ACOUSTICORK

AMORIM
CORK
COMPOSITES

Reinventing construction

Long term
comfort

Construction

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.

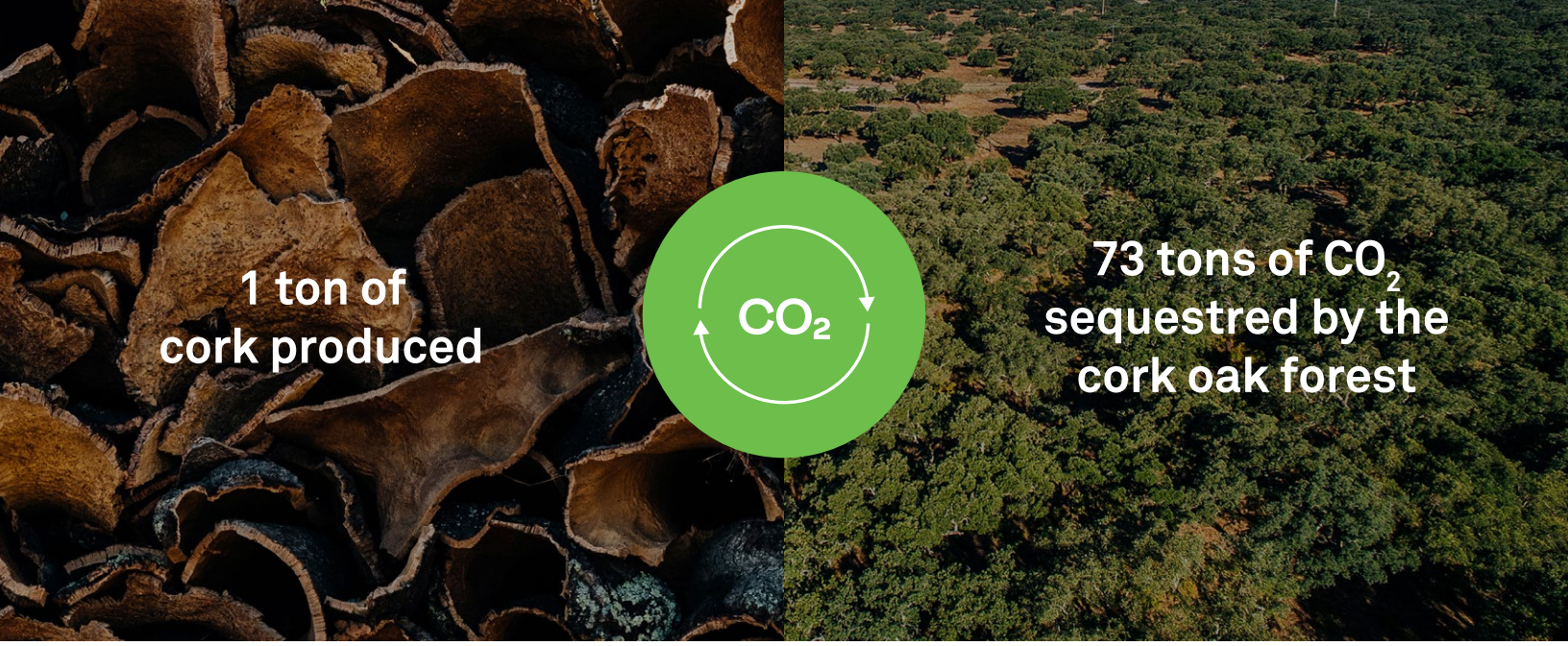
Excellent acoustic insulator

Extremely light

Excellent thermal insulator

Natural, reusable and recyclable

Good resilience
Excellent compressibility and recovery



The commitment to create a positive impact on the planet

Cork is 100% natural, reusable and recyclable, which, from an environmental, social or economic perspective, makes it one of the world's most versatile materials.

Cork oak forests, known in Portugal as "montados", support a unique and fragile ecology, and are a habitat for rare or endangered species. They are part of one of the world's 36 ecosystems that make the biggest contribution to biodiversity conservation – on a par with the Amazon, African savannah or Borneo. The cork oak forest offers ideal conditions for survival for 200 animal species and 135 plant species.

