



Buildwise

Magazine

Finishes
edition

100
edition



May-June
2025

- P04. Renovation of a cavity wall with an ETICS
- P10. Mosaics in swimming pools
- P18. Fire resistance of wooden floors

Contents

Buildwise Magazine May-June 2025



04

Renovating cavity walls?
Use an ETICS!



06

Renovation of a cavity wall with an ETICS:
connection to a sloping roof



08

The CE marking of joinery explained
in 10 questions and answers



10

Mosaics in swimming pools:
avoid assembly on the back



12

Focus



13

Connection Tour



14

What material should you choose
for a kitchen worktop?



16

New types of wood and treatments:
impact on exterior finishes



18

How do you guarantee the fire resistance
of an existing wooden floor?



20

Pipes under floating screeds:
what is the acoustic impact?



22

FAQ



24

Trade fair and events

100 editions built on connection

In 2004, our centre entered a new era of communication. Our ambition? To make our website an essential instrument for every construction professional. The magazine was given a key task in this: to **strengthen ties with our members** and serve as a **bridge to our website**.

And it has succeeded! With 1.15 million visits a year – an increase of almost 20% per annum – and more than 210,000 publications downloaded in 2024, buildwise.be has become your primary source of information.

Today, Buildwise Magazine still has the same connecting role although the magazine itself has undergone major development – and not just in terms of its design. Now, the content is even more focused on reality in the field, with a **more work-oriented approach, a more accessible tone and articles that are entirely geared towards practice**. A lot of effort has been put into simplifying the style and enhancing the way that articles are illustrated, resulting in the provision of accessible information that is easy to understand, without undermining the technical content. Every year, we publish around 60 new articles spread over three editions: building envelope, finishes and technical installations. That way, you receive information tailored precisely to your needs that you can apply directly on site.

Buildwise Magazine strengthens ties with our members and serves as a bridge to our website.

In order to move even closer to you, our magazine was quickly translated into German for our German-speaking members and, more recently, also into English in order to meet the growing demand from companies with international operations or working with multilingual teams.



Julie Beauclercq
and Joffrey D'Heygere,
team Buildwise Magazine

At the same time, Buildwise Magazine remains a **tangible link to our members** which is even more valuable at a time when digital applications are ubiquitous. This connection lies close to our heart, something which is also clear from the Connection Tour (see p. 13) when we literally come to you.

The magazine is also an important medium for our major communication campaigns which are conducted via a wide range of channels including social media (YouTube, Facebook and recently Instagram too). The aim of these campaigns is to **deliver the information to you in a format that meets your needs**. For instance, there is currently a campaign running for joiners on the CE marking of exterior joinery (see article p. 8-9 and news p. 12). This responds to the needs of the sector for better information on this regulatory aspect which is often perceived as extremely complex.

Buildwise Magazine therefore remains a **central pillar of our communication strategy** that connects us to construction companies. It is a valuable addition to our digital communication tools and remains a source of reliable and practical information – and that goes for every edition. 



Renovating cavity walls? Use an ETICS!

The façades of many existing buildings are constructed from cavity walls which have hardly any insulation or are not insulated at all. ETICS are ideal for the energy renovation of walls of this type where post-insulation of the cavity is strongly recommended when the façade brickwork is retained. ETICS therefore provide a relevant technical solution for the massification of energy renovations.

Y. Grégoire, Buildwise

ETICS

ETICS are composite systems for exterior façade insulation which can be finished by plastering or applying hard cladding so that they offer a wide range of aesthetic possibilities. [Technical Information Notes \(TIN\) 257](#) and [279](#) focus on their design and implementation principles.

The techniques for **exterior façade insulation** including ETICS improve the hygrothermal behaviour of façades: insulation continuity, limited risk of internal and surface condensation, maintenance of the thermal mass of the outside walls and no restriction of insulation thickness. They also protect the supporting structure against the weather.

In addition, these techniques ensure that the original internal space is retained and that the building remains habitable while the works are being carried out. For these reasons, their application is recommended, circumstances permitting.

ETICS are based on [technical approvals \(ATG\)](#) that guarantee the quality of the systems.

Cavity wall to be renovated

Cavity walls were widely used from the end of the Second World War until thermal requirements were tightened based on energy regulations in the late 1990s. The majority of those walls have hardly any insulation or are not insulated at all. There are two ways to improve the energy performances of this type of wall and to update the façade with an ETICS: by removing or retaining the façade brickwork.

Before work commences, a **diagnosis** must be carried out, mainly to find out whether the wall is abnormally exposed to moisture (infiltration, capillary action, etc.). If that is the case, the cause must be eliminated first. The technique for installing the ETICS must also be compatible with the existing substrate.

Renovation with removal of the façade brickwork

The first option involves removing the façade brickwork and layer of insulation if there is one and cladding the exposed load-bearing wall with an ETICS. This wall often has a lot of mortar burrs, making the surface difficult to level.

This approach is more complicated and expensive than the second solution but is of interest in certain cases



Xthermo/Dennis de Smet

1

Energy renovation with the help of an ETICS and plastering.

such as:

- if increasing the volume or the perimeter of the building is prohibited due to planning regulations, for example
- if the façade brickwork is damaged
- in order to preserve the width of balconies.

Before applying this solution, you must establish that the façade brickwork does not have a load-bearing function, e.g. supporting a ring beam or a cornice made of reinforced concrete (strongly discouraged design). In that case, significant (difficult and time-consuming) measures must be taken before the façade brickwork and the layer of insulation – if there is one – can be removed.

Special attention should also be paid to the stability of the exterior joinery that – despite the fact that it is discouraged – is often installed on a sill, with only the façade brickwork for support.

Renovation with retention of the façade brickwork

With this option, the façade brickwork is retained and clad with an ETICS which is usually a more economically favourable solution.

First of all, the stability of the façade brickwork must be checked. You can check the condition and functioning of the cavity ties by carrying out an endoscopic examination of the cavity. If defects are found or any ties are missing, renovation anchors (chemical anchors) must be provided.

The cavity must then be treated so that it is not ventilated (windtight) since air movements behind the ETICS cause heat losses. There are two ways to do this:

- if possible, it is recommended to **post-insulate a non-insulated cavity first** (see [TIN 246](#)). This is an inexpen-

sive technique that provides the most efficient first few centimetres of thermal insulation. Although high thermal performances are not achieved, this approach does prevent air movements behind the ETICS. If the works are carried out in a single phase, it is not necessary to take into account the normal application conditions to protect against the weather because the ETICS will protect the underlying wall

- if post-insulation of the cavity is not possible, measures must be taken to **prevent convection currents in the non-insulated cavity** (e.g. sealing with mineral wool on the top of the wall, around doorways, etc.).

Construction details

The correct approach to nodes is essential in order to avoid thermal bridges (which are a source of heat losses) and limit the risk of mould forming. Specific measures and connection details are therefore absolutely necessary in order to guarantee the **continuity of the insulation, airtightness and vapour tightness** (at the level of sills, joinery, the roof, etc.). Thanks to these precautionary measures which can be found in our [database with construction details](#), it is possible to achieve high levels of performance.

When removing the façade brickwork, the ETICS design details are comparable with those for new buildings which are discussed in [TIN 274](#).

If the façade brickwork is retained, then the design details (see table A) are the same as those in [TIN 295](#).

Table A provides an overview of the construction detail sheets for the various nodes as well as articles on this subject and the checklists that were published in [Buildwise Magazine 2025/1](#). 

