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# AMORIM T&D

Power Industry



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## Reinventing the power industry

Sealing, noise  
& vibration control

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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.



Cork cell microscopic view.

Elasticity and flexibility



Impermeable to liquids



Vibration control



Thermal resistance



Chemical resistance



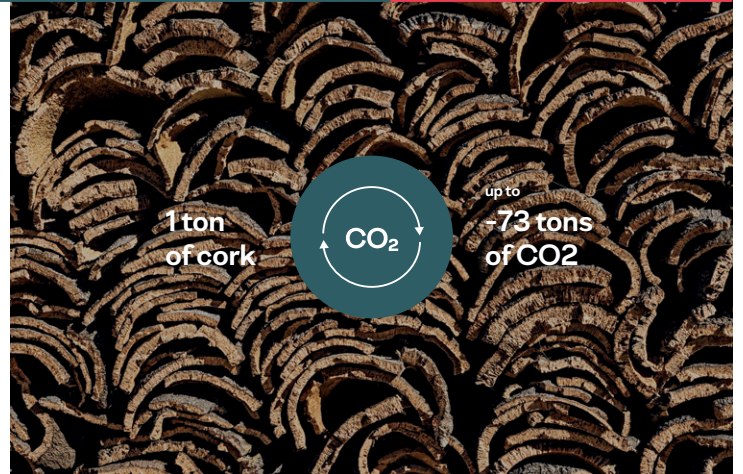
Shock absorption



# 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 CO<sub>2</sub>\*.

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.

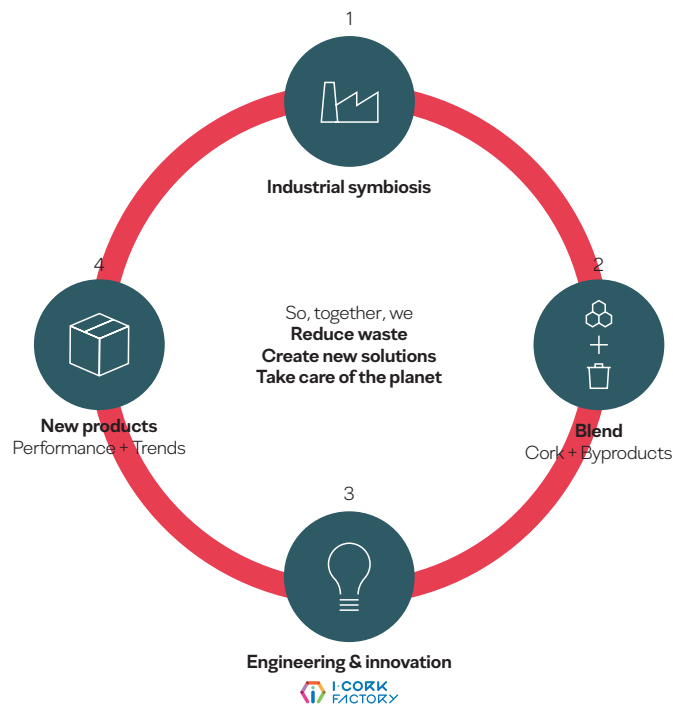


\* Source: Instituto Superior de Agronomia (ISA), 2016

# 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.

# Transmission & distribution industry

**Critical power infrastructure depends on materials that ensure safety, efficiency, and long-term reliability.**

**In transmission and distribution equipment, material engineering directly supports operational performance.**

With more than four decades of experience supplying advanced materials and gasket solutions to the transformer industry, Amorim Cork Solutions channels its technical expertise into a brand fully dedicated to the power transmission and distribution sector.

Amorim T&D delivers engineered sealing, noise, and vibration control solutions developed and validated for demanding electrical applications.

Specified worldwide in transformers, reactors, bushings, and other essential T&D equipment, its materials contribute to durability, stability, and reliable performance in rigorous operating environments.

