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Monitoring of weight loss of fibreboard during influence of flame

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Abstract

Choice of building materials today is influenced by numerous factors. One of the important factor except to good physical and mechanical properties is also the environmental impact. Just the organic processed of fibreboard is significantly different from other commonly used thermal insulation materials. In addition to good features the fibreboard has also in terms of fire protection poor quality and that it is a combustible material. It is for this reason that we have decided to make a fire test of fibreboard. As the test method, we chose a weight loss in the heat sources, and by delaying the time depending on the heat sources and the type of fibreboard. The theoretical part of the paper deals with the description of the material examined and the test methodology. The practical part consists of evaluation testing. Samples tested were two types of fibreboard, which is mainly used as thermal insulation material floating floors. The first test material is a fibreboard produced by pressing wood chips in a single layer. The other test materials consisted of pressed fibreboard in the form of thinner plates and then glued of several layers into a single unit. In addition to tracking the speed of weight loss, depending on the density of the samples we were compared and depending on the duration of action of flame and rate of weight loss of the sample.

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1. Introduction

Nowadays many factors influence the choice of building materials. In addition to good physical and mechanical properties, the environmental impact is very important factor. The processing rate of fiberboard significantly differs from other commonly used thermal insulation materials [1]. In addition to the good fire technical properties of a

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fiberboard, there is one downside – it's a flammable material. For materials comparison and determination of their behavior in fire, it's possible to make a variety of standardized tests but it's necessary to consider which of them are appropriate.

One of the basic material testing is tracking of weight loss. Tracking of weight loss is one of testing principles. This principle wasn't a sufficiently redeemable data among all materials because the weight loss may also occur in materials with higher content of water and they can be nonflammable [2].

2. Description of test material

In these paper, there are evaluated fiberboards from "Steico". They are mainly used as a thermal or a sound insulation and are primarily designed for interiors. They are produced in various thicknesses and designs. For the experiment, we have chosen two most commonly used types of fiberboards: "Steico Protect DRY M", "Steico Protect H".

2.1. Steico Protect DRY M

This is a thermal and sound insulation type of fiberboard designed for brick houses and houses with wooden constructions (Fig. 1). The material can be used as a thermal insulation of older wooden roofs [3]. It's produced by a dry process using different types of electric saw and its supplied as a straight edge board or a board with straight edge. Thickness of fiberboard is set from 60 to 240 mm. Distinctive attributes of the boards are water resistance and ability to open diffusion. In winter the board can be used as an excellent insulation and in summer the board can protect house against overheating.

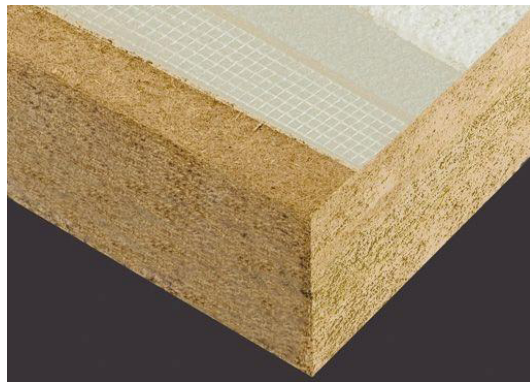


Fig. 1. Fibreboard "Steico Protect DRY M" [4].

2.2. Steico Protect H

As with the previous sample, this one (Fig. 2) is used as a good thermal and sound insulation for brick and wooden houses. To be specific, it's a brushed board with tongue and groove. It featured an excellent water vapor diffusion which is important for diffusion open constructions. It has also a high heat-storage capability and with this board, it's possible to control and regulate the internal microclimate of building. Thanks to tongue and groove profile, the board is very stable and rigid across entire surface. The board forms an effective protection against wind, dust, moisture, noise, it can be easily assembled and also the board has a high-pressure strength.

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