot.

It is sustainably harvested by specialized professionals without damaging the trunk, thus enabling the tree to grow another layer of outer bark that, in time, will be re-harvested. Over the course of the cork oak tree's life, that lasts 200 years on average, the cork may be harvested around 17 times. This means that cork is not only a natural raw material, it is also renewable and recyclable.



Cork cell microscopic view.

Thermal resistance



Controlled side flow - less extrusion, good conformability



Elasticity - good load transfer



Impermeable to gases



Impermeable to liquids



Chemical resistance



Performance



Sustainable

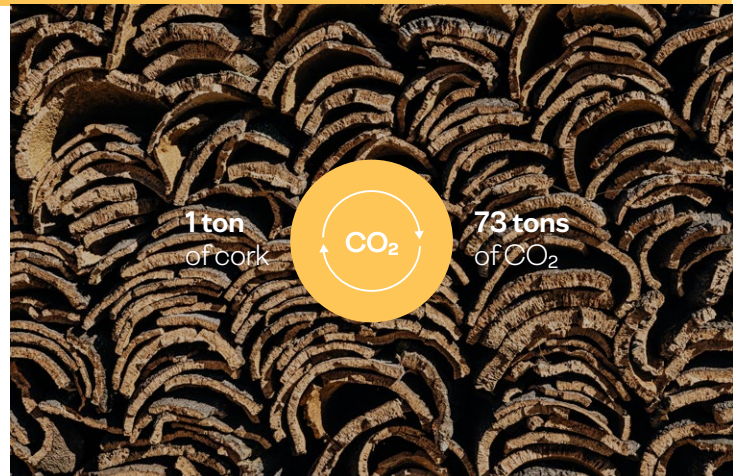


Cork, sustainable by nature

Cork forests are important natural carbon sinks. It is estimated that for each ton of cork produced, the cork oak forest sequesters up to 73 tons of CO₂*.

These forests, which have a recognised protection status, contribute to climate regulation, are the driving force of sustainable development and play a central role in the ecological balance of the planet. In this way, cork is a naturally sustainable raw material, like no other.

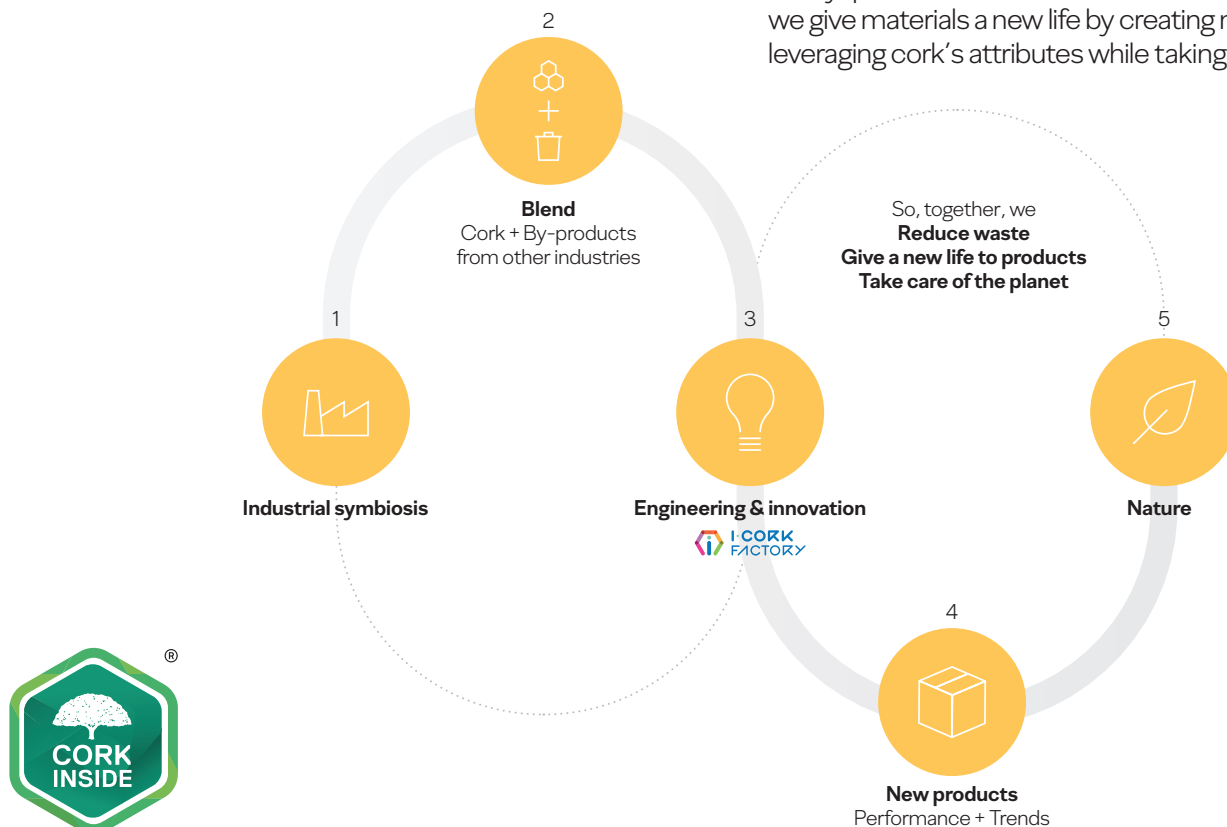
* Source: Instituto Superior de Agronomia (ISA), 2016



