

TECHSEAL



AMORIM
CORK COMPOSITES

Reinventing sealing technology

Automotive
and multipurpose
seals and gaskets



2019/2020 EDITION



Seals and Gaskets

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 centimetre 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 specialised 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 stripped 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



Impermeable to liquids



Controlled side flow
- less extrusion,
good conformability



Chemical resistance



Elasticity
- good load transfer



Performance



Impermeable to gases



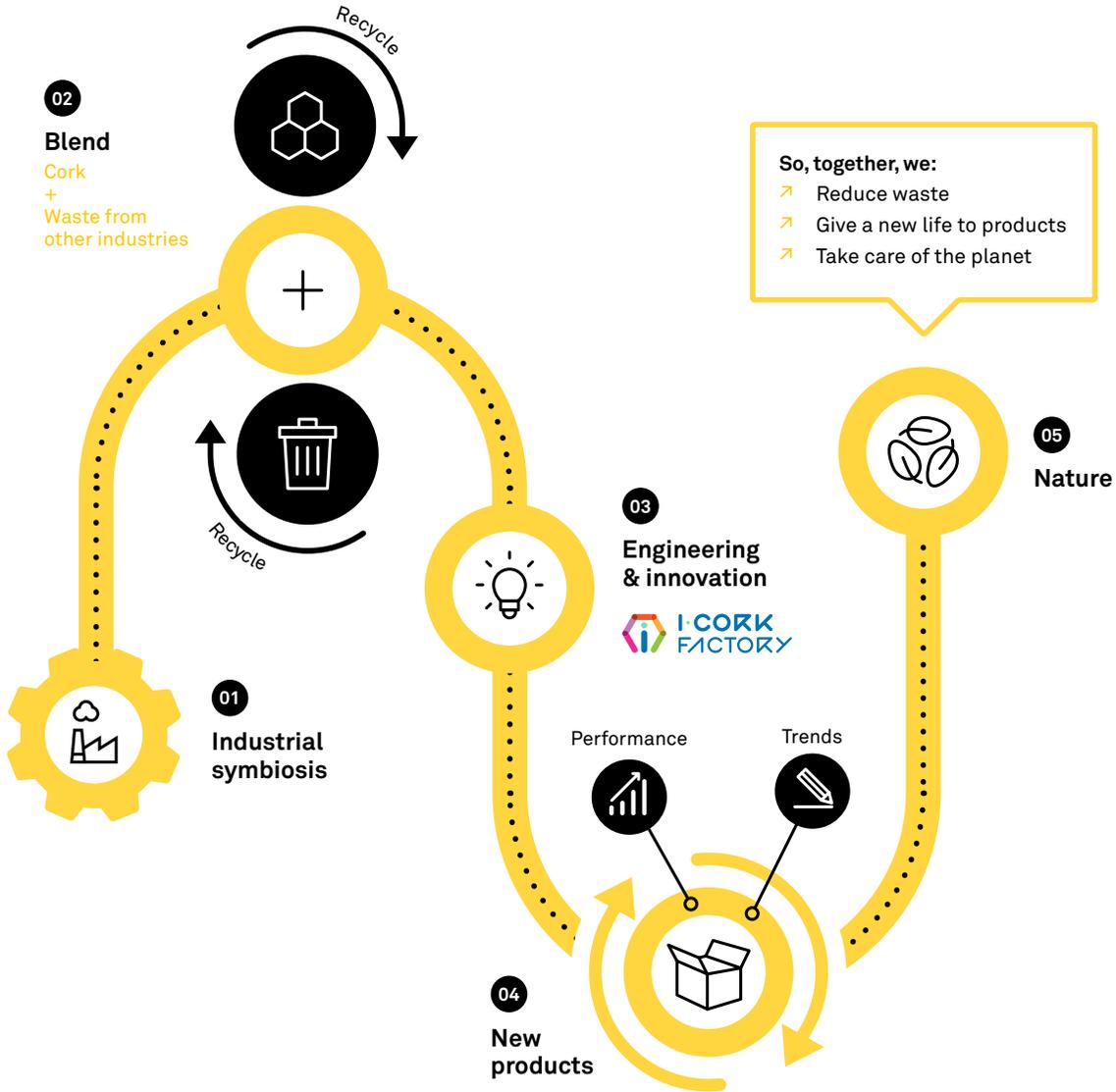
Sustainable

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 waste from other industries (industrial symbiosis), we give materials a new life by creating new products while taking care of the planet.

Over time, our expertise in cork has enabled us to create these new and high technological formulae that blend cork with other materials - thereby leveraging cork's attributes.



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.

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.

Materials & Applications



Automotive

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.

Main Advantages

Temperature

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

Flange

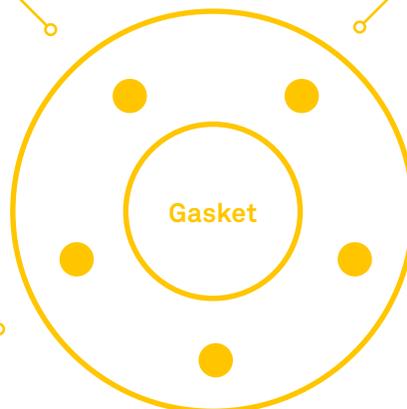
Material's tolerance to extreme surface finishings, such as "as cast", or high out-of-flatness flanges, such as stamped steel and plastic covers.

Fastener

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

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

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|---------------------------------------|--|
| (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. |

The data provided in this brochure refers to typical figures. This information is not intended to be used as a purchasing specification and does not imply suitability for use in any specific application. Failure to select the proper product may result in either product damage or personal injury. Please contact Amorim Cork Composites regarding recommendations for specific applications. Amorim Cork Composites expressly disclaims all warranties, including any implied warranties of merchantability or of fitness for any particular purpose. Amorim Cork Composites shall not be liable for any indirect, special, incidental, consequential or punitive damages as a result of using the information listed in this brochure, any of its material specification sheets, its products or any future use or re-use of them by any person or entity. **For contractual purposes, please request our Product Specifications Sheet (PDA).**



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