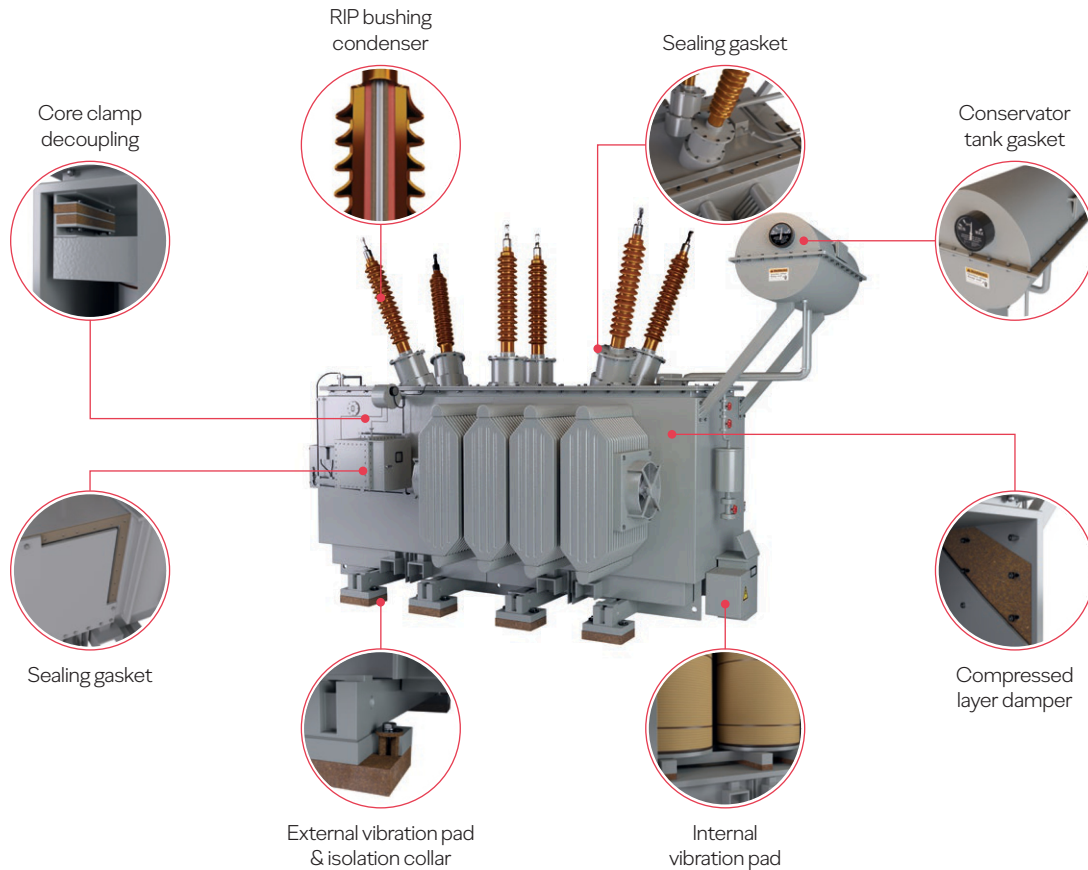


# Applications

Amorim T&D materials are used in both oil-filled and dry-type transformers, addressing the specific technical requirements of each design.

Solutions include sealing gaskets for tanks and covers, vibration control components that help mitigate structure-borne noise, and RIP bushing inlays designed to support dimensional stability and electrical insulation integrity.

## Oil transformers



## Dry transformers



# Sealing

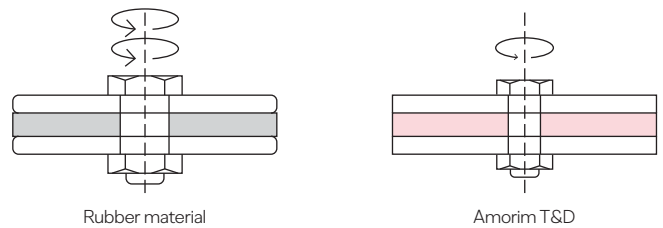
Amorim T&D sealing materials are developed to meet demanding application requirements while enabling flexible and efficient manufacturing processes.

