

GOOD PRACTICES IN SME

Insulating building partitions by using cellulose wadding



Designed by freepik

The following document was developed using European Union financing as part of the “Technical support for the promotion of energy audits and energy efficiency investments in small and medium-sized enterprises in Poland”. The opinions presented in this document should not be treated as the official stance of the European Union.

The project was financed by the European Union as part of Structural Reform Support Programme (SRSP) and realized by the Polish National Energy Conservation Agency (KAPE SA) in cooperation with the European Commission on behalf of the Ministry of Climate and Environment.

What is cellulose wadding?

The cellulose wadding is an insulating material made in a process of paper recycling i.e. old newspapers. Cellulose wadding can be used for insulating roofs and flat roofs, as well as internal or external walls.

By which parameters is cellulose wadding characterised?

The insulation parameters of cellulose wadding are similar to those of mineral wool. The thermal conductivity coefficient λ of the material is oscillating between 0,037 and 0,042 $\frac{W}{m \cdot K}$. However, the application of cellulose wadding by blowing in allows to avoid creation of thermal bridges.

Cellulose fibres are impregnated using dedicated salt agents which make the material highly fire-proof. Due to the impregnation the fibres are also less vulnerable to growth of microorganisms i.e. fungi and mould on the isolated partitions. What's more cellulose wadding is moisture resistant, therefore it could be successfully used as an humidity buffer and moisture protection of wooden elements of building construction. The material is characterised also by very good acoustic properties.



fol. 1 insulation of cellulose wadding

How to insulate the partitions using cellulose wadding?

For insulating building partitions the cellulose wadding is applied by blowing in. This process requires using specialised equipment called fan aggregate. The work should be carried out by professionals who dispose of adequate tools and skills.

This insulating material is very loose which enables to precisely fill even hard-to-reach areas. In result the creation of thermal bridges could be avoided. In comparison to cellulose wadding insulation, the insulation made of mineral wool is more frequently vulnerable to thermal bridges formation i.e. in the point of board's connection.

Cellulose wadding due to its structure could be used to fill the air void in cavity walls between load-bearing wall and curtain wall. Moreover it's suitable for insulating stud walls in which the old insulation (e.g. mineral wool) has lost its initial volume. This situation leads to creation of empty areas on the top of the construction and causes deterioration of the partition's thermal properties.



fot. 2 kb.pl : injection on a bond



fot. 3 onet.pl: blowing in the cellulose fibres

What is the cost of cellulose wadding insulation?

Implementation cost of cellulose wadding insulation of building partitions amounts to tens of PLN/m². It depends on the insulation thickness, material's thermal conductivity coefficient, cost of labour and form of insulation (additional insulation will be cheaper than implementation of the whole new insulation).

Unit cost of cellulose wadding insulation will be higher than the unit cost of mineral wool or polystyrene panels insulation. However, implementing cellulose fibre insulation will benefit with better thermal properties of the building. What's more using cellulose wadding made in process of recycling contributes to development of sustainable solutions in construction.

Source: Own study of KAPE S.A.