
AMORIM TECH SEAL

Sealing



Reinventing sealing technology

Gas sealing solutions

A low-angle, close-up photograph of several polished, stainless steel industrial pipes and flanges. The pipes are arranged in a diagonal pattern, leading from the bottom left towards the top right. The background is a bright blue sky with scattered white clouds. The lighting is bright, creating strong highlights and reflections on the metallic surfaces.

AMORIM CORK SOLUTIONS

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.



Thermal resistance



Impermeable to liquids



Controlled side flow - less extrusion, good conformability



Chemical resistance



Elasticity - good load transfer



Performance



Impermeable to gases



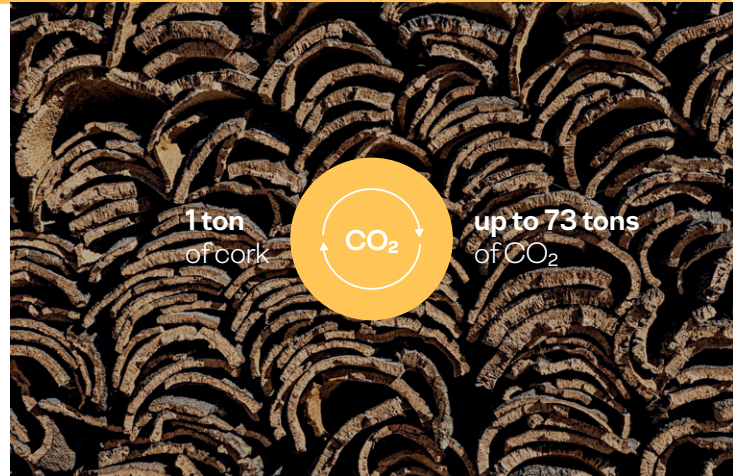
Sustainable



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 recognized 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.