Engineered from optimized blends of cork and carefully selected elastomers, these compounds deliver reliable sealing performance across a wide range of power applications.

## Main advantages

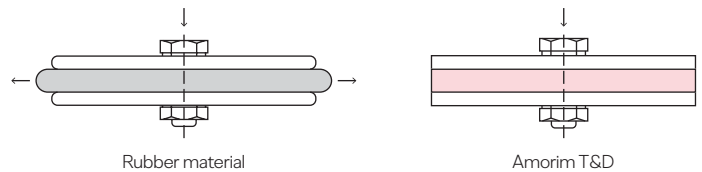
### Lower load-to-seal

Cork-rubber achieves sealing at lower loads than conventional rubber materials, enabling the use of smaller fasteners, lower tightening torque, reduced flange distortion, safer fastening conditions, and overall hardware efficiency gains.



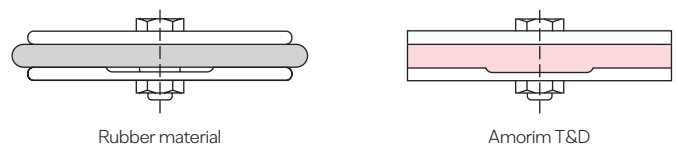
### Controlled side flow

While conventional rubber materials are largely incompressible and require lateral space to accommodate volume displacement under load, cork-rubber composites displace significantly less volume due to cork's internal compressibility and lower Poisson's ratio.



### Conformability

Cork-rubber offers improved conformability compared to conventional rubber materials, adapting to surface irregularities through inherent compressibility and maintaining consistent sealing performance under high out-of-flatness and rough surface conditions.



### Chemical Resistance

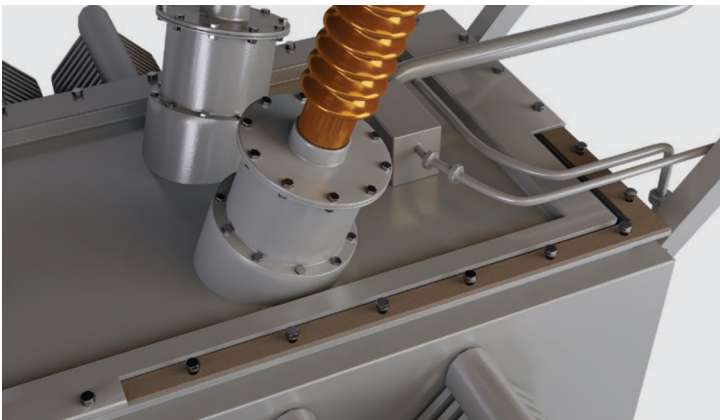
Compatible with the main insulating oils used in the T&D industry, including mineral oil, synthetic and natural ester oils, and silicone oil.

## Product range

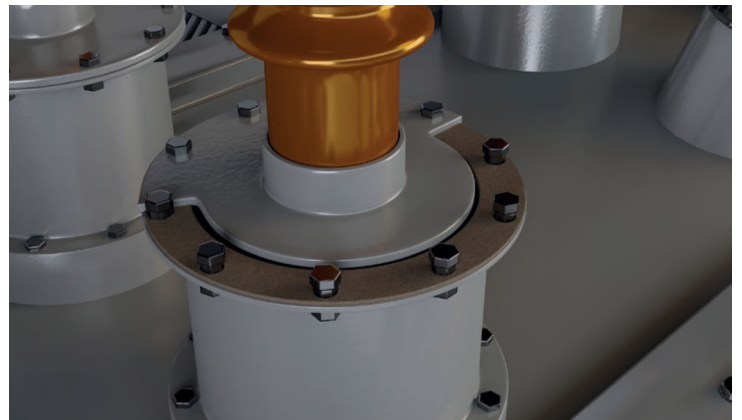
Key benefits	TD1049	TD1120	TD1310	TD7000
Temperature Range (°C)	-30–125	-40–125	-50–110	-60–175
Temperature Range (°F)	-22–257	-40–257	-58–230	-76–347
Mineral Oil	✓	✓	✓	◆
Silicone Oil	✓	✓	✓	
Ester Oil	✓	✓	✓	◆
SF6 Gas	◆	◆	◆	

