



CORK
CONCEPTS

Acoustic Cork Manual



Effective sound control and thermal insulation
underlay

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Acoustic Cork

Acoustic Cork has been recognised in the building industry as one of the most effective sound control and crack suppression underlays. Throughout the United States, Canada, Europe and now New Zealand residential and high rise complexes are using Acoustic Cork to reduce unwanted noise.

Acoustic Cork comes in both rolls and sheets made from agglomerated cork pieces baked and bound together. Cork is the natural outer layer of the Quercus Suber Oak tree, which abounds in Portugal. Cork's amazing thermal and acoustic insulation qualities are due to its unique cellular structure.

Features and Benefits

- The unique cellular construction of cork, consisting of approximately 40 million air filled cells per cubic centimetre is the secret. The entrapped air serves as a very effective noise barrier while providing natural resilience and great insulation values.
- The low density (10-12lbs) natural composition cork provides the best sound deadening resiliency and durability. Its low weight provides thermal insulation as well and is easily and economically applied. It also gives stress crack protection for ceramic tiles and hardwood flooring.
- Acoustic Cork should be used in buildings where it is necessary to reduce noise transmission from floor to floor or from room to room, such as in apartment blocks, schools, hotels and offices.
- Acoustic Cork deadens the impact noise, such as that made by high heel shoes on hardwood floors, ceramics, marble or stone flooring.
- In addition, cork is environmentally friendly because it is one of nature's few renewable resources. Cork oak bark is harvested in nine year cycles with mature trees living up to 250 years. Unlike synthetic man-made underlays, cork cells do not break down or lose their natural resilience even after years of heavy use.
- With Acoustic Cork you are guaranteed consistent thickness of the sound control underlay without trowel levelling of products mixed on site. The consistent thickness ensures a quality sound rated floor system.
- The cork sheets can be laid over any type of sub-floor as well as under ceramics, vinyl timber marble, natural stone or carpet.

Acoustic Insulation

Whether you want to act on the impact sound or on the step sound there are several Acoustic Cork solutions to help you trap those unwanted noises. In Europe there are two sound transmissions that can be measure in a building: the impact sound transmission and the airborne noise transmission. The first one measures the reduction of noise from room to room by impact to the floor such as a woman's high heels or a hard sole shoe. Building codes vary from country to country but usually require a minimum value of 60dB for L'nw. The second one measures the reduction of air-borne noise from room to room, such as music from a stereo or loud conversation.

Thermal Insulation

Acoustic Cork products are known for its ability to provide thermal efficiency to most types of floors. They are particularly useful when used under underfloor heating systems (UFH), as they will help reducing energy consumption and increase savings on running costs.

Product Description

Agglomerated cork and recycled rubber underlayment for noise reduction, thermal insulation and crack suppression membrane under ceramic tiles.

Packaging: 915mm x 610mm * other sizes available on request

Sound Rating Methods

Sound rating methods have been established by the Federal Housing Administration (now HUD) and the National Bureau of Standards in the United States. Such comprehensive sound rating methods are now demanded by building construction regulatory bodies and agencies in New Zealand. ASTM and ISO acoustical testing methods are used as the criteria to determine acceptable sound transmission standards.

Impact Insulation Class (IIC)

Impact sound originates when one body strikes another, such as in the case of footsteps, hammering, and objects falling. Impact sound travels vertically from room to room through a structure.

Transmission of impact sound can be controlled by isolation. IIC ratings are greatly improved with the use of Acoustic Cork the higher the IIC number the better the impact insulation.

Impact Noise Rating (INR)

The single-number rating system, called the Impact Noise Rating (INR) and now been replaced by the Impact Insulation Class (IIC)

Sound Transmission Class (STC)

Sound Transmission Class (STC) is used to measure sound travelling horizontally. This kind of sound can be defined as audible, such as voices, music or any other noise not related to impact sound. STC ratings are greatly improved by the use of Acoustic Cork the higher the STC number, the better sound barrier.