This article was drawn up as part of the 'ETICS4Retrofit' project subsidised by the FPS 'Economy, SMEs, Self-employed and Energy'.

A Renovation of a cavity wall with an ETICS: Construction Details Sheets, Articles and checklists.

Node		Construction Details Sheets	Buildwise Articles	Checklists
Foundation base		1530	2024/06.01	2025/01.06
Connection to joinery		1529	2024/03.04	2025/01.05
Connection to flat roofs	Heavy floor	1594 1595	2025/01.04	2025/01.04
	Light floor	1596 1597		
Connection to sloping roofs	Sloping roof insulated on the inside	1531 1532	2025/03.02 (p. 6-7 of this magazine)	2025/01.03
	Sloping roof insulated on the outside	1436	2025/01.03	



Renovation of a cavity wall with an ETICS: connection to a sloping roof

To improve the thermal performances of an existing cavity wall with the help of an ETICS (see [TIN 295](#)), it is essential to take into account a number of recommendations on connecting to a sloping roof. For these enable the continuity of the insulation, watertightness and airtightness to be guaranteed, the heat losses at the connection to be limited and the risk of condensation to be reduced.

Y. Grégoire, Buildwise

Renovation strategy

Good coordination of façade and roof works is of essential importance. The roof is generally renovated first, followed by the façade. In the process, you must ensure that the **layers of insulation fit together properly**.

Certain choices and solutions depend on the fact as to whether or not the roof covering is replaced. If it is, it is preferable for the roof to be insulated on the outside using the sarking method so that the continuity of the insulation on the outside of the building envelope is guaranteed. **However, this article looks at the situation where the roof is insulated on the inside.** In any case, thermal bridges must be prevented (see [Buildwise Article 2024/02.03](#)) because they lead to an increase in heat losses and a greater risk of mould forming.

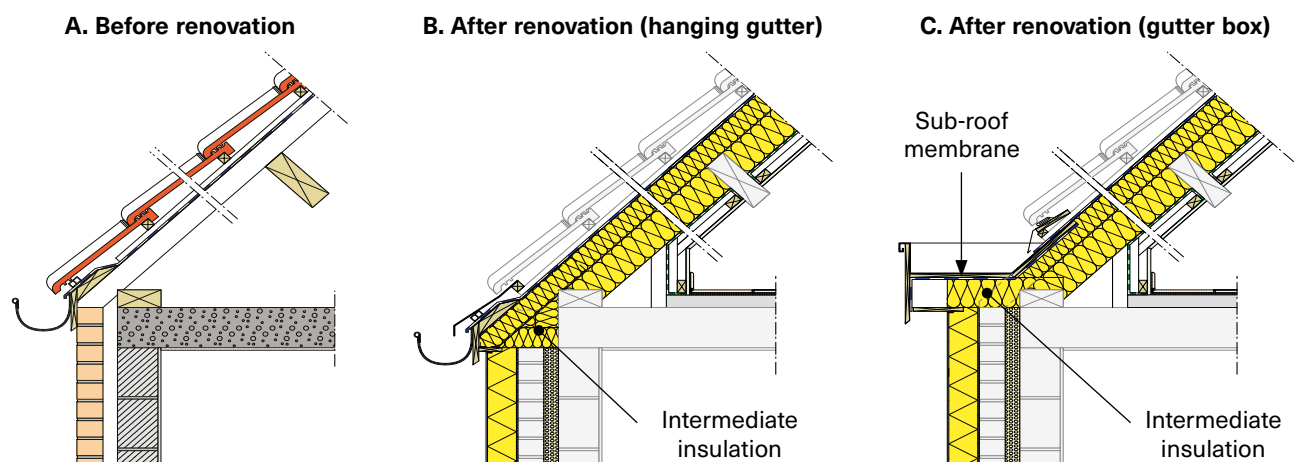
The **eaves** must be adapted in order to provide the necessary protection above the ETICS and to approach the node

in the correct way. This will involve having to move one or more rows of roof tiles.

If the roof covering is replaced during the first phase of the works and the roof is insulated on the inside, the roof overhang must be provided at this stage or at least sufficient roof tiles must be available to do this later on when the façade is insulated.

Eaves

The **continuity of the thermal insulation at the eaves must be guaranteed by installing suitable insulation between the roof and façade insulation** (see figure 1). This must be installed by the person who is responsible for adapting the eaves. The sub-roof must be extended, preferably up to the gutter.



1

Connection between the insulation of a sloping roof and that of a façade (vertical cross-sections).



2 Design of a gutter box.

The **hanging gutter can be redesigned** as in the existing situation (see figure 1B on the previous page). For the roof and façade insulation to be connected properly, the roof surface must be extended and the gutter moved approximately 15 cm horizontally (12 cm for the ETICS and at least 3 cm for the roof overhang). If the roof has a slope of 45°, the gutter must also be moved the same distance vertically. The façade brickwork must then be ground down to the same level in order to guarantee the continuity of the insulation.

It is also possible to **design a gutter box** (see figures 1C on the previous page and 2 above) to enable the height of the façade and the gutter to be retained. To prevent the risk of subsequent damage to the ETICS due to the gutter box not being sufficiently watertight, a vapour-permeable sub-roof membrane must be installed under the cladding of that gutter (see figure 1C).

Side edge

Thermal bridges must be prevented at the side edge of the roof by insulating the top of the wall (see figure 4).



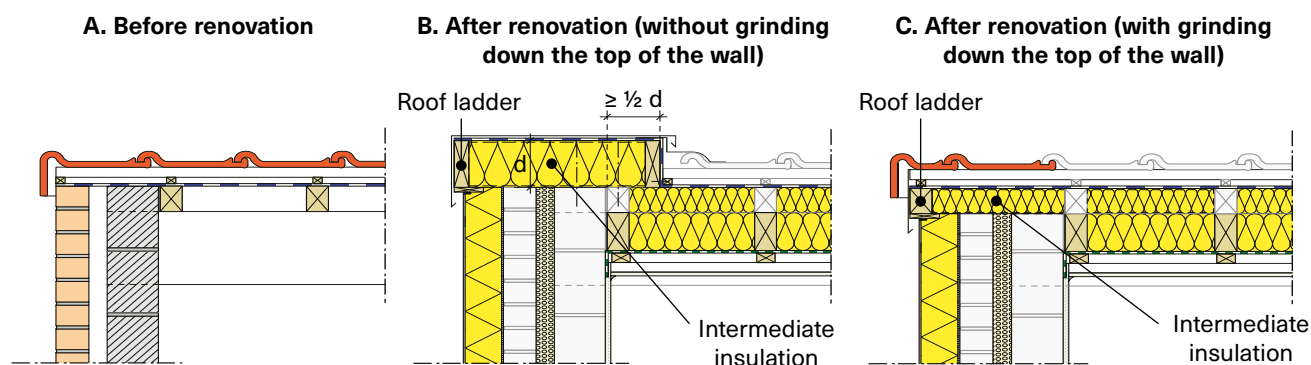
3 Insulation of the top of the wall without grinding it down.

The first solution is to **insulate the top of the wall without grinding it down**. In that case, an extension of the roof timberwork (roof ladder) must be designed and implemented to support the coping. The insulation for this structure must be sufficiently thick and must overlap the insulation between the rafters of the sloping roof by at least half the thickness of the roof edge insulation (see figure 4B). The insulation thickness to be provided depends on the structural measure chosen which must ensure that the coping protrudes far enough above the adjacent roof covering to guarantee correct connection (see figure 3).

