THERMAL INSULATION MATERIAL.

IS IT:

- [X] *Product*
- [ ] *Technology*
- [ ] *Equipment*

APPLICABLE FOR:

- [X] *Restoration*
- [X] *Rehabilitation*
- [X] *New Construction*

APPLICABLE ON:

- [ ] *1. Foundations and underground structures*
- [ ] *2. Vertical structures*
- [ ] *3. Horizontal structures and vertical connections*
- [ ] *4. Roof and terraces*
- [ ] *5. Façade and building envelope*
- [ ] *6. Finishes and completion elements*
- [ ] *7. Integrated services*
- [X] *8. General strategies for building recovery*

Related companies: *ECOWOOL.*

DESCRIPTION

Due to the environmental performance of ecowool it is chosen by people, who want to insulate their homes with maximally natural materials, creating a healthy microclimate in the premises. Ecowool is also suitable for thermal insulation of industrial buildings and sound insulation indoors. Ecowool is widespread in thermal insulation of kindergartens, educational institutions and medical facilities, confirming its beneficial effects on human health.

WHY TO USE

Ecowool is a natural, breathable and effective thermal insulation material, produced from natural cellulose fiber, while processing wastepaper.

Ecowool is a loose, light, dry mass with capillary - porous structure, 86% of its composition consist of recycled cellulose fiber (crushed paper - wood fiber) and 14% of natural salt admixture - volatile flame retardants and antiseptics. Due to such a composition, the material is completely safe in manufacturing, assembly, and exploitation. It excellently provides for the resistance against fire spread, does not rot, does not grow moldy and prevents the spread of rodents.

HOW TO USE AND APPLY

Ecowool can be applied in two ways – by wet or dry application.

Wet application is used in open wall structures. The material with special application equipment (blowers) are sprayed in wet manner or mounted apiece even in narrow, difficult of access places of the building structures difficult of access. After drying out, material is firmly adhered to surrounding surfaces that prevents from possible surface deformation. Suitable way for thermal insulation of gaps and places difficult to access.

Dry application is used in horizontal and sloping structures, for example, on floors or roof slope. Dry insulation material is blown into gaps and fills even the smallest gaps of the structure.

Technical procedure:

Damp installation is applied in open wall constructions, providing for an efficient insulation of even completely vertical surfaces. With the help of a special device the material is sprayed over the surface to be insulated, allowing filling also of difficult-to-reach or narrow constructions. After the material has completely dried it is firmly stuck to the surface, preventing a possible surface deformation or occurrence of gaps.

Dry horizontal ecowool installation is designed for the insulation of ceiling beams and attics. Ecowool with a special installation device is freely blown over the surface to be insulated, forming a thick, but at the same time breathing and regulating humidity thermal insulation layer.

In dry installation ecowool with a special installation device with pressure is "blown" into oblique and vertical structures, such as specially constructed frames in building walls. The fine texture of the material allows installing in difficult-to-reach places, filling in all the gaps and cracks. In addition, while embedding ecowool by applying pressure, the material is tightly compacted, ensuring that with time it will not settle down.

TECHNICAL CHARACTERISTICS

It consists of a mixture of cellulose fiber (81%), boric acid (12%) and borax (7%). It does not burn, does not rot, has good heat and sound insulation properties.

Main characteristics:

Low thermal conductivity. Ecowoll has excellent heat retention - its calculated thermal conductivity coefficient is $\lambda = 0.0377$ W /mK.

Resistance to moisture. The fine fiber ecowool structure does not accumulate moisture. Therefore, like wooden walls, it does not need to use any vapor barrier films. Because eco-cotton is based on recycled wood (newsprint), its moisture changes like wood. As the relative humidity changes, the moisture enters the top layer, the ecowool fibers stick together and form a thin film. This prevents air from penetrating inside. When the moisture evaporates, the properties of the material remain unchanged.

Fire resistance. It belongs to the group of highly flammable materials (B), so it protects wooden and metal structures from high temperatures and direct exposure to fire. This property is provided by the borax salts embedded in the ecowool, which, when heated, release crystallization water and slow down the ingress of oxygen to the fire site, thereby stopping the spread of fire and

cooling the insulation layer. Due to boron compounds, ecowool does not burn or melt. Does not emit toxic gases during a fire.

Biological resistance. The boron compounds in it protect the ecowool and the structures in contact with it from rot and fungus. Insects and rodents do not live or breed in it.

Good sound insulation. The fine-fiber ecowool structure effectively fills all gaps, cracks and hard-to-reach areas, and the resulting continuous layer ensures a high level of sound insulation.

RECOMMENDATIONS AND OTHER INFORMATION

- Ecologically clean raw materials.
- Effective thermal insulating properties.
- Breathable thermal insulation material.
- Antiallergic material - safe for health both during the installation and after the installation.
- Extensive application possibilities and different ways of installation.
- Economical application since there is no material waste.
- Fire safe and flame-retardant material.
- Excellent sound insulation properties.
- Rodents and pests avoid living therein.

EXAMPLES

Wet insulation eco-wool is suitable for both brick and wooden house walls, inside and out. When insulating external walls, ecowool must be installed with a wooden frame (55 cm gaps between the beams are recommended), the gaps of which are filled with 5 - 15 cm. eco-cotton layer. Wet insulation of external and internal walls fills even the smallest cracks, crevices and unevenness in the walls. Such wall insulation provides an opportunity to level the walls and not waste money on standard insulation solutions. Ekovata fills the carcass evenly even if there is a huge deviation in one plane. The walls are filled with a solid layer of Ekovatos. Excess cotton wool is cut with a special roller and blown. Insulation with eco-wool will help to avoid cold bridges and provide maximum heat and sound insulation. Consultation is required for the preparation of the carcass for the wet method. Wet insulation of external and internal walls is carried out only during the warm season.

When insulating walls in a dry way, an air gap must be created. After installing the frame on the walls of a wooden or brick building, a wind insulation film must also be installed. Fully sealed around the perimeter and lined with battens. In some cases, a string or tape is used for extra strength. It is advisable to use as strong a film as possible. Holes are cut in the film in certain places through which we blow the thermal insulation, then the holes are sealed. In this case, the gaps between the struts may be the same. Dry insulation can be done all year round.

REFERENCES / SOURCES AND LITERATURE

https://www.balticfloc.lv/en/products/ecowool/

http://www.siltinatmaju.lv/en/loose-fibre-insulation/ecowool

https://ekotroba.lt/paslaugos/isores-ir-vidaus-sienu-siltinimas/

WEBSITE OF THE COMPANY

https://www.balticfloc.lv/

http://www.siltinatmaju.lv/en

IMAGES AND CAPTIONS

Fig.1: Ecowool installation by damp application over the wall. © *EDILTECO https://www.balticfloc.lv/en/products/ecowool/*

Fig.2: Insulation of attic and inter story space. © *https://www.balticfloc.lv/en/products/ecowool/*

Fig.3: Insulation of ablique constructions and walls with ecowool. © *https://www.balticfloc.lv/en/products/ecowool/*