Acoustic Cork Properties

Material: Natural Composition Cork

Uses: Underlayment / Acoustical / Sound Control / Stress Crack Protection / Environmental Insulation

Binder: Polyurethane

Granule Size: 1-4mm

Typical Values: Density Minimum

Kg/m³ (pcf) 184 (11.5)

Compression % 20 - 50

Recovery % up to 95

Tensile Strength (*)

Kpa (psi) L - 414 (60)

T - 276 (40)

* L - Test on the longitudinal way

T - Test on the transversal way

Acoustic Cork in 6mm thickness exceeds sound-deadening requirements for floors separating living units such as in apartment buildings, condominiums, and office towers.

Acoustic Cork is available in many different thicknesses depending on the flooring system designed and the IIC and STC ratings required.

In order to achieve the db rating specified, CSL will look at any flooring system, which needs a sound barrier, and establish which is the best type of cork underlay material to use.

Sample Specification

Install Cork Supplies Ltd Acoustic Cork (CSL AC6) according to the supplier's specifications and using the recommended adhesives and waterproofing compounds.

Carefully follow all installation instructions to ensure optimum decibel ratings are achieved.

Laying Instructions

Acoustic Cork comes in sheets or rolls. It is designed to meet building codes and apartment association requirements for floor assemblies.

1. The sub-floor must be structurally sound, clean and level. The moisture content should not be more than 2.5% by weight (74%r.h.) measured on concrete floors.
2. A Perimeter Isolation Barrier 35mm wide minimum is first installed vertically around the outside of the entire floor including any openings or protrusions such as electrical boxes, heating ducts, cold air returns columns or pipes in the subfloor installation. An isolation barrier **MUST** be installed prior to Acoustic Cork being installed.
3. The Perimeter Isolation Barrier is spot adhered with acrylic glue or a bead of silicone sealant to the backside of the barrier, below the finished surface plane.
4. Never mechanically fasten the isolation barrier with screws, nails or staples, as this will severely diminish the acoustical value of the barrier.
5. After the glued down top layer is installed, trim the barrier 2mm below the finished floor surface.

Then caulk the trimmed areas with a bead of acoustical sealant flush to the finished floor.

6. We do not recommend that the Acoustic Cork be glued to the subfloor when using laminate or wood floating floors, cork floating floors, or loose laid carpets. In all other situations the Acoustic Cork should be glued to the subfloor.

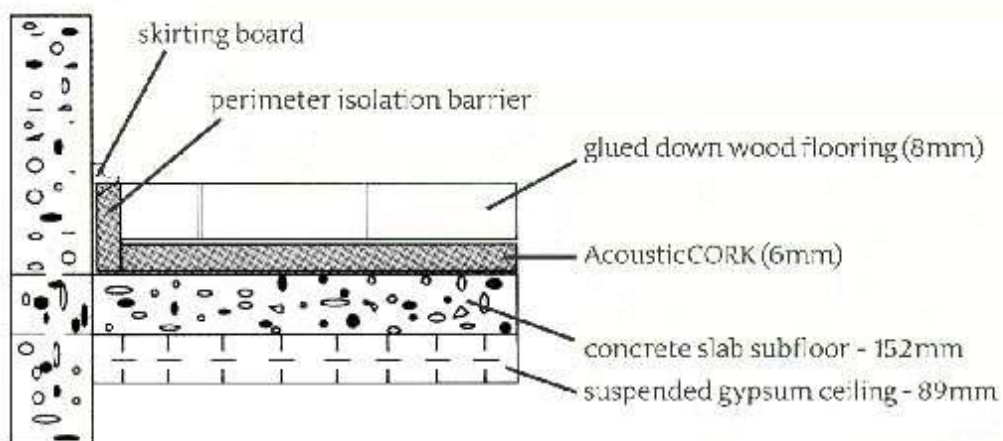
7. Cut the Acoustic Cork to the desired length and lay directly over the subfloor removing all trapped air.