The second option is to **insulate the top of the wall after grinding it down**. In this configuration, the top of the wall (supporting brickwork and façade brickwork) is ground down to enable the roof covering to be extended above the ETICS (see figure 4C). After grinding it down, the roof timberwork must be extended but without resting on the ETICS. This option requires the availability of roof tiles that are compatible with the existing tiles.



This article was drawn up as part of the 'ETICS4Retrofit' project subsidised by the FPS 'Economy, SMEs, Self-employed and Energy'.



4 Connection between the insulation of a sloping roof and that of a façade at the side edge (vertical cross-sections).



The CE marking of joinery explained in 10 questions and answers

Construction Products Regulation, CE marking, harmonised product standards... Do you sometimes find that you can't see the wood for the trees? We will help you get started by answering the ten most common FAQs on the CE marking of joinery.

C. Cornu, Buildwise

What is CE marking and what is it for?

The CE marking of construction products enables manufacturers to **market their products in all member states of the European Economic Area (EEA)**. It also specifies the product performances which can be used to demonstrate that the construction product complies with the regulations of the country or region where the product is to be marketed.

The CE mark refers to the performances of the product as marketed. This falls under the responsibility of the manufacturer. However, it is the installer who is responsible for ensuring that the installed product complies with industry practices and the specific requirements of the construction site.

Why is this important today?

The CE marking of construction products has been applicable since the introduction of the Construction Products Directive in 1989. In 2011, this directive was replaced by the Construction Products Regulation which was updated in 2024 by the **revised Construction Products Regulation** and will gradually come into force. This revised regulation and the current market surveillance campaign targeting joinery companies which is being conducted by the FPS 'Economy' clearly show that the companies concerned need support in this area.

Which products must have a CE mark?

The CE marking of construction products is mandatory **if there is a harmonised European standard for the product**. For the joinery sector, this is the case for windows and exterior doors which are covered by NBN EN 14351-1 and garage doors and gates which are described in NBN EN 13241, for example.

Are there exceptions?

Yes, but only in a few cases. In the case of monument conservation or if unique designs that fall outside the normal product range are produced at the customer's request, CE marking is not mandatory.

The FPS 'Economy' used to consider that joinery supplied and installed by the same company was covered by a building contract (and not by a sales contract). Consequently, CE marking was not mandatory in those cases.

For some time now, this view has no longer been upheld for market surveillance campaigns and **CE marking is also mandatory for building contracts**.



Shutterstock

What is a harmonised product standard?

A harmonised product standard specifies the **characteristics that fall under the regulations in the various European countries**. These standards also specify the methods which manufacturers can use to determine those characteristics. Such standards are drawn up at the specific request of the European Commission. All harmonised standards are cited, i.e. they are listed in the Official Journal of the European Union.

What are harmonised characteristics?

A harmonised product standard contains all the characteristics that are relevant to the product. If those characteristics **are covered by regulations in at least one member state of the European Union**, they are referred to as 'harmonised characteristics' or 'essential characteristics'. Example of these include thermal performances, watertightness or airtightness.

The harmonised product standard also specifies other characteristics not covered by regulations, such as operating force, mechanical strength or anti-intrusion capacity. These are then referred to as 'non-harmonised'.

What regulations are applicable in Belgium?

For windows, doors and gates, at least the **thermal performances** (U_w or U_d value) must be determined and the **content of hazardous substances** must be declared.

If the window or door is glazed, the thermal performances also include the solar factor (τ_v) and the light transmittance (g) of the glass. These characteristics must be declared by the supplier of the glazing.

None of the other harmonised characteristics from the standard or the non-harmonised characteristics have to be determined before putting products on the market in Belgium.

What must I do as a joiner?

To apply the CE mark to a construction product, you must take the following steps:

- determine the product type according to the standard (e.g. window, normal exterior door or anti-panic door)
- establish a production control system in the production facility or workshop. That means that the checks and registrations specified in the standard must be carried out
- find out which harmonised characteristics are specified in the regulations of the destination country and are therefore mandatory
- at least determine the levels of performance for these mandatory harmonised characteristics, where necessary

with the involvement of a third party (e.g. testing by an approved laboratory)

- if relevant, the non-mandatory harmonised characteristics may also be determined. However if they are specified in documents (e.g. a catalogue, technical data sheets or advertising), it is mandatory to do so and this must be done using the methods from the standard and where necessary with the involvement of a third party (e.g. testing by an approved laboratory)
- draw up a declaration of performance in which the levels of performance of all harmonised characteristics are specified
- add a CE mark to the product, specifying the levels of performance of all harmonised characteristics.

How can Buildwise help me?

The standards antenna 'Joinery and glazing' contains several [help documents](#). Here you will find examples of a declaration of performance and CE mark or explanation of the production control system.

Additional help documents, checklists and information films were developed for the 'CE marking of joinery' information campaign and provided for our members free of charge.

A software tool called '[Uw4Wood](#)' was also developed which can be used to calculate the thermal performances U_w or U_d which are mandatory in Belgium.

Finally, Buildwise can act as an [approved laboratory](#) for the purpose of determining the most common harmonised characteristics.

How can I stand out as a joiner in terms of quality?

European product standards only stipulate how performances must be determined and expressed. Recommendations on this can be found in Belgian standards NBN B 25-002-1 to NBN B 25-002-7 inclusive which establish the relationship between the different performances of joinery according to the product standard, the use expected by the prescriber, the building environment (location and height) and the sustainability of the joinery.

Also, the voluntary technical approval – ATG – uses these standards to demonstrate suitability for use for various applications, with the support of neutral institutions. 

This article was drawn up as part of the 'CE marking of joinery' study subsidised by the FPS 'Economy, SMEs, Self-employed and Energy'.



Mosaics in swimming pools: avoid assembly on the back

Tilers are regularly confronted with mosaic tiles that have come loose in swimming pools. Research shows that the way sheets of mosaic tiles are assembled has a crucial influence on the adhesion of the tiles. To prevent tiles from coming loose, it is best to use sheets of mosaic tiles which are assembled using a sheet of paper on the visible side which is removed after installation.

T. Haerinck, S. Mertens, Buildwise

Description of the problem

Our colleagues from the Technical Advice department are repeatedly contacted regarding cases of damage in swimming pools where individual mosaic tiles have come loose from their substrate. The problem occurs a lot less frequently in the case of applications where the tiles are not submerged (e.g. in bathrooms).

The phenomenon occurs both below the waterline (walls and bottom) and around or just above it. The various cases of damage investigated do not immediately point to any influence from the water in the swimming pool or specific

water treatment systems (see [Buildwise Article 2016/03.09](#)). In the cases investigated, the mosaic tiles almost always consisted of prefabricated sheets with the tiles attached to a mesh on the back. The tiles were almost always fixed using a flexible cement-bound powder tile adhesive of the type C2TE (i.e. improved adhesion, high slip resistance and an extended open time) in accordance with standard NBN EN 12004-1. In many cases, a latex polymer additive was added to improve the adhesion and flexibility of the adhesive.

Durability of the bond

During a previous Buildwise investigation into cases of damage involving mosaic tiles coming loose in swimming pools (see [Buildwise Article 2009/04.13](#)), it was established that the tiles used were fixed to a mesh using a PVAc (polyvinyl acetate) type adhesive. This type of adhesive can **dissolve or swell in an alkaline environment** (e.g. when in contact with cement mortar) which can lead to tiles coming loose.

