

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
8 July 2010 (08.07.2010)

(10) International Publication Number
WO 2010/077210 A2

(51) International Patent Classification:
C04B 18/00 (2006.01) *C04B 28/02* (2006.01)

(21) International Application Number:
PCT/SK2009/000007

(22) International Filing Date:
21 December 2009 (21.12.2009)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
PUV 158-2008(5260)
29 December 2008 (29.12.2008) SK

(71) Applicant (for all designated States except US): **ELI SYSTEMS, S.R.O** [SK/SK]; Malé Tatry 6048/8, 034 05 Ruzomberok, Slovakia (SK).

(72) Inventor; and

(75) Inventor/Applicant (for US only): **UHRİK, Zoltan** [SK/SK]; Liptovská 21/16, 034 50 Ruzomberok (SK).

(74) Agent: **MRENICA, Jaroslav**; Mládeznicka 1435, 020 01 Púchov (SK).

(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DK, DM, DO,

DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PE, PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Declarations under Rule 4.17:

- as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii))
- of inventorship (Rule 4.17(iv))

Published:

- without international search report and to be republished upon receipt of that report (Rule 48.2(g))

(54) Title: MIXTURE FOR THE CONSTRUCTION.

(57) Abstract: Mixture for construction of a pulp mixture intended as a base to manufacture prefabricators resp. thermal insulation materials with using of waste, consisting of at least 5% of volume of cellulose mixture and a maximum of 95% of cement with sand volume and industrial dry matter with the benefit of 10% of volume mixture of cellulose and 90% of cement with sand volume and industrial dry mass with the benefit of 90% of volume mixture of cellulose and 10% of cement with sand volume and industrial dry mass, while a mixture of cellulose consists of 100% of volume of cellulose fibers or recycled paper, or at least 30% of volume of cellulose fibers or recycled paper, with the addition of 5 to 10% of volume of water glass and / or 2 to 15% of volume of natural resins and / or 5 to 25% of volume of kaolin and / or 5 to 20% of chalk volume.



WO 2010/077210 A2

Mixture for the construction.**The field of technique**

The technical solution relates to the mixture production intended for the construction with a pulp content used as a building material of high thermal insulation properties with a reduced weight, and mainly as a base mixture for the production of prefabricators resp. thermal - insulating materials with the usage of unutilizable waste.

The existing state of technique

So far the construction industry uses classic prefabricates containing varying quantities of a mixture of cement and water. As a mixture used in the combination is particularly stiff, these products cure to the relatively high weight. It still does not make a substantial role in blocks or bricks used in basic constructions, only a manual work with them is quite strenuous. The major barrier to high weight of wall tiles or roofing is because of the possible disruption of statics construction. Some technical solutions add to the concrete mixture a crushed or cracked polystyrene. There is also used a waste glass in the granular form and the use of sheep's wool for the insulation. These disadvantages are partly removed with a mixture of cellulose according to EN no.3976 of the utility model. Its use, however, was limited because of no possibility of heat treatment for special purposes, such as sound insulation or thermal insulation materials. The shaping of prefabricators were difficult as well.

The nature of technological solution

Disadvantages of a current state of technology largely removes the mixture for construction of a pulp by the utility model. It contains components in the optimal ratio consisting of at least 5% of cellulose volume mixture and a maximum of 95% of cement with sand volume and industrial dry mass with an advantage of 10% of the cellulose mixture volumes and 90% with volumes of cement with sand and industrial dry mass with the benefit of 90% of cellulose mixture volumes and 10% of cement with sand volumes and industrial dry mass, while a mixture of cellulose consists of 100% by volume of cellulose fibers or recycled paper, or at least 30% by volume of cellulose fibers or recycled paper, with the addition of 5 to 10% of volumes of water glass and / or 2 to 15% of volumes of natural resins and / or 5 to 25%

volumes of kaolin and / or 5 to 20% of chalk volumes.

It is possible to make a vacuum cure of the mixture by thermal proces in a range from 0 to 100 ° C.

Cellulose fibers are derived from a wood waste, eventually from a torn or minced waste paper, which is prepared in a tank water and poured at a 1:1 ratio and is allowed to operate, about 7 to 24 hours with an occasional stirring. Subsequently, water glass is added into the prepared material in a given proportion and / or natural resin and / or kaolin and / or chalk. Individual components can be mixed with a cellulose individually or all together according to the requirements for the use of mixture. After achieving a perfect dissolution of wood or paper to the slurry mixture, prepared cellulose is added in a given proportion to the mixture of cement and sand with an industrial dry mass determined for using in the construction.

Its advantage is that cellulose fibers which are derived from a waste wood or waste paper, act as a plasticizer of constructing mixtures, restrict cracking of units, form a thermal insulation and increase the flexibility of individual products. Use a water glass, natural resins, kaolin or chalk allows a heat treatment and a vacuum cure. The mixture has advantages over previous materials in the creation of a wide range of construction materials of different thermal insulation materials in required elasticity, internal tension, fire resistance, and also provides sound insulation.

Examples of implementation of technical solutions

A certain amount of cellulose waste mixture formed by a collecting paper is inserted into a mixing device depending on the used volume of the 1:1 ratio with water and let it interact, about 7 to 24 hours. After the dissolution of paper slurry, the mixture is used in the manufacture of various prefabrication as follows:

To add 5 to 25% of volumes of kaolin to the cellulose mixture when producing the gypsum-cardboard plates.

To add 5 to 10% of volumes of water glass to the cellulose mixture when manufacturing the waterproofing and wall panels.

To add 2 to 15% of volumes of natural resin and 5 to 20% of volumes of chalk to the cellulose mixture when producing the heat-insulating bricks or blocks. Natural resins provide

us the flexibility and chalk provides us the softness during the crafting of used prefabricators.

The ready cellulose blend is then mixed with 10 to 90% of volumes of cement with sand and industrial dry mass.

Relevant precast can be used in construction after a technological treatment, moreover, a used mixture of allows not only a vacuum cure but also the heat treatment at temperatures from 0 to 100 ° C.

Industrial utilization

The mixture is designed specifically for construction according to the technical solutions .

Requirements for the security

A mixture designed for construction with a pulp content is characterized by the fact, that it consists of at least 5% of volume mixture of cellulose and a maximum of 95% of cement with sand volume and industrial dry mass with the benefit of 10% of volume mixture of cellulose and 90% cement with sand volume and industrial dry mass or with the benefit of 90% of volume mixture of cellulose and 10% of cement with sand volume and industrial dry mass, while a mixture of cellulose consists of 100% of volume of cellulose fibers or recycled paper, or at least 30% of volume of cellulose fibers or recycled paper, with the addition of 5 to 10% of water glass volume and / or 2 to 15% of volume of natural resins and / or 5 to 25% of volume of kaolin and / or 5 to 20% of chalk volume.