\*Typical Values ◆Suitable ✓Recommended

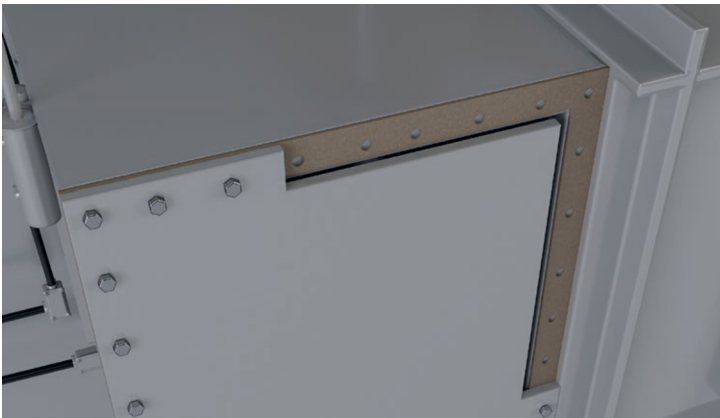
### Tank sealing gaskets



### Bushing sealing gaskets



### Sealing gaskets



### Conservator tank gaskets



The Joint Q-Tool is a dedicated engineering tool that helps identify the most suitable sealing material and corresponding torque for each application. With an intuitive interface and clear visual guidance, it streamlines the selection process by enabling users to quickly determine the optimal solution based on specific application requirements.



# Noise & vibration control

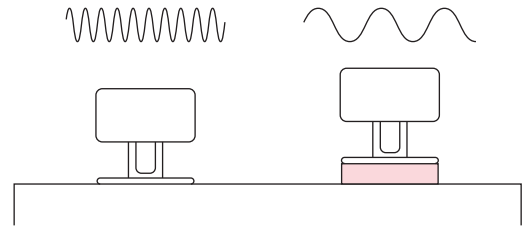
Amorim T&D's noise and vibration control solutions are designed to reduce vibration on the equipment and transmission to surrounding structures.

This contributes to quieter equipment operation, extended machine and tooling life, and longer maintenance intervals.

## Main advantages

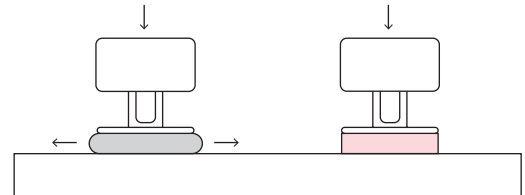
### Lower transmissibility (natural frequency)

Cork-rubber provides effective control of structure-borne noise and vibration by reducing transmissibility and shifting the system's natural frequency away from operating frequencies



### Extruded side flow

Cork-rubber's controlled compressibility limits material extrusion under load, providing dimensional stability and consistent performance without the need for additional side-flow allowances.



### Chemical resistance

Compatible with the main insulating oils used in the T&D industry, including mineral oil, synthetic and natural ester oils, and silicone oil.

## Cumulative gains in noise reduction

Through a four-step system approach, cumulative noise reduction gains are achieved, with performance varying according to the selected configuration and application requirements.

Solution	Noise reduction typical values*			
Internal Vibration Pads	1 dB–2 dB	3 dB–5 dB	6 dB–8 dB	9 dB–10 dB
Core Clamping Mechanism				
CLD - Compressed Layer Damping				
External Vibration Pads				