For the current study, the durability of the bond was investigated for mosaics attached using dots of (polyester-based) adhesive on the back of the sheet of mosaic tiles and for mosaics attached to mesh using five types of adhesive:

- two PVAc adhesives
- PU acrylate adhesive
- acrylate adhesive
- polyester adhesive.

For this test, the samples were submerged for up to 14 days in an alkaline liquid with a similar pH to a cement-bound adhesive.

Our study showed that the dots of adhesive did not suffer any damage after being exposed to the alkaline liquid.



1

Tiles from a glass mosaic in a swimming pool that have come loose.

The results of the test on the mosaic tiles on mesh, on the other hand, were mixed:

- in the case of the polyester adhesive and the first PVAc adhesive, the tiles came loose from the mesh
- in the case of the acrylate adhesive, considerable swelling was found without the tiles coming loose
- in the case of the PU acrylate and the second PVAc adhesive, the adhesive did not appear to have been affected.

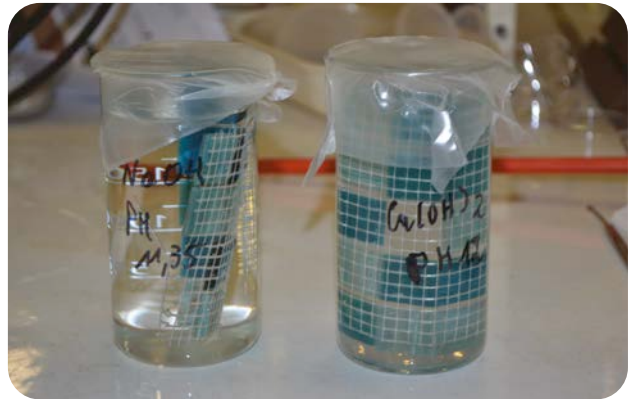
Our sampling test suggests that a significant proportion of the sheets of mosaic tiles on mesh are fixed using a type of adhesive that loses adhesion or swells in an alkaline environment. We know that the types of adhesive used (PVAc, polyester and acrylate adhesives) **can be susceptible to chemical attack in an alkaline environment**. None of the technical information provided by the manufacturers of the mosaic tile sheets (on mesh or using dots of adhesive) contained information on the chemical nature or durability of the bond.

Assembly using paper on the visible side

The wire mesh on the back of sheets of mosaic tiles and to a lesser extent the dots of adhesive do not provide optimum contact with the tiles. Because of that, a third assembly method was investigated: assembly using paper on the visible side.

The three systems were fixed to concrete using the same cement-bound powder adhesive of the type CT2E and an identical method in accordance with the technical data sheet for the adhesive (type of notched trowel, thickness of adhesive, waiting times, etc.).

The tensile tests carried out on the three systems showed that the **adhesive strength of the mosaics fixed using a sheet of paper on the visible side was significantly**



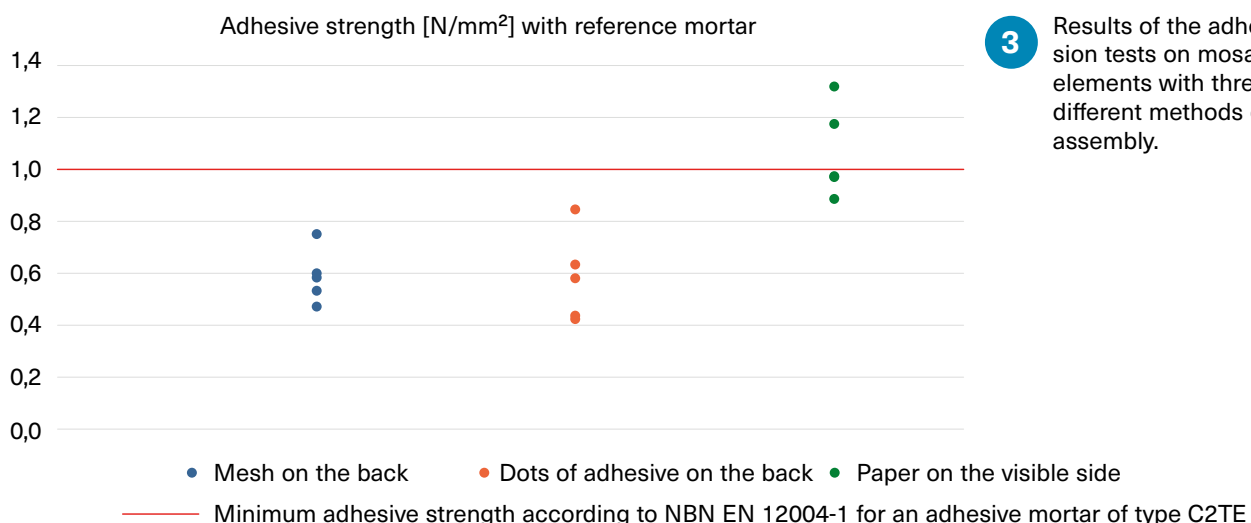
2 Test on the durability of the bond in the case of mosaics on mesh.

greater than that of the mosaics fixed using dots of adhesive or attached to a mesh on the back. The graph below shows the adhesive strength measured for the different methods of assembly (five measurements per method).

The adhesive strength of the systems with assembly on the back (mesh and dots of adhesive) is comparable and around **40% lower** than that of the tiles with assembly on the visible side. The presence of both a mesh and dots of adhesive on the back therefore seems to provide reduced adhesion of the mosaics.

When applying mosaic tile cladding in swimming pools, it is therefore recommended to **use elements which are assembled using paper on the visible side**.

This article was drawn up as part of the pre-normative project 'DuPoMa' subsidised by the FPS 'Economy, SMEs, Self-employed and Energy'.



3 Results of the adhesion tests on mosaic elements with three different methods of assembly.



Focus

on exterior plasterwork on brickwork and concrete
and on our campaign on CE marking.



Exterior plasterwork in the spotlight, with Technical Information Notes 289 and 290

Technical Information Notes (TIN) 289 and 290 form a coherent diptych dedicated to exterior plasterwork.

TIN 289 covers the principles of the design, execution and maintenance of plasterwork on brickwork or concrete (with the exception of thermal insulation boards and buried walls). This TIN contains a concise overview of the materials used, suitable substrates and the quality criteria for the works.

As a direct supplement, TIN 290 provides a selection of data sheets from our [construction details database](#). These data sheets provide in-depth information on various aspects to which attention should be paid when implementing the connection details for exterior plasterwork.

Together, these two documents provide professionals with clear, practical guidelines for ensuring the quality and durability of cladding.

Marquage CE
pour portes et fenêtres en bois ?
Version simplifiée

Téléchargez votre kit CE gratuit

- Checklist pratique
- Guide complet des **étapes** et des **obligations**
- Fiche pour le suivi quotidien en atelier
- Outil de **calcul** de la valeur U_w

Apposez le marquage CE et démontrez la fiabilité de vos produits.

Shutterstock

Connection tour

Rentrée de la construction

RÉSEAUTAGE, WALKING DINER... AMBIANCE GARANTIE !



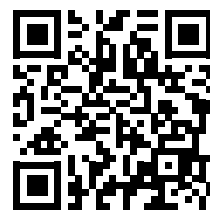
Gagnez du temps, misez sur la **qualité**

26.08 Mettet | 28.08 Grâce-Hollogne | 02.09 Rochehaut | 04.09 Hornu

Travailler plus efficacement et plus rapidement sur chantier ?

