SOLIDITY COUNTS

For Safety and Comfort

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- **Reduces sound impact**
- **Stabilises temperature**
- **No emissions**

Baumit. Ideas with future.

Solidity Counts

THE RIGHT BUILDING MATERIALS

Insulate and save

Houses with good external insulation using components with a high mass are best at storing energy and optimally balancing out temperature fluctuations.

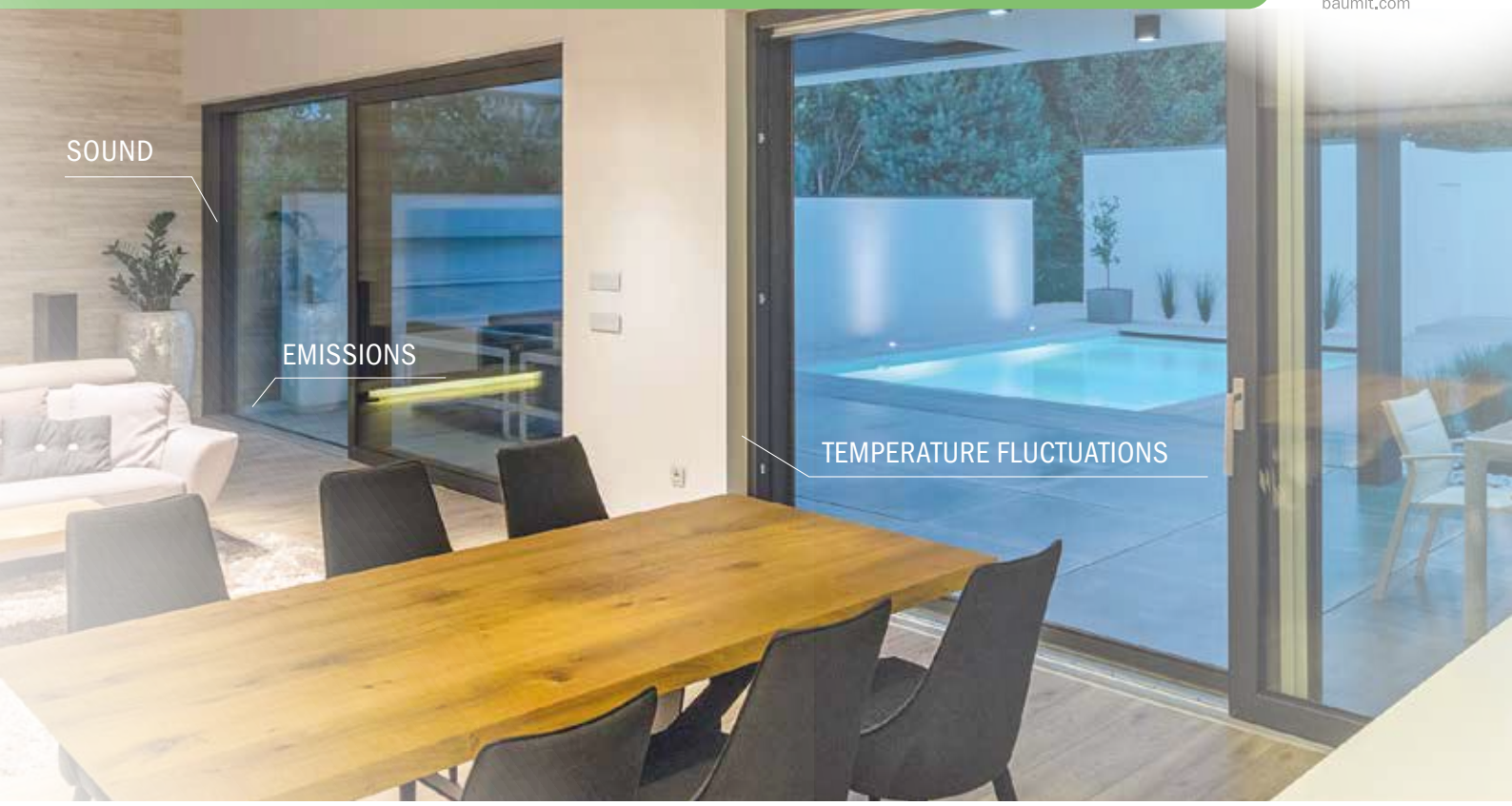
The right building materials

For many years, Baumit has been creating healthy living and environmentally-friendly system solutions with its products for healthy indoor air, comfortable living and better relaxation. Our home should, on one hand, provide protection and, on the other, enable us to recharge our batteries, enjoy some rest and devote ourselves to the nice things in life without stress.