8. Making sure that the cork is butted up against the isolation barrier, use a V notched trowel to apply acrylic glue to the concrete slab or substrate. Make sure all the joints are butted tight.

Never mechanically fasten the cork to the floor, as this will severely diminish the acoustical value of the cork. Tape the joints securely.

9. Now lay the Acoustic Cork. It is preferable that you wait 24 hours before installing the flooring of choice, which is glued to the cork in the case of ceramics, vinyl and some timber floors. Floating timber or floating cork floors are not adhered to the Acoustic Cork.

Acousticork



Please note:

Due to variables, Cork Supplies Ltd cannot warrant the accuracy of the values. The final material choice and determination of values is that of the specifier or buyer and depends on the entire flooring and ceiling system. Cork Supplies Ltd cannot be held responsible for results achieved.

Testing

Acoustic Cork has proven itself to be an extremely effective insulation of both impact and airborne sound from floor to floor and room to room. It has been tested according to International Standards at independent accredited laboratories for acoustical values. Such laboratories include CEBPT and CSTB (France), Riverbank (USA), SINTEF (Norway), LNEC (Portugal) and for physical properties such as “Flame spread” and “Toxics” at TUV Nord (Germany). The results are available at Cork Supplies Limited. Other tests conducted on Acoustic Cork are:

Test	ASTM Test	Result
Bond Strength	C482 Modified	PSI of 80
Structural Performance	C627-88	Residential Rating
Flame Spread	E84-91a	Class “A”
Thermal Conductivity	C177-85	R=3.125

Certifications

ICBO Evaluation Report No. 5314

A City of Los Angeles Research Report No. RR25323-

RIIVERBANK ACOUSTIICAL LABORATORIIES

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NEVA ILLINOIS 60134 FOUNDED 1918 BY WALLACE CLEMENT-SABINE

REPORT ON: Cork 6mm Acoustic Cork™ Impact Sound Transmission

Underlayment With A Floating Floor Test RAL™ IN95-41 On 6” Precast Concrete Slabs

With Suspended 5/8” Gypsum Ceiling

Test Method

Unless otherwise designated, the measurements reported below were made with all facilities and procedures in explicit conformity with the ASTM Designations E492-90 and E989-89, as well as other pertinent standards.

Riverbank Acoustical Laboratories has been accredited by the U.S. Department of Commerce, National Institute of Standards and Technology (NIST) under the National Voluntary Laboratory Accreditation Program (NBLAP) for this test procedure.

A description of the measuring technique is available separately. The serial number of the measuring microphone was 1440522.

Description of the Method

The test specimen was designated by the client as a Cork 6mm Acoustic Cork™ underlayment with a floating floor on 6" precast concrete slabs with suspended 5/8" gypsum ceiling.

The overall dimensions of the specimen were nominally 4.27m (168 in.) wide by 6.10m (240 in.) long and 416mm (16.38 in.) thick. The specimen was constructed directly in the laboratory's 4.27 m (14 ft) by 6.10m (20 ft) test opening and was sealed on the periphery (both sides) with a dense mastic.

The description of the specimen was as follows:

From the top down, the floor consisted of a 7.9mm (0.313 in.) thick floating wood floor, manufactured by Universal Flooring Limited, set on Cork 6mm (0.25 in.) thick, Acoustic Cork™ underlayment. The

6mm Acoustic Cork™ was set on a 6mm plastic vapour barrier which was laid directly on the concrete slab sub-floor. The sub-floor consisted of ten nominally 610mm (24 in.) wide by 4.23m (166.5 in.) by 152mm (6 in.) thick wire reinforced concrete slabs.

A layer of 16mm (0.625 in.) thick Type X wallboard was attached to the DWC channels.

The joints between the wall board sheets were taped and covered with joint compound.