Lors du Connection Tour près de chez vous, découvrez des solutions pratiques pour faciliter votre travail et améliorer la qualité de vos projets. Commencez avec les bons détails de construction, des méthodes de mesure intelligentes et des accords de travail efficaces. Vous éviterez ainsi les erreurs, les réparations et les coûts inutiles.

Ne manquez pas cet événement gratuit ! Scannez le code QR pour plus d'infos !





What material should you choose for a kitchen worktop?

Choosing a suitable worktop is essential for a kitchen to be both practical and sustainable. Besides aesthetics, the strength and ease of maintenance of the material also play an important role. Each type of stone has its own specific characteristics so it is crucial to take the customer's requirements and budget into account.

D. Nicaise, Buildwise

Natural stone

Natural stone is a popular choice due to its authenticity and natural character. There are many types of natural stone with a wide range of different characteristics. These are described in [Technical Information Note \(TIN\) 228](#) (§ 2.2). Below, we discuss the main characteristics of the stones most commonly used for kitchen worktops based on the three types of rocks: magmatic, metamorphic and sedimentary rocks.

Magmatic rocks

Granite, in the broad sense of the word, is often used for worktops. Its high hardness and generally low porosity make this stone particularly resistant to household acids and scratches. There is a range of different surface finishes to choose from (polished, honed, brushed, etc.) but you should bear in mind that the finish will affect the surface absorption. The most important thing is to choose a material that is easy to maintain and not too rough. It is usual to apply a colour enhancer to some black granites.

Metamorphic rocks

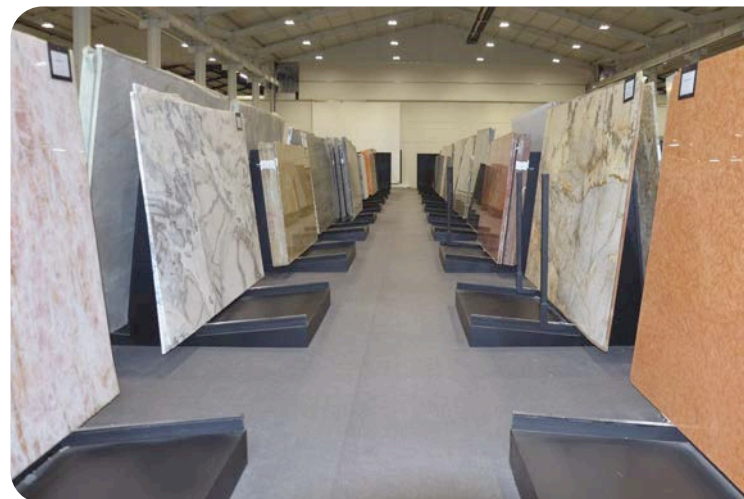
This group contains two main subtypes, namely siliceous rocks (such as quartzites and gneisses) and marbles. The characteristics of quartzites and some gneisses are comparable with those of granite: excellent scratch resistance and good resistance to household acids. Other gneisses, such as Sivakasi, absorb more and require treatment. Marble, on the other hand, is more sensitive to acids which can create matte spots on the surface. However, such stains are usually less noticeable on this stone which often has light and nuanced shades. Over time and with regular maintenance, these stones quickly develop a patina which hides any imperfections. Finally, the changes are even less

visible on honed or brushed (rather than polished) surfaces because acid stains appear in a diffuse and discrete manner.

Sedimentary rocks

Compact limestone (e.g. bluestone) is used a lot for kitchen worktops. Because of its carbonate composition, this stone scratches easily and is more sensitive to acids. However, the patina quickly reduces these effects over time. Slate is another less common option in Belgium. This stone is usually highly acid-resistant (with the exception of Ardesia from Italy, for example) but has very low scratch resistance.

Moisture-sensitive stones should be avoided for horizontal worktops but are acceptable for splashbacks. Carbonate rocks such as marble and limestone can be treated to reduce their sensitivity to acid. However, a carefully chosen



surface finish and colour can help limit the effects of acids (see below).

Finish

The finish influences both the stain resistance and look of the worktop because it changes the absorption of the worktop and the colour intensity. A polished finish generally reduces the level of absorption but can increase the visibility of scratches. The darker the colour of the stone, the more pronounced the scratches will be. However over time, these marks will gradually fade due to the patina. A honed or brushed finish will increase the level of absorption again and may require an impregnation treatment.

Composite

There are composites based on marble and others based on quartz or granite granules bound by a synthetic resin.

Marble-based composite is not recommended for kitchen worktops because it is too susceptible to stains, acids and scratches.

Quartz-based composite on the other hand is a highly adaptable material, especially in terms of colour, that not only has very low porosity but is also stain-resistant and easy to maintain. In addition, this stone has excellent scratch and acid resistance due to its composition. However direct exposure to sunlight or heat – from a hot pan, for example – can change the colour of the resin and leave stains. The use of hard water can also cause more visible stains than on natural stone but these can be removed by periodically cleaning the worktop using a suitable acid. Remember: because this material is rich in quartz (crystalline silica), it is dangerous to work with (see [Buildwise Article 2023/03.02](#)). Solutions based on amorphous silicon or aluminium powder are starting to emerge as alternatives.

Surface treatment

The treatments used must be approved for use with foodstuffs, regardless of the material. This is indicated by a specific pictogram on the packaging. It is better to use durable impregnating agents that will not degrade over time.

For porous and carbonate materials, particularly with certain finishes, this treatment is essential in order to limit sensitivity to stains or acids. When the worktop is completely saturated with the impregnating agent, the treatment should not be repeated. However, with intensive use or poor maintenance, it may be beneficial to repeat the treatment annually.

Ceramic

This material is mainly chosen for its excellent scratch resistance which is better than that of most natural stones and for its very low porosity. However if the material is scratched by a ceramic knife, for example, it is virtually impossible to repair.

Unlike natural stone and composite, the pattern is 'printed on' so it is not embedded in the mass.

It is also not recommended to choose a polished finish which, in contrast to natural stone, increases porosity and therefore absorption too. However, ceramic does not allow impregnation treatments. Contrary to expectations, the price is often higher due to the fragility of the material during cutting, with an increased risk of breakage, unless a water jet cutting machine is used. Ceramic is also more sensitive to impacts, mainly because it is thinner. Although daily maintenance is simple, soap marks can appear more easily if the worktop is not rinsed properly. 

Dimensions

The dimensions chosen can influence the choice of material:

- **natural stone** gives you complete freedom in terms of length, width and thickness and can therefore also be designed as a single piece
- **composite** and **ceramic** have their limitations. The large formats are usually limited to approximately 3.30 m x 1.60 m. The maximum thickness is 3 cm for quartz composite and a maximum of 2 cm for ceramic (see [Buildwise Article 2024/06.03](#)). In addition, costs vary depending on the size of the slabs, the unusable offcuts and the risk of breakage during machining.



New types of wood and treatments: impact on exterior finishes

A lot of new types of wood and innovative treatments for exterior joinery have appeared recently. It is important for the wood, treatment and finish to be compatible in order to prevent the paint from weathering prematurely.

E. Cailleux, T. Haerinck, Buildwise

Since European Regulation 528/2012 (Biocidal Products Regulation or BPR) was introduced in 2013, wood preservation products have been subject to approvals with a limited period of validity. Restrictions already apply to certain active substances and the use of some molecules is being phased out. At the same time, construction professionals have noted that the supply of traditional exotic types of wood is diminishing.

