

## **GUIDANCE ON SPACE HEATING & THERMAL INSULATION FOR RESIDENTIAL PROPERTIES**

**In order to avoid dwellings being hazardous because of excess cold a satisfactory heating system and thermal insulation should be provided.**

### **A heating system should be:**

- Controllable, understandable and accessible by the occupants
- Safe
- Properly and professionally installed
- Appropriate for the design, layout and construction of the dwelling
- Capable of heating all habitable parts of the building, and/or individual rooms, adequately and efficiently

### **Suggested primary heating systems and appliances include:**

- Gas, oil or solid fuel fired programmable central heating with thermostatically controlled radiator valves and where appropriate room thermostats
- Central heating in HMOs, provided that supplies to individual lettings are metered
- Warm air central heating with air flow control
- Thermostatically controlled fixed electric panels (oil fired and convector types)
- Slim line electric storage heaters
- Room sealed balanced flue wall mounted gas heaters

Note that new gas fired central heating systems should have gas condensing boilers installed, in compliance with Part L1 of the Building Regulations and in compliance with the minimum recommended standard contained in CHeSS (Central Heating System Specifications)

### **Suggested secondary heating appliances for topping up heating in habitable rooms served by the primary heating system/alliance**

- Radiant gas and fixed electric fires

### **Note**

- LPG heaters are not recommended due to amount of moisture they create and increased risk of CO poisoning
- Radiant gas and fixed electric fires are not recommended as the only source of heating for a habitable room; their recommended use is as a top up source of heating
- Electrical convector heaters are NOT acceptable because they are expensive to operate and dangerous particularly if left on whilst the house is unoccupied.

### **Minimum recommended levels of insulation**

Mineral fibre insulation to roof spaces – the thickness to be in accordance with current Building Regulations, which is currently 270 mm.

In attic rooms where there is no insulation provided between the ceiling and the roof covering, the ceiling should be lined with thermally insulated board. Where the attic room has an external wall, that wall should also be lined with thermally insulated board.

### **Why insulate the roof space?**

Installing or upgrading loft insulation is one of the quickest and most efficient methods of improving the thermal performance of new and existing buildings. The application of loft insulation material can provide numerous benefits to a building owner, occupant or user, for example:

- Reduces utility bills due to reduced heating demand
- Improves building energy performance / efficiency rating
- Helps to maintain warmth in the winter
- Helps to prevent over heating in the summer

- Creates a more comfortable living space by maintaining room temperatures
- Helps to prevent internal condensation
- Reduces external noise ingress
- Reduces a building's carbon footprint
- Makes a building more desirable to potential renters

**Excess Cold** generally covers the threats to health when temperatures fall below the minimum satisfactory levels for relatively long periods.

### **Health Effects.**

A healthy indoor temperature is around 21°C. There is small risk of health effects below 19°C. Below 16°C, there are serious health risks for the elderly, including greatly increased risks of respiratory and cardiovascular conditions. Below 10°C a great risk of hypothermia, especially for the elderly.

Cardiovascular conditions (e.g. heart attacks and stroke) account for 50 per cent excess winter deaths. Respiratory diseases (e.g. 'flu, pneumonia, bronchitis) account for another third. Excess cold can also cause an increase in blood pressure/reduce resistance to infection because of the effect of cold air on bronchial lining and immune system/worsen symptoms of rheumatoid arthritis.

### **Causes**

- Main causes appear to be changes in outdoor temperature among other factors;
- Sleeping in cold bedrooms greatly increases health risk;
- Dwellings with low energy efficiency ratings (poor insulation);
- Greatest risk is in properties built before 1850, lowest in more energy efficient dwellings built after 1980;
- Absence of central heating/poor inefficient heating systems; and
- Excessive damp which reduces thermal insulation.

### **Preventive measures that can have an effect on likelihood and harm outcomes:**

- Appropriate levels of thermal insulation to minimise heat loss. Level depends on location/exposure/relationship to other dwellings/buildings orientation;
- Appropriate heating system safely and properly installed and maintained and controllable by occupant;
- Appropriate/properly installed/maintained occupant controllable low-level background ventilation without too much heat loss/draughts;
- Means for rapid ventilation at times of high moisture production in kitchens/bathrooms through fans;
- Properly sited/sized permanent openings (e.g. air bricks/open-able windows); and
- Properly fitting butt-jointed floor boarding/doors/windows.

Note: there may have to be a 'trade-off' regarding windows because of security/external noise levels etc.

### **What about flats and HMOs?**

Centrally controlled space heating systems should operate in a way that makes sure occupants are not exposed to cold indoor temperatures. Occupants should be allowed to control temperature within their dwelling.

### **Hazard assessment**

- Dwelling is assessed on the basis that it is fully occupied by the most vulnerable age group;
- Only the dwelling characteristics/energy efficiency/effectiveness of the heating system are considered as these are within the control of the owner; and
- Other factors such as dampness/disrepair to the structure/space/water heating systems.