

A method for making expanded paper honeycomb core material moisture- or waterproof, and the thus obtained honeycomb core material.

The invention relates to a method for making expanded paper honeycomb core material moisture- or waterproof, as well as the honeycomb core material obtained by using this method.

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Paper honeycomb core material is often used as a stiff and light construction material. In a number of applications it is necessary for the paper honeycomb core material to be moisture- or waterproof, as for example in construction
10 panels for outside use, for use in transport and for use in floors and such like. In these cases, the honeycomb core material is usually delivered in moisture- and waterproof condition, after which the user himself provides one or both sides of the honeycomb core material
15 with a cover layer of plastic or metal, for example.

Paper honeycomb core material is obtained by glueing a number of strips of paper onto each other at certain places, and, after the glue has dried, expanding this
20 parcel of paper by pulling the outer strips of paper apart laterally, thus obtaining the hexagonal cellular structure. After the expanded shape has been stabilized, the honeycomb core material is cut into slices of the desired thickness, which are further used as honeycomb core in
25 honeycomb panels, for example.

It is known to make the paper honeycomb core material moisture- and waterproof after expansion by impregnating the paper. Impregnation is effected by immersing the ex-
30 panded honeycomb core material in a solution of formal-

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dehyde and water. In the known processes immersion usually takes place a number of times in order to apply the desired amount of resin. After immersion, the impregnated honeycomb core material must be dried with the aid of a
5 drying facility in order to remove the surplus of water from the honeycomb core material.

This way of making paper honeycomb core material moisture- and waterproof has a number of disadvantages. Formaldehyde
10 is a poisonous substance that makes recycling or dumping difficult. Owing to the fact that immersion has to take place a number of times, the treatment is time-consuming and elaborate, which results in high process costs. Drying, at the end of the process, is an extra step in
15 which the solvent with formaldehydefumes must be disposed of in a safe manner.

It is an aim of the invention to provide a method for making expanded paper honeycomb core material moisture- or
20 waterproof which overcomes these disadvantages.

According to the invention, this aim is achieved by the measure that the honeycomb core material is provided with a coating after expansion.

25 This brings about, that the paper honeycomb core material is provided with a sealing layer that offers an effective protection against moisture and water. The coating can be applied in one layer, so that repeated immersions are not
30 necessary. Nor does formaldehyde have to be used any more. By applying the coating a coating-paper-coating-sandwich is obtained, which produces a lighter and stronger construction as compared to impregnated paper. This method is cheaper than the one in which strips of paper are
35 provided with a coating before they are glued to one another and expanded, as less coating material is needed, that is not on the glued areas, and as the usual glues may

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be used. In addition, expenses are saved because spoilage of honeycomb core material during production has not yet been provided with the cost price raising coating.

- 5 The coating is preferably applied as a powder of a polymer material, as, in this way, it is possible to apply a coating of essentially equal thickness across the entire length of the honeycomb cells within a short time.
- 10 In an advantageous embodiment of the method, powder is applied by providing the paper honeycomb core material and the powder with an opposed electric charge, as a result of which a predetermined amount of powder can be applied to the honeycomb core material simply and quickly, by al-
- 15 lowing the honeycomb core material to attract the powder electrically.

In this case it is advantageous to moisten the paper honeycomb core material with water before the powder is

20 applied, as this makes it easier to give the paper honeycomb core material a suitable electric charge.

Moistening is preferably carried out by sprinkling with water, preferably such an amount of water being used, that

25 a degree of humidity equal to 15-30 percentage by weight of the honeycomb paper is obtained. By sprinkling, the paper easily and quickly acquires an even, suitable degree of humidity. It has been established that the stated degree of humidity achieves good results in practice.

30 For the polymer powder, a thermosetting polyester or epoxy is preferably used, since a strong moisture- and waterproof coating can be made from a thermosetting polyester or epoxy or a mixture of the two.

35 In an advantageous manner the honeycomb core material is heated after the thermosetting powder has been applied, in

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order to let the powder turn into a hard and thick coating
and to stabilize the coated honeycomb core material in the
expanded state, in which the heating is preferably carried
out by means of hot air or by infrared radiation in order
5 to obtain quick and even heating.

The invention also relates to the paper honeycomb core
material that is obtained with the method described above.



C L A I M S

1. A method for making expanded paper honeycomb core material moisture- or waterproof, characterized in that the honeycomb core material is provided with a coating after the expansion.
- 5 2. A method according to claim 1, characterized in that the coating is applied as a powder of a polymer material.
3. A method according to claim 2, characterized in that
10 the powder is applied by providing the paper honeycomb core material and the powder with an opposed electric charge.
4. A method according to claim 3, characterized in that
15 the paper honeycomb core material is moistened with water before the powder is applied.
5. A method according to claim 4, characterized in that the moistening takes place by sprinkling with water,
20 preferably such an amount of water being used that a degree of humidity equal to 15-30 percentage by weight of the honeycomb paper is obtained.
6. A method according to one of the claims 2 up to and
25 including 5, characterized in that a thermosetting polyester or epoxy is used for the polymer powder.
7. A method according to claim 6, characterized in that
30 the honeycomb core material is heated after the thermosetting powder has been applied, in order to let the powder flow out into a hard and thick coating and to stabilize the coated honeycomb core material in the ex-



panded state.

8. A method according to claim 7, characterized in that the heating is carried out by means of hot air.

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9. A method according to claim 7, characterized in that the heating is carried out by means of infrared radiation.

10. Paper honeycomb core material provided with a coating that is obtained by the method described in one of the above claims.

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(57) Abstract The invention relates to a method for making expanded paper honeycomb core material moisture- or waterproof, as well as the honeycomb core material obtained by using this method. According to the invention, the honeycomb core material is provided with a coating after expansion, the coating preferably being applied as a powder of a polymer plastic.		