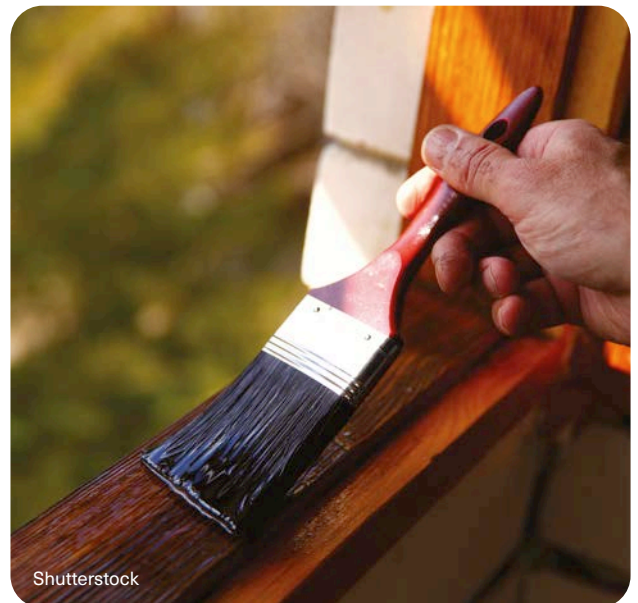
For exterior joinery, various solutions are currently available to address these restrictions:

- **look for new exotic types of wood or opt for certain indigenous species which are still being underutilised.** Depending on their natural durability, a preservative treatment may be required
- **use thermally or chemically modified wood** that does not require a preservative treatment
- **use new preservative treatments** to which fewer restrictions apply.

However, little is known as yet about these different solutions and many questions still remain about them, including their influence on the choice and behaviour of finishes (paints and stains).

Precautionary measures for the types of wood

Technical Information Note (TIN) 249 discusses the most important precautionary measures that need to be taken for the most common types of wood before applying any finishes. These measures may involve **avoiding certain specific binders or primers or making additional preparations**. These precautionary measures are necessary due to the presence of certain elements in the wood (e.g. tannins or antioxidants) that can prevent the finish from curing properly, limit the adhesion of that finish or cause variations in appearance. They can also relate to the general



behaviour of the wood such as dimensional variations and a fibrous appearance.

Various types of wood such as chestnut, kasai and mongo are now regarded as alternatives to the more traditional types. Regardless of the type of wood, it is necessary to **identify the precautionary measures that must be taken when finishing these types of wood**. They are generally comparable with the precautionary measures already known for traditional types. The table on the next page provides an overview of these measures with specific examples for the new types of wood.

Chemical and thermal treatment of wood

Chemical (furfurylation or acetylation (*)) and thermal wood treatments (thermally modified wood) can provide an alternative to preservative treatments. Generally, they also restrict the water absorption of the wood and improve dimensional stability, although that is not always the case for thermally modified wood.

We also wish to point out that these different treatments lead to **acidification of the wood** (pH ~4) which can affect the polymerisation of certain finishes and change their performances.

Scientific literature has not shown any significant impact on the behaviour of paints and stains to date. However during our ageing tests, we identified a number of cracks in thermally modified wood, especially with alkyd paints. You should therefore remain cautious and find out from the manufacturers which paint systems have already been validated.

New preservative treatments

Finally, we can expect a number of developments in the formulation of preservative treatments over the next few years, particularly through the **use of more environmentally-friendly active substances**.

The tests that we carried out on several of these new compositions showed that up to now, they have not had any negative impact on the finish, apart from a few changes in the appearance of semi-transparent finishes due to discolouration of the wood (brown or green tones). As a precaution, for the time being it is necessary – as is the case with chemically or thermally modified wood – to check the compatibility of the finishes by testing them in advance.



This article was drawn up as part of the 'PMEDuBois' project subsidised by NBN and the FPS 'Economy, SMEs, Self-employed and Energy'.

A Most important precautionary measures depending on the behaviour of the wood. However, these measures cannot guarantee that the phenomenon will not occur.

Type of wood	Examples	Impact on the paint	Recommendations for the paint
Tannin-rich	Oak, chestnut, red grandis, etc.	Separation of tannins	- Cleaning with oxalic acid - Application of an insulating primer
Oily	Teak, afzelia, iroko, merbau, etc.	Limited adhesion and/or delayed film formation	Application of the finish immediately after sanding or cleaning with a solution containing ammonia (5%) followed by rinsing with clean water
Acidic	Chestnut, oak, red grandis, etc.	- Acceleration of the hardening of the finishes (acrylic) and reduction of performances - Corrosion of iron components	- Use of solvent-based finishes - Use of stainless steel fixings
Presence of antioxidants	Iroko, padauk, etc.	Restriction of the hardening of paints which polymerise by oxidation (alkyds)	Use of a finish that does not dry by oxidation (acrylic, etc.)
Coloured substances	Afzelia, iroko, merbau, padauk, teak, etc.	Seepage of coloured extracts	Application of a primer that isolates coloured extracts
Coarse grain, pores or fibres	Iroko, kasai, etc.	Non-homogeneous finish, inconsistent thickness, pinholes, air bubbles, etc.	Application of a filling primer or pore filler
Separation of resin	Pine, Douglas fir, etc.	Blistering, deterioration of the paint	- Wood dried at at least 60 °C or degreasing of the surface using solvent - Use of a light-coloured paint
Fibrous appearance on the surface	Merbau, tornillo, African mahogany	Defect in the paint layer	Careful sanding and polishing before applying paint and between each coat of paint
Moderate to low stability	Oak, chestnut, red grandis, etc.	Cracks in the finish	Use of a validated finish for this wood

(*) Impregnation with furfuryl alcohol (e.g. Kebony®) or acetic anhydride (e.g. Accoya®).

How do you guarantee the fire resistance of an existing wooden floor?

When renovating an old building, fire services sometimes impose specific fire resistance requirements on existing floors. This is mainly the case when the use of the building changes. This requirement can have serious consequences and must be taken into consideration from the design phase.

G. De Raed, J. Goovaerts, Buildwise

Possible requirements

In Belgium, the fire safety of new buildings is mainly regulated by the Royal Decree dated 7 July 1994 (and its amendments, the latest of which dates back to 20 May 2022). In the case of renovations or changes of use, the application of this document may also be imposed within the context of the permit application and the advice of the fire services.

New buildings

We understand the term 'new buildings' to mean newly constructed buildings and extensions to existing buildings (only the extension is then taken into account). However, these regulations do not apply to single-family dwellings.

It may be the case that the contractor responsible for the renovation has to make an existing floor fire-resistant. To do that, **the structural element must comply with a fire stability rating of R 60 and the compartmentalisation must comply with a fire resistance rating of EI 60.** However, we wish to point out that this requirement only applies from bottom to top, i.e. to a fire that starts under the floor.

Direction of propagation

We often get asked about the direction in which a fire should be viewed. In Belgium, the only current requirement for floors relates to propagation upwards. There are therefore no requirements for situations where the fire spreads downwards.