The plenum between the sub-floor and the ceiling contained a single layer of 89 mm (3.5 in.) thick, R-11 unfaced fibreglass insulation. The weight of the entire specimen as

determined was 5,810 kg (12,810 lbs) an average of 223.5 kg/m² (45.7lbs/ft²). The source and receiving room temperatures at the time of the test were 20°C (68±2°F) and 57±2% relative humidity.

RESULTS REPORTED ABOVE APPLY ONLY TO THE SPECIFIC SAMPLE SUBMITTED FOR MEASUREMENT. NO RESPONSIBILITY IS ASSUMED FOR PERFORMANCE OF ANY OTHER SPECIMEN.
ACCREDITED BY DEPARTMENT OF COMMERCE, NATIONAL VOLUNTARY LABORATORY ACCREDITATION PROGRAM FOR SELECTED TEST METHODS FOR ACOUSTICS.
THE LABORATORY'S ACCREDITATION OR ANY OF ITS TEST REPORTS IN NO WAY CONSTITUTES OR IMPLIES PRODUCT CERTIFICATION, APPROVAL, OR ENDORSEMENT BY NIST.

Acoustic Results

Please note that values obtained in different noise test laboratories or floor conditions may not be directly comparable. Tested using CSL AC71 ACOUSTIC CORK with 2mm thickness laid under ceramic tiles.

Acoustic results: ISO 140 & 717

L_w=6dB (test report 21.015.702M1)

Tested at LGAI – Barcelona, Spain

Thermal Properties: (ISO 8301)

Thermal conductivity: 0.075W/mC

Thermal resistance: (2mm): 0.027m² C/W

Physical and Mechanical Properties (ASTM F104)

Specific weight: > 400 Kg/m³

Tensile strength: > 600 Kg/cm²

Compression: > 15%

Recovery: > 80%

Durability: Lifetime of the building.

Very easy to install. Directly laid under the ceramic tiles. Improves flooring thermal resistance.

General Installation Instructions

The following installation instructions are recommended by Cork Supplies NZ Ltd but are not intended as a definitive project specification. They are presented in an attempt to be used with recommended installation procedures of the flooring manufacturers.

Room Conditions

Temperature > 10C; room moisture content <75%

Subfloor

All subfloor work should be structurally sound, clean and level. The moisture content of the subfloor should not be more than 2.5% (CM) by weight measure on concrete subfloors.

Perimeter Insulation Barrier

Install a perimeter insulation barrier minimum 35mm wide vertically around the perimeter of the entire floor. Spot adhere it to the wall with acrylic glue or a bead of silicone sealant.

Gluing and Installation

Unpack the CSL AC71 ACOUSTICCORK and observe a 24 hour period before proceeding with its installation

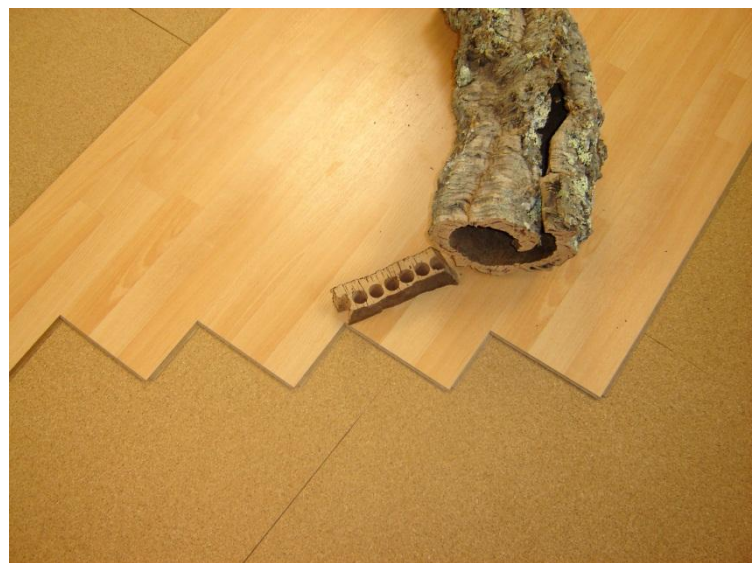
A properly sized V-notched trowel and acrylic glue should be used to glue the CSL AC71 ACOUSTICCORK to the concrete slab. Always follow the glue manufacturers recommended instructions. A 48 hour period should be observed between each glueing operation.

