

# Insulation

## How does it work?

- **Insulation significantly reduces the amount of energy required to heat a building.**
- Insulation helps your building to retain its heat when temperatures outside are cooler. The insulating ability of a material is rated using the **R value** system. High R value materials make better insulators
- The R value of an insulator is displayed on the packaging. You might also come across references to **U values**. This value is an inverse of the R value and relates to how quickly your walls, roof or building lose heat. High U values mean high levels of heat loss.
- High Insulation levels have become a necessary inclusion in newer buildings but many of the older community facilities still lack adequate levels.
- **Insulation is an excellent, low cost, first step in any project with immediate financial and carbon savings.**

## Most common uses

- Loft insulation preventing heat loss through the roof
- Cavity Wall insulation in properties built with a double skinned concrete block construction
- Floor insulation below under floor heating pipes so that heat is not lost to the ground below
- Insulation of external (render) and internal (insulating plasterboard) walls
- Pipe work and hot water storage insulation minimising losses on heat distribution systems



Figure 1 Typical loft insulation

## Site and area suitability

- In general the majority of buildings can be insulated to some degree. The higher the levels of insulation the better when it comes to retaining heat.
- Cavity wall insulation can be a valuable addition to the insulating properties of a building. Care must be taken with buildings that are exposed to increased moisture as any permeation of even very small quantities of water can render the insulation useless. Check whether your building is in a high risk area and if so take suitable advice from a professional. [http://www.planningportal.gov.uk/uploads/br/BR\\_PDFs\\_ADC\\_2004.pdf](http://www.planningportal.gov.uk/uploads/br/BR_PDFs_ADC_2004.pdf)
- Where cavities are not present in a building construction, there is still the option of internal or external insulation systems.
- Ventilation must always be considered when insulating a building. Buildings rely on the adequate levels of ventilation to prevent the build up of moisture and keep the construction materials in a preserved state.

## Questions and Answers

### ✚ What is insulation made of?



Insulation can be produced from many different materials. Glass or mineral wool, insulating foam and rock wool are synthetic forms of insulation. There are also natural products such as hemp, sheep's wool, wood fibre, recycled denim and shredded newspaper. The lifecycle costs of insulation are interesting to look at. Some insulating materials require a lot of CO<sub>2</sub> in the manufacturing process and others use less. This is something you may want to consider when choosing insulation. Building regulations require insulation to have some form of fire retardant treatment and some insulation that may be vulnerable to insect attack like sheep's wool will require treatment with Boron which is considered safe for humans.

### ✚ What if there is not enough roof space in my building?

The design and construction of some older community buildings means there is little or no loft space. In these cases, where possible, the ceiling can be lowered through the addition of an artificial ceiling resulting in a new loft space. This has a twofold effect. Firstly, it will reduce the volume of air you will have to heat in order to get the building to a comfortable room temperature. Secondly, it will enable you to insulate the ceiling with significant amounts of insulation.



Figure 2- Example of newly installed lowered ceiling

### ✚ How do I find out what I need to upgrade my buildings insulation levels?

There is a number of professional insulation surveyors who can visit the property and provide your committee with a specification of the insulation required. Upgrading loft insulation can be a simple and cost effective DIY job in many cases. Check your attic space against current building regulations for the required levels remembering to follow safety precautions during loft inspection and installation of any insulation

## See for yourself

**Ardross & Ainess Bowling Club:** This group installed a lowered the ceiling in their bowling club and filled the resulting space with over 270mm of mineral wool. The cavity walls in the building were also filled. The group hope to make significant savings on their energy bills from these simple measures.

**Bower Busy Bees Playgroup:** This group installed floor insulation along with internal and external wall insulation

**Berneray Hall :** Removal of existing plywood lining and supply and fit of Kingspan insulation on the ceiling with new panelling. The remaining building was also insulated and the group have felt the difference in terms of the building's ability to retain heat.

**Eriskay Hall :** Previously this project was losing an awful lot of heat through the roof, something which was rectified through additional funding for the necessary insulation in the roof space. This project did run into some problems which couldn't have been accounted for at the time such as plywood defects and cracked lead when raising the roof. These unforeseen problems are one reason for contingencies and are something that groups should be mindful to calculate into a project.