Viva Research Park

A wide range of environmental influences affect us every day. Many of these are rated as detrimental, and can therefore have a negative effect on our well-being and our indoor comfort. At Baumit's Viva Research Park, intensive research is being carried out to establish how different building materials and construction methods interact with many of these influences. A vast amount of data is collected, measured and subsequently evaluated. The results ultimately prove the effect or influence of different building materials on the environmental factors mentioned.

SOLIDITY COUNTS



INFLUENCING FACTORS

Solid, mineral building materials

It is in the nature of things that different materials and substances have different physical and chemical properties. Which substances and building materials ultimately have a positive, reducing effect on certain negative environmental influences?

"There is no substitute for mass."

Solid building materials act on one hand like a battery, absorbing, storing and releasing energy. Rooms with a high thermal storage mass therefore overheat much more slowly and also cool down much more slowly. Solid building materials thus have a direct effect on the well-being factor of rooms and buildings. A solid construction also has a positive effect on sound insulation, as any noise is dampened and better shielded. In addition, these building materials mainly consist of natural mineral substances, so they also help to promote pollutant-free indoor air.

1. Sound

Buildings are affected by a variety of sounds from outside, for example, street noise and passers-by, as well as the environment. Inside, the well-being environment is influenced on the one hand by the neighbours, e.g. footsteps, but the internal walls and furnishings also play an important role. In general, external noise is only perceived as half as loud in houses made of concrete as in houses with a timber frame construction and plasterboard panels. External wall insulation systems can help to increase the sound insulation.

2. Temperature fluctuations

Hot summer temperatures or rapidly cooling rooms in the winter create a host of different feelings in our bodies and can have a negative effect on sleeping comfort and recuperation. Thermal storage capacity plays an important role because the right building materials can help to buffer or balance these effects due to their mass by storing heat.

3. Emissions

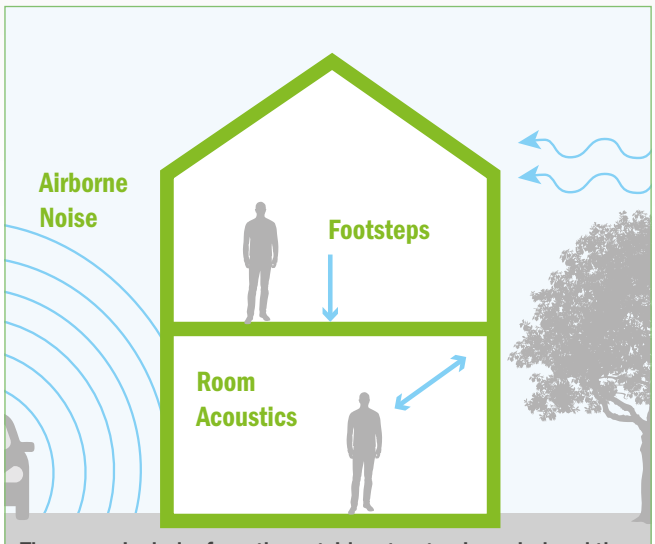
Energy-efficient construction also often means airtight building designs. As a result, any pollutants remain in the room for longer. The replacement of internal air with external air is now much lower than in old buildings. Modern buildings therefore place much higher demands on building materials than before. This makes it all the more important to choose the right building materials, which should be free of pollutants, mineral-based and breathable.

1. Sound

NOISE POLLUTION FROM ALL SIDES

Sound

Sound has a variety of sources and can be transmitted in different ways; through the air, for example traffic noise or via building components. This sound or noise is known as structure-borne sound or impact sound.



These can include, from the outside, street noise, wind and the external climate, and from the inside, people, furnishings, walls and the indoor climate.

Noise causes illness

'Noise' is classed as disturbing, disruptive and annoying or damaging sounds. Noise is not a physical, but a subjective term, i.e. whether sound is perceived as noise depends on the feelings of those affected. Noise can only be quantified with measurements to a certain extent (e.g. loudness, signal waveform, pitch). The disruptive effects of noise range from mild irritation to actual adverse health effects. Noise is one of the most unpleasant environmental influences and one of the greatest environmental stress factors.

Sound insulation

Soundproofing, impact sound insulation and room acoustics are relevant quality features for buildings and are very important when it comes to the well-being and health of users. The task of sound insulation is to buffer sounds from outside or from adjoining rooms.