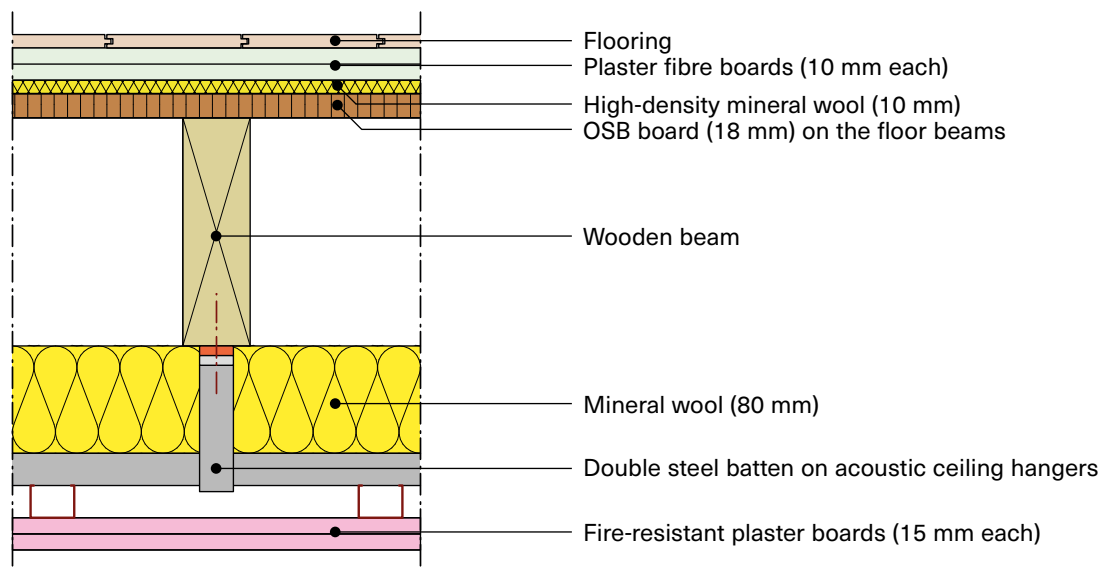
In the majority of cases, the wooden floors in old buildings do not meet these requirements, regardless of whether a finish has been applied under these floors.



Adjustments often required

It is usually necessary to make adjustments in order to meet fire safety requirements. Depending on the possible interventions, there are various solutions available. However, we wish to point out that the approach chosen **must always be validated by a laboratory test or approved calculations.** In practice, implementation will often have to comply with the solutions specified in a classification report from the manufacturer. We discuss a number of approaches below.

The simplest technical solution consists of **installing a suspended ceiling with a fire resistance rating of EI 60 under the existing beams** (see the figure on the next page). This method guarantees the compartmentalisation of the



1 Example of a floor structure consisting of a suspended ceiling with a fire resistance rating of EI 60 under the beams.

floor and protects the wooden beams for 60 minutes so that the structure also meets the structural strength requirement R. Special attention should be paid to weak points in the ceiling (e.g. light fittings, spotlights and cables) which must be sealed to make them fire-resistant (see [TIN 293](#)).

However, this solution cannot always be used for various reasons, for instance if it is not possible to intervene on the floor below (e.g. if the rooms are being used as commercial premises) or if the existing finish has to be preserved as is often the case with town houses. In that case, it is essential to only intervene via the floor from above by removing the entire floor covering and applying protection to guarantee the compartmentalisation between or above the beams.

There are tried and tested systems for the **solutions that are applied between the floor beams** consisting of non-flammable boards and/or insulation which – as already explained – guarantee fire-resistant compartmentalisation. In addition, installing these protects the sides of the wood so that the required structural strength R can be achieved.

Various board systems can guarantee fire-resistant compartmentalisation for the **solutions above the beams**. However, this configuration will not protect the wood directly if fire starts under the floor. The wooden beams must therefore either have a sufficiently large cross-section to be able to withstand the flames (*) or they must also be protected as in the case of the solutions between the beams.

The chosen solution must be determined from the design phase and must be validated when the floor is dismantled.

Acoustic requirements

Finally, it is important that the chosen solution also meets the acoustic requirements, especially with regard to **airborne and impact sound insulation** (see standard NBN S 01-400-1). When an old residential house is being converted into multiple apartments, the initial level of insulation between the future dwellings is usually insufficient. When determining the chosen solution, the acoustic aspect must therefore be taken into account (see the figure above).

For more information on this, please refer to [Buildwise Article 2017/04.14](#). The achievable acoustic performances also depend on the method of intervention in relation to the beams: from underneath, in-between or from above. In addition, double walls are often required in buildings with solid walls in order to meet the requirements for airborne noise insulation between apartments. 

This article was drawn up as part of the 'TimFire' project subsidised by the FPS 'Economy, SMEs, Self-employed and Energy' and NBN.

(*) This must normally be calculated using the method described in [part 1-2 of Eurocode 5](#) which focuses on the calculation of fire behaviour. You can also consult [Buildwise Article 2001/04.39](#) for more information.

Pipes under floating screeds: what is the acoustic impact?

Sometimes the protection against impact sound from apartments above does not meet expectations. The presence of pipes is often put forward as a possible cause. However, a targeted measurement campaign has shown that this is not a limiting factor in itself provided that the correct implementation rules are followed.

D. Wuyts, A. Dijckmans, Buildwise

Impact sound reduction ΔL_w

To meet the acoustic comfort requirements between dwellings, it is always necessary to have a floating floor screed. The floor structure above the load-bearing floor usually consists of (from bottom to top):

- a filling layer which may or may not be thermally insulated
- an elastic intermediate layer
- a cement-bound floor screed.

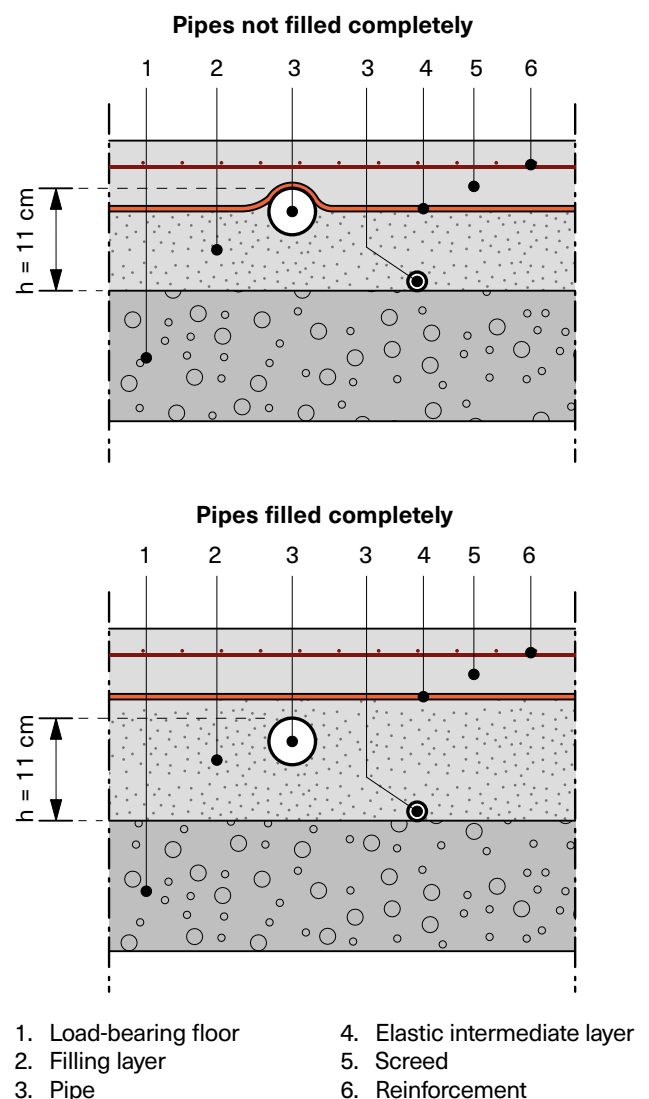
The improvement in impact sound insulation ΔL_w (in dB) achieved by installing this floor structure is measured in the laboratory on a concrete reference floor. That reduction in impact sound is then used to estimate the achievable level of performance in situ. The value ΔL_w is dependent on the composition of all the layers of the floor structure and therefore not just on the elastic intermediate layer.