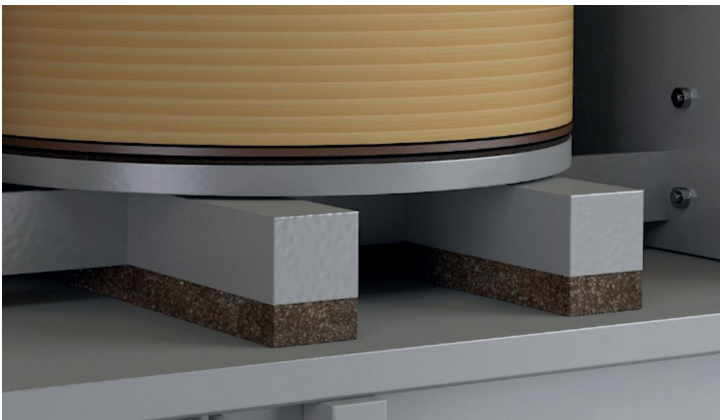
\*Typical Values

## Product range

Key benefits	VC1047	VC2100	VC6400	VC7000
Work Load Range (MPa)	0.25 to 1.0	0.5 to 1.5	0.5 to 1.5	2 to 6
Work Load Range (Psi)	36 to 145	72 to 217	72 to 217	290 to 870
Temperature Range (°C)	-25 to 120	-40 to 125	-50 to 110	-60 to 175
Temperature Range (°F)	-13 to 248	-40 to 257	-58 to 230	-76 to 347
Type of transformer	Oil	Oil	Oil & Dry	Oil & Dry
Application	External	Internal (Oil contact)	External	External

\*Typical Values

### Internal Vibration pads



### Core clamping mechanism



### CLD – Compressed Layer Damping



### External vibration pads



The Noise & Vibration Design Tool is a dedicated engineering tool that helps identify the most suitable solution to meet noise and vibration control requirements. With an intuitive interface and clear visual guidance, it streamlines the design process by enabling users to quickly determine the optimal solution based on application conditions and performance targets.



# Isolation collars

Amorim T&D's isolation collars are engineered to maintain vibration isolation performance in mechanically fastened systems.

When machinery or structural elements are bolted through anti-vibration pads, fastenings can create rigid transmission paths that bypass the isolation material.

Positioned around the bolt and used with compatible washers, the collar prevents structural-borne vibrations from being transferred through the fastening, preserving system effectiveness and ensuring reliable isolation.

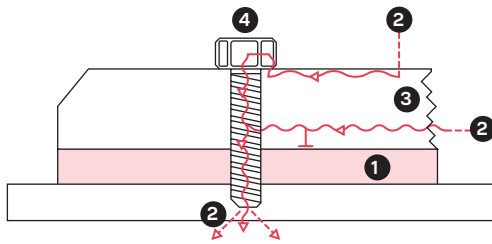
## Vibration control

Effective vibration isolation depends on the integrity of the entire fastening system.

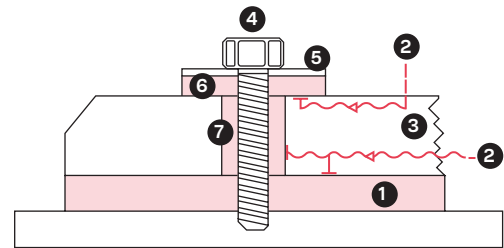
When a machine is bolted directly through an anti-vibration pad into the supporting structure, the fastening can create a rigid mechanical bridge. Even if the pad absorbs vibration, structural-borne vibrations may still be transmitted through the bolt, reducing overall isolation efficiency.

By integrating Amorim VC isolation collars and washer assembly, this unintended transmission path is eliminated.

The collar prevents direct contact between the bolt and surrounding structure, maintaining proper system decoupling and preserving the performance of the vibration pad.



1. Vibration Pad · 2. Vibrations · 3. Machine Base · 4. Bolt



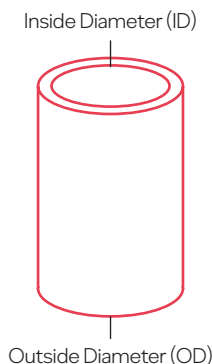
1. Amorim T&D VC pads · 2. Vibrations · 3. Machine Base · 4. Bolt · 5. Steel Washer  
6. VC1 047 isolation washer · 7. VC1 047 isolation collar

## Applications

Amorim VC isolation collars are dimensioned to match standard bolt sizes, ensuring proper fit and effective decoupling in mechanically fastened vibration isolation systems.