Cut the CSL AC71 ACOUSTICCORK desired length and install directly over the subfloor with crown of the roller materials up (Acoustic Cork label facing down) removing all trapped air. But the underlay directly against the isolation barrier already installed. Pull the loose laid material back.

Using a properly sized v-notched trowel, apply acrylic glue to the concrete slab. Gently, return the pulled back material to its measure place and roll in both directions with a roller. Proceed to cover the entire floor making sure the joints are butter tight. After completion, the CSL AC71

ACOUSTIC CORK should cover the entire flooring area without gaps and with joints securely taped.

Never mechanically fasten the CSL AC71 ACOUSTIC CORK to the finished floor. Follow manufacturers recommended instructions for installation of finished.



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Sound Ratings Achieved when using Acoustic Cork

Sound Rating for AcousticCork Sound Control Underlayment Floor/Ceiling Assemblies

	<u>Test Reference</u>	<u>Subfloor</u>	<u>AcousticCork Brand</u>	<u>Suspended Ceiling</u>	<u>Overlay</u>	<u>Floor Covering</u>	<u>Sound Ratings IIC,STC</u>
<u>WOOD FLOOR JOIST SYSTEM</u>	<u>RAL IN95-11•RAL TL95-118</u>	<u>5/8" Plywood</u>	<u>CSL A06</u>	<u>Yes</u>	<u>1 1/2" Gyp-Crete</u>	<u>Ceramic Tile</u>	<u>57 60</u>
	<u>RAL IN95-19•RAL TL95-126</u>	<u>5/8" Plywood</u>	<u>CSL A06</u>	<u>Yes</u>	<u>1 1/2" Gyp-Crete</u>	<u>Parquet Wood</u>	<u>59 54</u>
	<u>RAL IN95-15•RAL TL95-122</u>	<u>5/8" Plywood</u>	<u>CSL A06</u>	<u>Yes</u>	<u>1 1/2" Gyp-Crete</u>	<u>Laminate Floor</u>	<u>53 60</u>
	<u>RAL IN98-37•RAL TL98-186</u>	<u>5/8" Plywood</u>	<u>CSL A06</u>	<u>Yes</u>	<u>1 1/2" Gyp-Crete</u>	<u>Floating Wood</u>	<u>57 60</u>
	<u>RAL IN95-37•RAL TL95-256</u>	<u>6" slab</u>	<u>CSL A06</u>	<u>Yes</u>	<u>None</u>	<u>Ceramic Tile</u>	<u>61 60</u>
	<u>RAL IN95-43•RAL TL95-366</u>	<u>6" slab</u>	<u>CSL A06</u>	<u>Yes</u>	<u>None</u>	<u>Glued Wood</u>	<u>61 62</u>
	<u>RAL IN95-42•RAL TL95-365</u>	<u>6" slab</u>	<u>CSL A06</u>	<u>Yes</u>	<u>None</u>	<u>Nailed Wood</u>	<u>61 61</u>
	<u>RAL IN95-41•RAL TL95-364</u>	<u>6" slab</u>	<u>CSL A06</u>	<u>Yes</u>	<u>None</u>	<u>Floating Wood</u>	<u>63 60</u>
	<u>RAL IN95-40•RAL TL95-363</u>	<u>6" slab</u>	<u>CSL AC71</u>	<u>Yes</u>	<u>None</u>	<u>Floating Wood</u>	<u>62 59</u>
	<u>RAL IN98-4•RAL TL98-27</u>	<u>6" slab</u>	<u>CSL A06</u>	<u>No</u>	<u>None</u>	<u>Floating Wood</u>	<u>50 52</u>
<u>CONCRETE FLOOR SYSTEM</u>							