The cork oak forests protect against soil erosion and consequent desertification. They are a barrier against forest fires, due to cork's low combustibility, and play an important role in regulating the hydrological cycle. They also make a fundamental contribution to the air that we breathe, because they capture CO_2, which would otherwise be released into the atmosphere.

Combating Climate Change

The cork oak tree is a slow-growing species, which plays an important role in capturing CO_2, which is stored in its roots, leaves, trunk and bark (cork) throughout its life. Studies indicate that for each ton of cork produced, the cork oak forest can sequester up to 73 tons of CO_2, thus making a vital contribution to combatting climate change*. Cork products maintain this storage capacity throughout their entire life cycle, which makes it possible to reduce the carbon footprint of various cork-based products.

Positive impact on the carbon balance

Considering the cork oak forest's carbon sink effect, made possible by the cork industry, survey results demonstrate that annual carbon sequestration can be 17 times the greenhouse gas emissions of Corticeira Amorim's entire value chain*. In other words, at a time when carbon neutrality is one of society's biggest challenges to guarantee preservation of Planet Earth, Corticeira Amorim is developing an activity that has a positive impact on climate regulation, promoting much higher carbon sequestration levels than its CO_2 emissions.

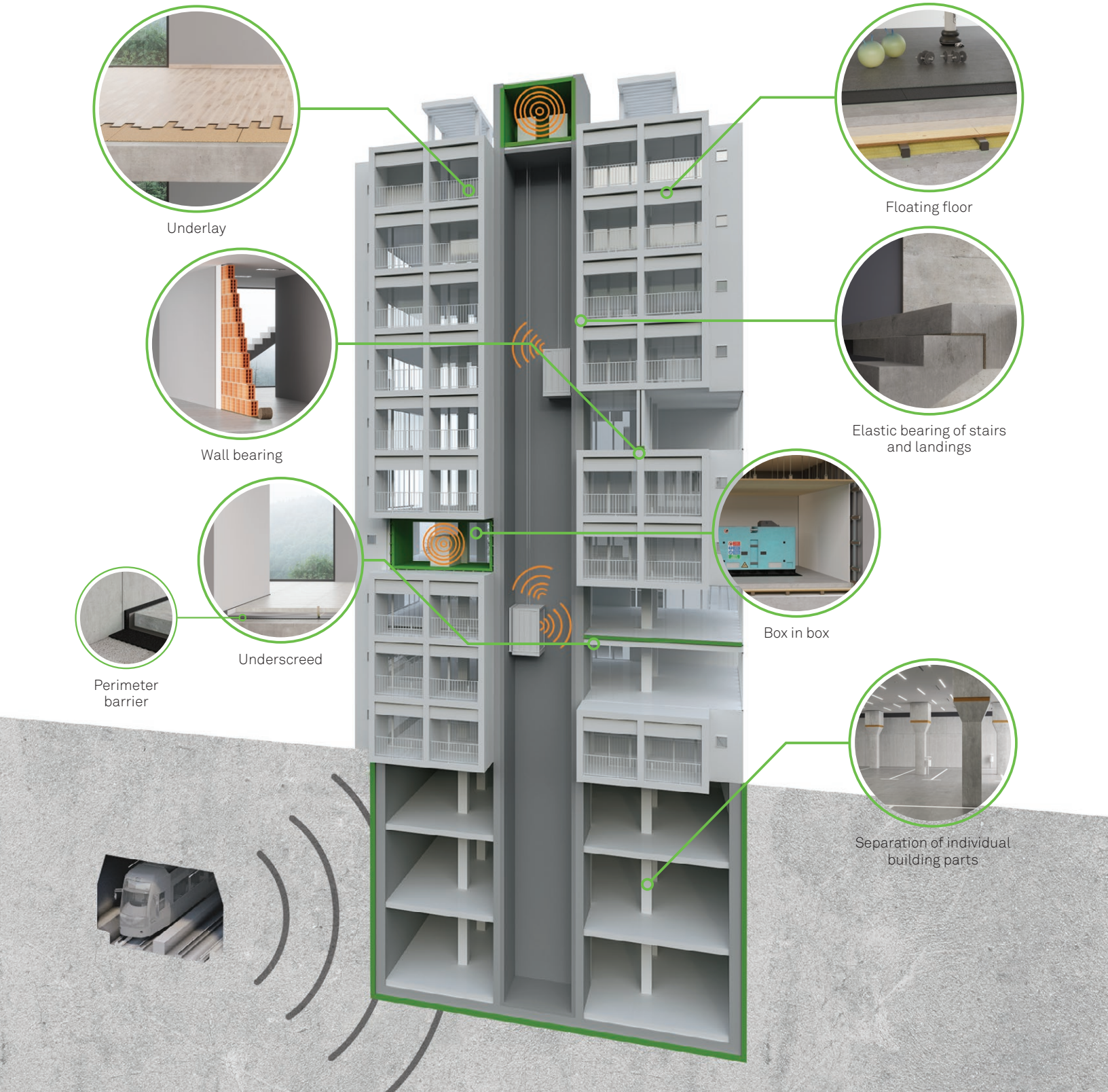
* Source: Instituto Superior de Agronomia (ISA), 2016 (http://uaonline.ua.pt/pub/detail.asp?lg=pt&c=45245)