### Standard pack contains

- 6 collars x 50mm long
- 4 cork washers x 6mm thickness
- 4 steel washers x 3mm thickness



Bolt size	Isolation collars		Washers	
M10	ID 10mm	OD 16mm	ID 10mm	OD 30mm
M12	ID 12mm	OD 18mm	ID 12mm	OD 36mm
M14	ID 14mm	OD 20mm	ID 14mm	OD 42mm
M16	ID 16mm	OD 22mm	ID 16mm	OD 48mm
M18	ID 18mm	OD 24mm	ID 18mm	OD 54mm
M20	ID 20mm	OD 26mm	ID 20mm	OD 60mm
M24	ID 24mm	OD 30mm	ID 24mm	OD 72mm
M26	ID 26mm	OD 32mm	ID 26mm	OD 78mm

# RIP Bushing Inlays

Amorim T&D's RIP cork-rubber inlay is a purpose-engineered solution for resin-impregnated paper (RIP) condenser and bushing manufacturing.

Positioned between the conductive core and the paper insulation, it provides controlled compressibility during resin impregnation and curing, accommodating resin shrinkage and compensating for mismatched material behavior. This dimensional compliance supports insulation integrity throughout manufacturing and service life.

## Main advantages

### Prevention of cracking

Cork-rubber inlays absorb expansion and contraction throughout both manufacturing and operation of bushings, limiting stress accumulation and reducing the risk of cracking in resin insulation.

### Lower electrical losses

The dielectric characteristics of cork-rubber contribute to improved electrical field behavior within the RIP condenser, supporting reduced dielectric losses and stable electrical performance over time.

### Extended service life

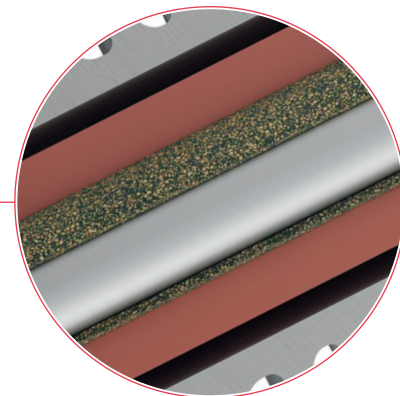
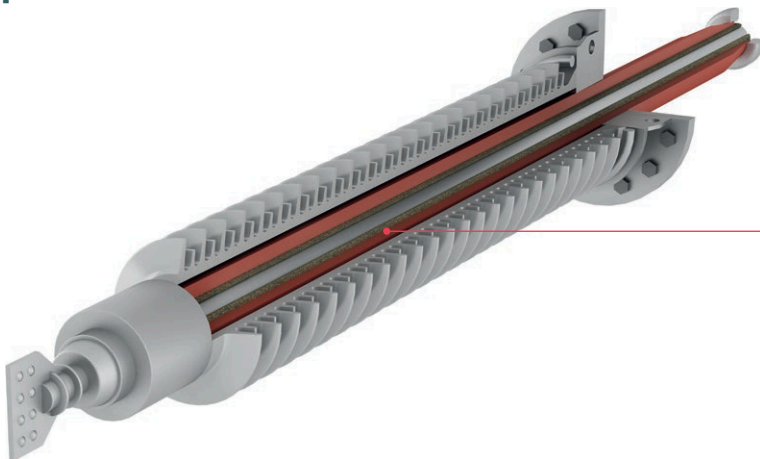
By preventing crack initiation and limiting internal stress throughout the bushing lifecycle, the cork-rubber inlay enhances long-term reliability and extends the operational lifetime of RIP condensers and bushings.

## Product range

Key benefits	RI1001	RI1002
Compressibility [%] @ 2.8 Mpa (400 Psi)	10–18	30–50
Recovery [%] @ 2.8 Mpa (400 Psi)	>80	>80
Tensile Strength (Mpa)	>4 Mpa	>1.3 MPa
Tensile Strength (Psi)	>580 psi	>190 psi

\*Typical Values

## Applications



Cork rubber Inlay

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