Impact of pipes

Until recently, there was a considerable lack of clarity regarding the acoustic impact of utility pipes present for sanitary purposes and electricity cables, for example. In practice, there are located on the load-bearing floor and are usually for the most part embedded in a filling layer before the elastic intermediate layer is applied.

As there are no pipes present in the standardised laboratory test setup, the possible impact of pipes in situ remains uncertain. In order to clarify this, a large-scale measurement campaign was carried out in the Buildwise acoustics laboratory. Among other things, this involved examining a typical bathroom situation with a realistic pattern of electricity cables and water pipes (see figures 1 and 2 on the next page).

Various combinations of filling layers and elastic intermediate layers were tested, with and without the pipes. The impact of the pipes on the reduction of impact



1 Cross-section diagrams of the floating floor structures tested.



2 Two test setups with an identical pattern of pipes, before application of the filling layer.

sound is shown for a number of floor structures in the table below.

Results of the study

The results of this specific study confirm earlier findings in the research, namely that the influence of the pipes present on the reduction of impact sound by the floor structure is not systematically negative and is limited to two decibels.

The deviations measured remain within the usual tolerances due to variations in construction with floating screeds. This also seems to be the case for the variants that are not filled completely. The filling of the pipes can have both a (limited) positive and negative influence, depending on the ultimate

thickness and the type of filling layer (see [Buildwise Article 2021/06.06](#)).

We can therefore conclude that the presence of pipes under the floating screed has a negligible impact on the acoustic performances of the floor structure.

Careful installation where the continuity of the elastic intermediate layer is ensured throughout remains an important point for attention, especially if the pipes are not filled completely. In this respect, we refer to theme 6 from [Technical Information Note \(TIN\) 281](#) and the animation [‘Impact sound insulation’](#). 

This article was drawn up as part of the pre-normative study ‘Standards for Acoustically Better Buildings (STABBS) II’, with financial support from the FPS ‘Economy, SMEs, Self-employed and Energy’ and C-Tech Technological Services, subsidised by the Brussels Capital Region (Innoviris).

A Impact of the pipes on the reduction of impact sound for various floor structures.

Elastic intermediate layer (thickness)	Filling layer (density)	Thickness of the filling layer	Reduction of impact sound ΔL_w without pipes	Impact of the pipes ⁽²⁾
Polyethylene foam (6 mm)	EPS mortar (300 kg/m ³)	8 cm ⁽¹⁾	25 dB	0 dB
		13 cm	23 dB	+ 1 dB
	Foam cement (600 kg/m ³)	8 cm ⁽¹⁾	22 dB	- 2 dB
		13 cm	23 dB	- 1 dB
	PU foam (40 kg/m ³)	6 cm ⁽¹⁾	21 dB	+ 1 dB
		11 cm	22 dB	+ 1 dB
Polyolefin foam with acoustic felt (6 mm)	EPS mortar (300 kg/m ³)	8 cm ⁽¹⁾	30 dB	- 2 dB
		13 cm	28 dB	+ 1 dB
	Foam cement (600 kg/m ³)	8 cm ⁽¹⁾	29 dB	- 1 dB

⁽¹⁾ Pipes not filled completely: thickness of the filling < 11 cm.

⁽²⁾ A positive value indicates better performance for the structure with the pipes.



FAQ

The three most important questions and answers on finishes.

What should I do if **micro-cracks** are found in **suspended ceilings** constructed using plaster boards?

Those micro-cracks are usually attributable to the hygrothermal deformation of the boards due to changes in the climate in which they are kept. At most, they are a source of aesthetic discomfort that can easily be rectified during initial maintenance works. Such micro-cracks must therefore be accepted.



Is the **hollow sound** that tiles make acceptable?



Yes, but... Certain tiles, especially large ones, can sound hollow when you tap on them with a hard object. This sound is usually caused by air pockets under the tiles due to unevenness in the substrate or tile. A hollow sound per se is therefore not a reason to reject the tiling unless the sound is accompanied by other defects (e.g. tiles coming loose or degradation of joints) or if the phenomenon extends across several adjacent tiles.

How long should I wait before applying a **finish** to **interior plasterwork**?

The plasterwork must be completely dry before it can be painted over or tiled. If there are favourable drying conditions, plasterwork can be sufficiently dry after just three to four weeks. The drying time is dependent on the type and thickness of plasterwork, ambient conditions (relative humidity), the moisture content of the substrate and the presence of a ventilation and/or heating system. It is recommended to always check the humidity in the least ventilated zones (corners, etc.).



Read more about this
and discover similar **FAQs** for your field.



Trade fair and events

Finish Day

This year's leading event for professionals from the finishing sector will take place on **Tuesday 21 October**.

Discover the latest trends in finishing via demonstrations of new technologies that can be used directly on site, technical presentations, reference documents and much more besides.

Put all your **questions to our specialists from Buildwise** and get all the information you need to take your company into the future.



Shutterstock

Buildwise Zaventem

Registered office
Kleine Kloosterstraat 23
B-1932 Zaventem
Tel. 02/716 42 11
Email: info@buildwise.be
Website: buildwise.be

- Technical advice – Publications
- Management – Quality – Information technology
- Development – Valorisation
- Technical approvals – Standardisation

Buildwise Limelette

Avenue Pierre Holoffe 21
B-1342 Limelette
Tel. 02/655 77 11
• Research and innovation
• Training
• Library

Buildwise Brussels

Rue Dieudonné Lefèvre 17
B-1020 Brussels
Tel. 02/716 42 11

Colophon

A publication of Buildwise (formerly the Belgian Building Research Institute), an institute approved through application of the legislative order dated 30 January 1947.

Responsible publisher : Olivier Vandooren, Buildwise,
Kleine Kloosterstraat 23, B-1932 Zaventem

This is a magazine of a general informative nature. Its purpose is to help disseminate the results of building research from home and abroad.

Reproduction or translation, even in part, of the texts from this magazine is only permitted with written consent from the legally liable publisher.

This publication is an unrevised translation. Only the original documents in French and Dutch are to be used as references.

Translation: Communicationwise

Layout: J. Beauclercq and J. D'Heygere

Illustrations: G. Depret

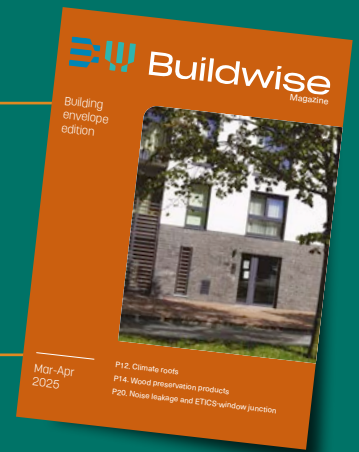
Photographs Buildwise: D. Rousseau, M. Sohie et al.

Also interested in the 'Building envelope' or 'Technical installations' editions?

'Building envelope' edition

Published in April and October and distributed exclusively to:

- general contractors
- joiners and glazing companies
- rough structure contractors
- sealing and roofing contractors



'Technical installations' edition

Published in August and distributed exclusively to:

- heating, ventilation and air-conditioning installers
- sanitary installers

General contractors also receive this edition.



Buildwise



Would you like to receive other editions too? You can! Scan this QR code and fill in the online form. You can also sign up to receive our digital newsletter via this QR code.

buildwise.be