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SOUND INSULATION IN BUILDINGS

Noise barriers for outside noise

Soundproofing measures, such as noise barriers or noise protection walls along roads and railway tracks are everywhere and are a controversial, ubiquitous and above all ever-present topic. Here, we can make a significant contribution to our well-being by using solid building materials in our buildings. The sound measurements carried out at the Baumit Research Park show that solid building components reduce exterior noise by up to 50%.

Impact sound

As well as thermal insulation, good sound insulation is now a key criterion for high-quality buildings. Noise pollution resulting from transmitted impact sound can have a negative impact on health. The more effectively individual components are decoupled from each other, the more effectively the impact sound can be dampened. The more solid the walls, ceilings and floors, the better the soundproofing.

Room acoustics

When building and furnishing a building, the emphasis is usually on the visual impression or the functionality of the space. Often, no consideration is given to the acoustics. Yet we prefer to be in rooms with good room acoustics, we work better and recuperate more quickly. Bad acoustics are detrimental and cause stress.

2. Temperature fluctuations

STORAGE MASS AS A BALANCING FACTOR

High storage mass

Building components with a high storage mass, e.g. solid walls, screeds and also plasters can absorb, store and release heat energy well when it gets cooler.

Warm in winter, cool in summer

If, in winter, the interior is heated to a comfortable temperature, the temperature does not decrease as quickly, so that, after ventilation, for example, the living room heats up to a comfortable temperature again more quickly. The walls and the floor act like a tiled stove. Conversely, in summer, the rooms stay pleasantly cool.

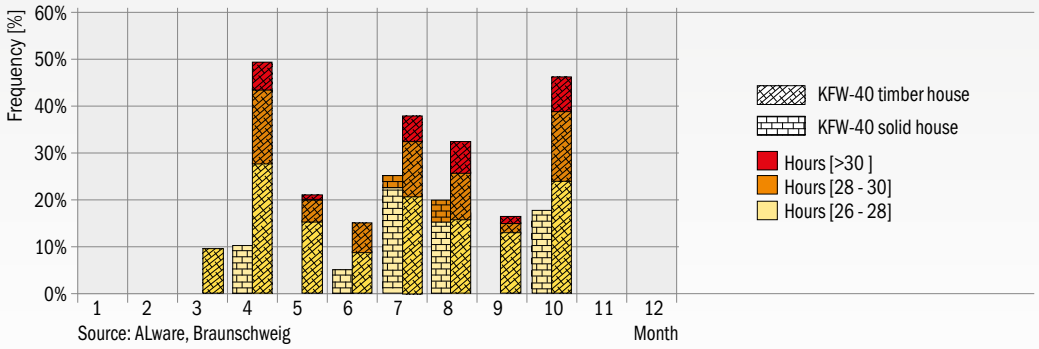
The better the thermal insulation, the better the building components can make use of their storage mass, as the walls are protected from the outside, preventing energy from being lost. Two essential factors for a healthy, comfortable living environment are therefore good insulation and the greatest possible storage mass.

Cooling and heating effects of walls, ceilings and floors

Studies prove the influence of different building materials, as well as the layer thickness of walls, ceilings and floors. The more storage mass that is present, the longer and better these surfaces are able to help to cool down the room temperatures in summer and to heat them up in winter. While solid ceilings and floors, for example, can buffer cold and heat for more than 12 hours, in lightweight constructions, this potential is exhausted after only a short time.

Also, the surface temperature of the interior walls varies depending on the materials used. Measurements carried out at the Viva Research Park showed a variation in the wall surface temperature inside solid houses of up to 4 °C. By contrast, in lightweight constructions, differences of up to 8 °C were detected on the interior wall surfaces.