Acousticork, the sound of silence

Amorim Cork Composites develops specific compound formulations for acoustic insulation and vibration isolation which offer highly insulating or dampening materials in compliance with a wide range of environmental conditions and chemical resistance levels. See below the possible applications of Acousticork materials.

Acoustic insulation

Vibration isolation



Why Acousticork?

Ensuring peace and quiet isn't a mere luxury. It's already a human need - to guarantee quality of life and work in our fast-moving era.

Fast-moving times require acoustic comfort

Growing urbanization and rising populations in urban areas are leading to more stringent noise and vibration standards and norms. As a result there is higher demand for high-quality and efficient sound insulation and vibration isolation (from internal or external sources in each building).

Every day, new buildings are being erected on plots of land subject to vibrations, in areas with dense infrastructures. Sources of disturbance are often located near railway lines, roads or industrial complexes. Unless appropriate action is taken, buildings are defenceless against such vibrations.

Many apartments blocks also have underground car parks, commercial establishments on the ground floor (such as a shopping mall) or even a gym on an intermediate floor. In these situations, various factors may subject buildings to shocks, which have an impact on their structure and are perceived by residents as noticeable vibrations or secondary airborne noise.

Acousticork natural base materials for demanding applications

Amorim Cork Composites develops specific compound formulations for acoustic insulation and vibration isolation which offer highly insulating or dampening materials in compliance with a wide range of environmental conditions and chemical resistance levels.

Cork absorbs energy due to its unique compressibility and recovery characteristics, yielding higher loss factors that are essential for the dampening function. Cork's extremely low Poisson Ratio improves the behaviour of such materials in dynamic loading applications. Cork also brings durability to the applied solution.

Durability and warranty

The Acousticork products have a warranty for 10 years. For the underscreed materials, this is sustained by extrapolated compressive creep measurements carried out using the procedure described in EN 1606: 2013 standard.

CORK INSIDE®

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.

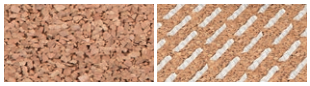
Cork Inside formulations combine cork with other materials and are developed and rigorously tested by Amorim Cork Composites' innovation and engineering teams. **Cork Inside** responds to stringent requirements and guarantees the needed performance required for the application.

Underlay

Acousticork has solutions for different types of final flooring.

When a thicker solution is not an option, Acousticork offers high performance with reduced thickness: This durable and long-term resilient underlay will protect your floor:

- Compatible with underfloor heating systems;
- Suited for levelling out localized uneven areas i.e. suitable for application in existing floors;
- Compatible with underfloor heating systems;
- Able to withstand repeated loads of short duration;
- Resistant with very heavy loads at rest;
- Compatible with laminate boards with click-lock systems.