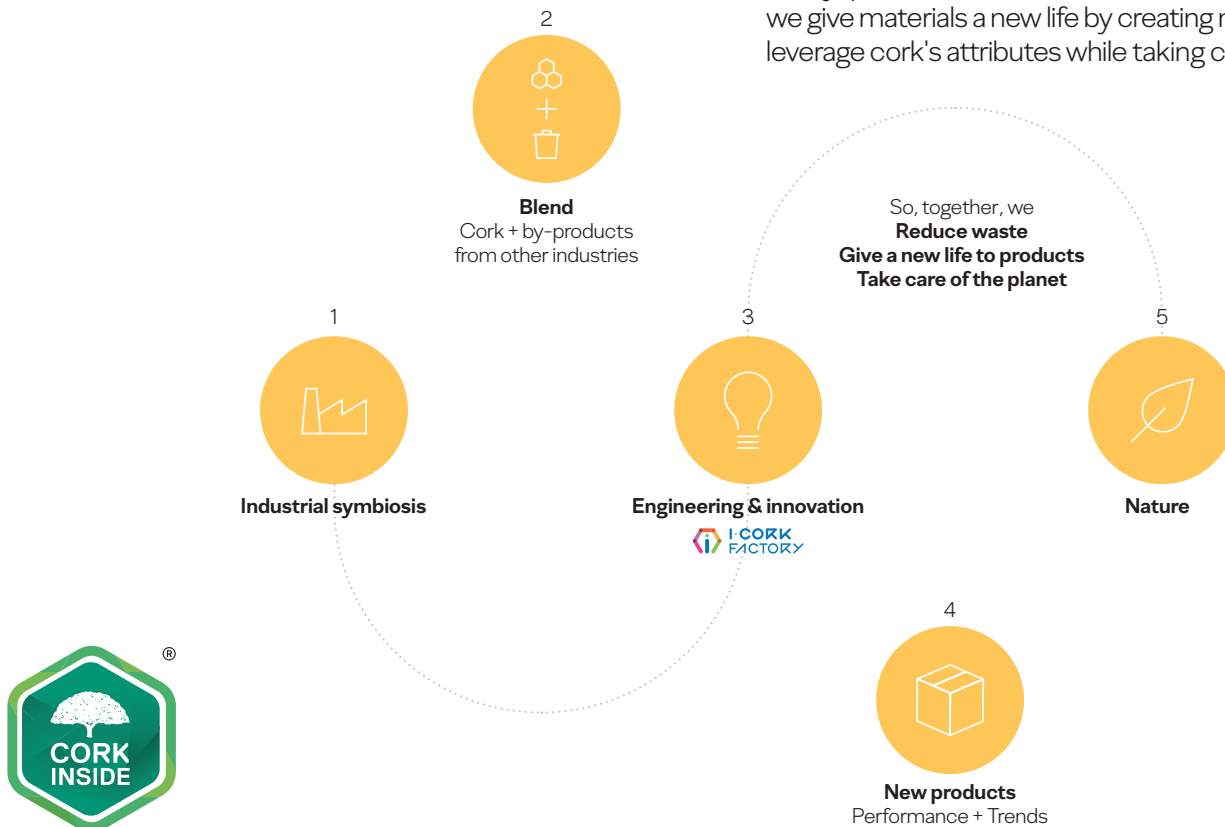


* Source: Instituto Superior de Agronomia (ISA), 2016

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 being created.

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 that leverage 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 Solutions' innovation and engineering teams. Cork Inside responds to stringent requirements and guarantees the performance required for the application.

Sealing industry

High thermal, chemical and mechanical resistance are essential characteristics of a good sealant. Cork is used in high-performance industries, whose applications are subjected to heat and pressure resistance tests.

Amorim Cork Solutions has many years of experience in providing sealing solutions to high-performance industries, supplying engineering support during product development, giving a global advantage when it comes to designing sealing systems.

Amorim Tech Seal is a range of engineered sealing materials based on soft gasket technology, specifically designed and tested to withstand applications in several environments while providing final product customization and manufacturing options.

We use cork and rubber solutions to produce suitable materials for sealing, ensuring the prevention of gas leaks or the entrance of external elements in the sealing systems.

Industries & applications*

Gas

Gas meters, gas sensors, gas regulators



Compatible gases

LPG and natural gas

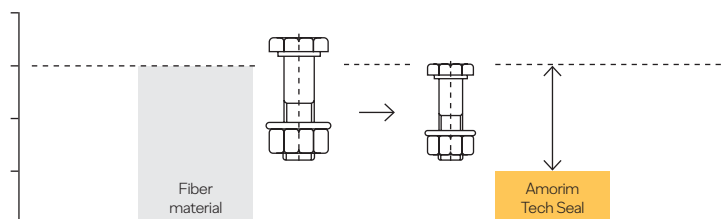


Main advantages

Load-to-seal

Lower load-to-seal delivers hardware gains, such as optimized hardware designs including lower grade or smaller size fasteners, resulting in lower torques which also benefit from lower distortion issues and safer fastener working ranges.

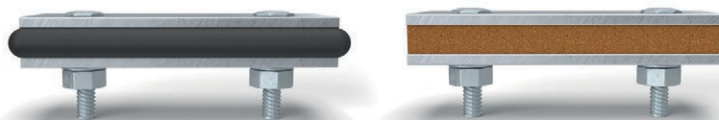
Load-to-seal



Controlled side flow

No allowance need to be made for side flow if a cork rubber material of the correct firmness is selected. The compressability of cork-rubber can be used instead of non-compressible molded rubber o-rings.

Controlled side flow



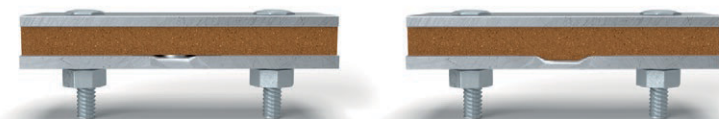
Compressed rubber material, with side flow

Compressed Amorim Tech Seal materials, without side flow

Conformability

Tolerance to extreme surface finish conditions and high out-of-flatness ranges. Large contact areas and sufficient compression ensures excellent conformability even if there are surface imperfections in the flange.