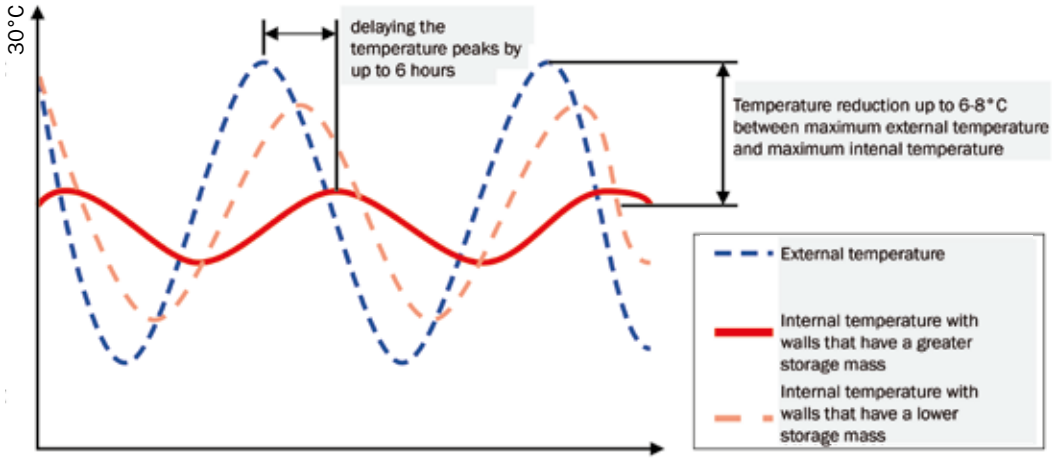
BAUMIT WALL SYSTEMS



Source: ALware, Braunschweig

Overheating in summer:

Studies comparing a timber frame construction with a solid house have shown that rooms in buildings with walls that have a low storage mass can overheat much more easily and frequently.



Delaying and damping effect of wall systems

The graph shows that solid walls result in a longer delay, as well as a significant reduction, in the effects of outside temperature spikes.
This means that the interior temperature can be kept more stable.

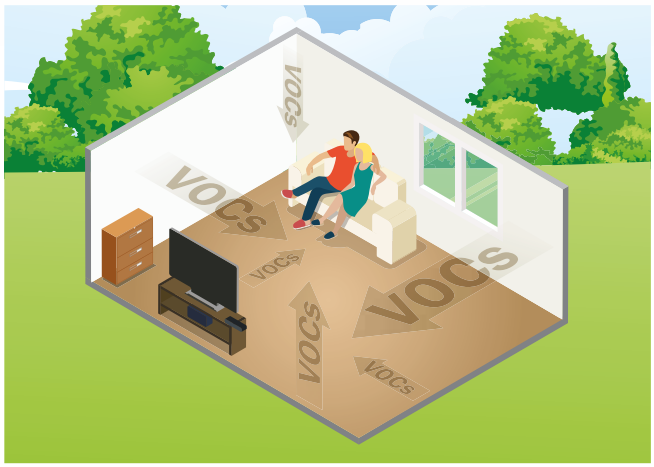
3. Emissions

FREE OF POLLUTANTS

Free of pollutants

Healthy living is in the spotlight more than ever before, so the issue of indoor air quality and indoor pollution levels is becoming increasingly important.

Science now has increasingly detailed toxicological findings on the influence of pollutants on the human organism. Particularly in new buildings or after renovations, increased indoor pollution levels can occur, which can cause unpleasant odours or health problems for the residents.



VOC

VOC (volatile organic compounds) are irritants and odourous substances that are contained in many products – including building materials. Pregnant women, infants and children in particular are affected by these pollutants caused by VOCs. They can cause, among other things, irritation of the respiratory tract and eyes, or result in fatigue, lethargy and headaches, and even allergic symptoms.

IDEAL INDOOR CLIMATE

Viva approved

Which pollutants are released into the indoor air by the different building materials and in what quantities? The researchers at the Viva Research Park investigated these topics and carried out VOC and formaldehyde pollutant measurements. Essentially, it was found that buildings made of concrete and bricks with a mineral interior coating are largely free of volatile organic compounds (VOCs) immediately after completion.

Guaranteed pollutant-free

However, the Viva Research Park is not the only research centre where Baumit building materials are tested. Baumit works closely with recognised testing institutes to test their function and safety for humans and the environment: NaturePlus for natural and healthy interior plaster systems, the Eco Institute for pollutant-free building materials and with Emicode for low-emission building products. Baumit products are reliable and safe for people and the environment.

What is Emicode?

Emicode is a trademarked eco-label for the product classification of low-emission construction products. Emicode provides guidance on consumer health and environmental protection for the assessment and selection of chemical building products. Emicode is divided into three categories which indicate the emission behaviour of the labelled product.

- **EMICODE EC 1 plus, the premium category ("very low emission")**
- **EMICODE EC 1 corresponds to "very low emission"**
- **EMICODE EC 2 corresponds to "low emission"**

baumit.com

Baumit Ltd

t: +44 (0)1622 710 763
e: contact@baumit.co.uk
w: baumit.co.uk

Unit 2 Westmead, New Hythe Lane,
Aylesford, Maidstone, Kent, ME20 6XJ

Ideas with a future.

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