Floor Covering		T61		T66		T22
						
Laminate [1]	Thickness	2 mm		3 mm		-
	ΔLw [4]	20 dB		19 dB		
	IIC [5]	54 dB		47 dB		
Glue down wood	Thickness	3 mm	3 mm perforated	3 mm		4 mm
	ΔLw [4]	26 dB	18 dB	16 dB		20 dB
	IIC [5]	59 dB	51 dB	50 dB		49 dB
Ceramic [2]	Thickness	5 mm		3 mm	4,5 mm	-
	ΔLw [4]	16 dB		16 dB	18 dB	
	IIC [5]	50 dB		51 dB	52 dB	
Resilient [3]	Thickness	-		3 mm		
	ΔLw [4]			19 dB		
	IIC [5]			61 dB		

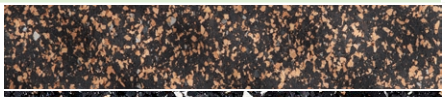
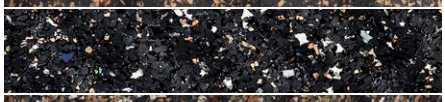
(1) Non glued
(2) Or natural stone
(3) LVT, vinyl, etc.
(4) Test procedure according to ISO 10140-1:2010; ISO 10140-3:2010; ISO 10140-4:2010 and ISO 717-2:2013 standards. Test Apparatus: 140mm concrete slab + underlay + floor covering.
(5) Test procedure according to ISO 10140-1:2010; ISO 1040-3;2010 and ISO 10140-4:2010 standards. Test Apparatus: 140mm concrete slab + underlay + floor covering.

Underscreed

Acousticork ensures high impact noise insulation in flooring screed applications.

Cork brings static stiffness (and higher load capacity) to the undercreed mat, without a negative impact on its dynamic stiffness.

A cork-based underscreed guarantees the performance durability of the system equipped with this mat.

Product		Thickness (mm)	ΔLw (dB) (1)	IIC (dB) (2)
U85		3	21	50
U85		4/2	23	52
U34C		6/3	24	50
U34C		8/4	26	50
U36*		6/3	25	53
U36*		8/4	27	53
U38*		12/6	26	61
U38*		17/8	31	63

*CE

The **green solution** for your projects. Cork is natural, reusable and recycable.

The perfect solution to strike a balance between energy efficiency, acoustic and thermal comfort, affordability and sustainability.

Product		Thickness (mm)	ΔLw (dB) (1)	IIC (dB) (2)
U32		6/3	20	48
U32		8/4	21	42
U32		10/5	22	47

(1) Test procedure according to ISO 10140-1:2010; ISO 10140-3:2010; ISO 10140-4:2010 and ISO 717-2:2013 standards. Test Apparatus: 140mm concrete slab + underscreed + 70mm screed.
(2) Test procedure according to ISO 10140-1:2010; ISO 1040-3;2010 and ISO 10140-4:2010 standards. Normalized impact sound pressure level and IIC rating determined according ASTM E492-09 and ASTM E989-06 standards. Test Apparatus: 140mm concrete slab + underscreed + 70mm screed.
(3) Test procedure according ISO 9052-1 and ISO 7626-5 standards.

Wall Bearing

Acousticork prevents low frequency propagation on the wall/floor interface.

It also increases the lifetime of the building, avoiding the appearance of cracks due to decoupling of elements.