Conformability to the flange



Untorqued material with flange with deformation

The Amorim Tech Seal material conforms to the flange, after being torqued

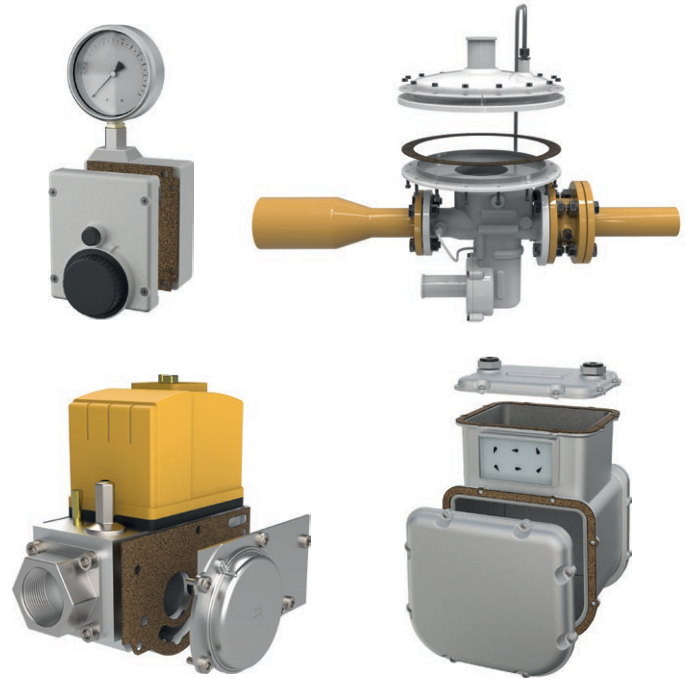
*To learn more about hydrogen sealing solutions please contact us, through our website www.amorimcorksolutions.com

Gas

Sustainable materials, that can contribute to the overall carbon reduction of systems will be a must-have for entities to achieve carbon neutrality.






In the future, natural gas and forms of low-carbon gases will be essential for sustainable energy systems, both for the automotive industry, industrial and domestic usage. Whether it is the use of natural gas combined with carbon capture, utilization, and storage (CCUS) or low-carbon gases, such as hydrogen, gas will be a key enabler for the transition to a net-zero situation.

Amorim Cork Solutions offers solutions for natural gas and LPG and is extending its portfolio for hydrogen solutions. By choosing the correct material in function of the type of gas, compressibility working range, load-to-seal characteristics, and the right thickness for the gasket, cork rubber will ensure the high performance of the application and guarantee the long-term durability of the seal.



Product Range

Gas

Material	Format	Material Description	Density (kg/m ³) (lb/ft ³)	Hardness (Shore A)	Compressibility (%) - 400 psi	Tensile strength (Mpa/psi)	Temperature range (°C / °F)
TS5500 (OR55R)	 	Cork/SBR&NBR blend, suitable for natural gas and LPG applications.	560–800 35–50	55–70	30–50	>1.03 >149	up to 90°C up to 194°F
TS1028 ⁽¹⁾⁽²⁾⁽³⁾	 	Cork/NBR blend, suitable for natural gas and LPG applications. DVGW Approved.	700–900 43–56	65–75	25–40	>1 >145	up to 125°C up to 257°F
TS7090 ⁽²⁾⁽⁴⁾		Cork/NBR blend, suitable for natural gas and LPG applications. JIA Compliant.	650* 41*	50–70	30–50	2* 290*	up to 110°C up to 230°F

*Typical value  Roll  Block

Certifications and Approvals

(1) DVGW Approved · Rubber/Cork and rubber/cork synthetic fiber based gasket materials for use with gas valves, gas appliances and gas pipe work.

(2) NP4464 Compliant · Cork/Rubber materials for tightness joints used in gas appliances, valves, devices and gas installation.

(3) EN 30.1.1, part 6.1.1.2 Compliant · Domestic Cooking Appliances Burning Gas, Durability of Sealing Materials.

(4) JIA C001 Compliant · Japanese gas appliance inspection association

For UL157 Listed materials please contact us, through our website www.amorimcorksolutions.com


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