The circular economy at the heart of innovation

At i.cork factory, our innovation hub, we achieve the perfect match between performance and sustainability. New, innovative and high performance products from the circular economy are arising.

With cork at the core, blended with other materials, that are by-products from other industries (industrial symbiosis), we give materials a new life by creating new products leveraging cork's attributes while taking care of the planet.



When cork isn't so visible, the Cork Inside seal guarantees that the product contains cork in its formulation, a 100% natural and recyclable material with unique technical properties. Cork Inside formulations combine cork with other materials and are developed and rigorously tested by Amorim Cork Composites' innovation and engineering teams. Cork Inside responds to stringent requirements and guarantees the needed performance required for the application.

Materials & Applications

Automotive

Seals and gaskets Powertrain sealing materials



Multipurpose Seals and Gaskets

Gasket materials for applications that include electric & electronic enclosures, natural gas & LPG, heavy duty diesel, industrial and small gasoline engines



Techseal solutions for the best sealing performance

Amorim Cork Composites has many years of experience in providing sealing solutions to numerous industries, supplying engineering support during product development, giving a global advantage when it comes to designing sealing systems, allowing an overall optimised sealing solution for our clients.

Main advantages

Temperature

Wide range of thermoset polymers and blends are used ranging from SBR, NBR, EVA, ECO, ACM and VMQ to obtain specific temperature resistance.

Fastener

Fewer and lower grade fasteners allow for lower bolt torques due to material's low load to seal.

Flange

Material's tolerance to extreme surface finishings, such as "as cast", or high out-of-flatness flanges, such as stamped steel and plastic covers.

Sealing area

Stress ranges and reduced side flow allow choice of materials to customize sealing areas.

Medium

Designed to resist oils, fuels, gases and other lubricants as well as coolants.



Product Range

Material	Type	Density (lb/ft ³) (kg/m ³)	Hardness (pts) Shore A	Compressibility (%) (400 psi)	Tensile strength (min) (psi) (Mpa)
TS1028 ^{(2) (3) (4)}	Cork/Nitrile blend, medium loading material, used for natural gas and LPG applications	43–56 700–900	65*	25–40	145 1,0
TS1400	Cork/Nitrile blend, high performance, high loading material, suitable for fuels, bio-fuels, oils and coolants.	69* 1100*	75–90	10–22	508 3,5
TS1521	Cork/SBR blend, with outstanding low sealing stress for low loading applications. Suitable for most lubrication fluids.	35–47 550–750	50–70	35–50	116 0,8
TS7000	Cork/Silicone blend, medium loading material used for very high and low temperature resistance, exceptional resistance to coolants and acceptable resistance to most lubricants.	69* 1100*	65–80	10–30	247 1,7
TS7090 ^{(3) (5)}	Cork/NBR blend, medium low loading material used for natural gas and LPG applications.	41* 650*	50–70	30–50	290* 2,0*
TS7100 ⁽¹⁾	Cork/Nitrile blend, medium loading material, suitable for fuels, bio-fuels, and oils.	56* 900*	60–75	20–45	362* 2,5*
TS7110 ⁽¹⁾	Cork/Epichlorohydrin blend, medium to high loading material, exceptionally suited for fuels, bio-fuels, as well as oils and coolants.	69* 1100*	70–85	15–30	653* 4,5*

* Typical value

Certifications and Approvals (1) UL157 Listed · Gaskets and Seals - requirements cover test procedures and performance criteria for the evaluation of nonmetallic gasket and seal materials for specific end products. (2) DVGW Approved · Rubber/Cork and rubber/cork synthetic fibre based gasket materials for use with gas valves, gas appliances and gas pipe work. (3) NP4464 Compliant · Cork/Rubber materials for tightness joints used in gas appliances, valves, devices and gas installation. (4) EN 30.1.1, part 6.1.1.2 Compliant · Domestic Cooking Appliances Burning Gas, Durability of Sealing Materials. (5) JIA C001 Compliant · Japanese gas appliance inspection association.



A detailed close-up photograph of a mechanical assembly. A large, dark, cylindrical component with a threaded end is visible. A rectangular block of cork composite material is seated within a groove of the assembly. Several screws and a knurled adjustment knob are also visible. The lighting highlights the textures of the metal and the cork.

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