MS-R0
Cork and Recycled Rubber

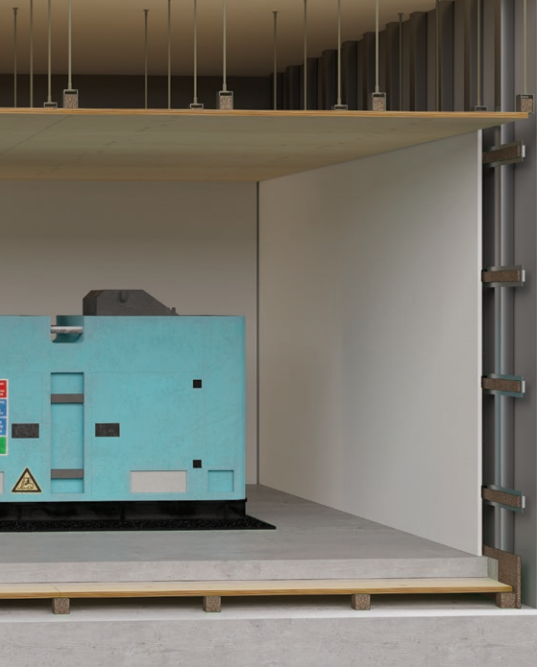
MS-R1
Recycled Rubber

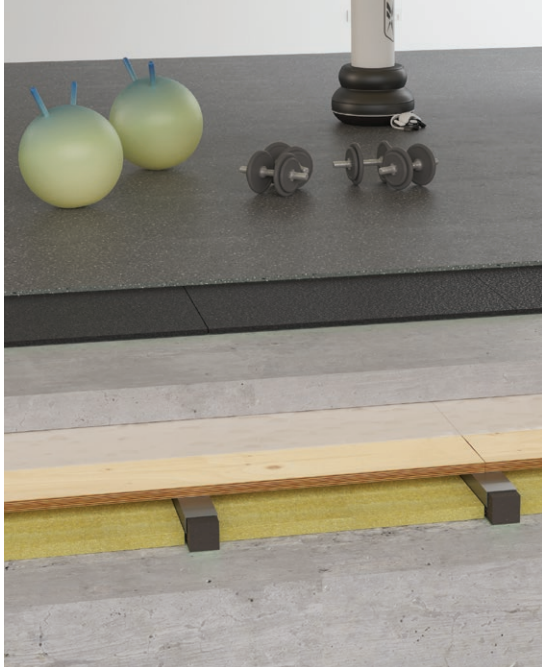
MS-R2
Cork Recycled Polyurethane

Load range (MPa)

Materials available with different backings, such as double-sided tape, aluminium or polyester film.

* at <50% Deflection ** at <25% Deflection

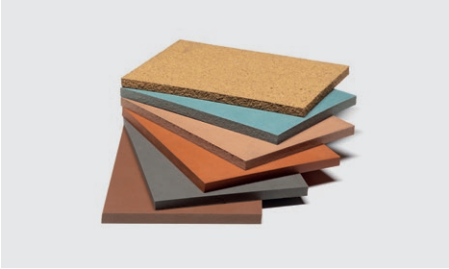




Vibration Isolation

Acousticork's specific material formulations for vibration control combine performance with environmental concerns.

Cork & Natural Rubber Engineered Compound



Features
- Dynamic-to-static stiffness ratio (1,3–2,5)
- Low damping
- Low creep
- Low water absorption

Benefits
- Low resonance frequency
- Long term durability
- Can be used in mats, strips or pads and with different backings, such as double-sided tape.

Resin Bonded Cork & Recycled Rubber

Features
- Dynamic-to-static stiffness ratio (2–3,5)
- High damping
- Low Poisson ratio (no shape factor dependency)
- Recycled products

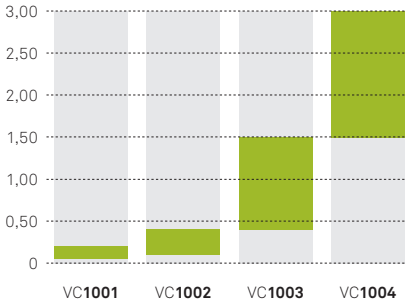
Benefits
- Lower amplification at resonance
- Long term durability
- Good Quality/Value ratio
- Can be used in pads

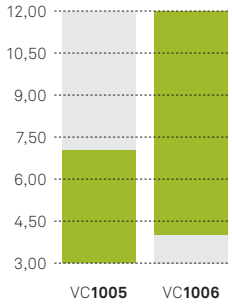
Resin Bonded Recycled Rubber

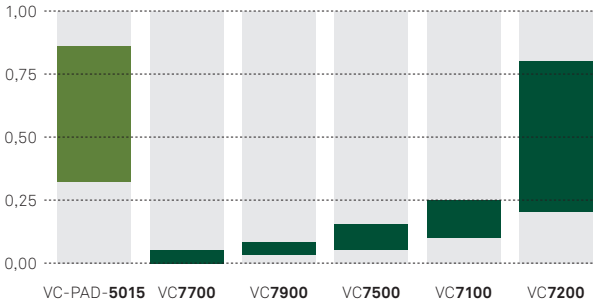
Features
- Dynamic-to-static stiffness ratio (2–3)
- Low damping
- Recycled products

Benefits
- Long term durability
- Good Quality/Value ratio
- Can be used in mats and strips

Work load range (MPa)







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ACOUSTICORK solutions are tested at ITECONS in a highly qualified environment.

ITeCons

www.itecons.uc.pt

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