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(72) Inventor; and
(71) Applicant: **LÁSZLÓ, Ferenc** [HU/HU]; H-1165 Budapest, Hunyadvár utca 52. (HU).

(74) Agent: **KASZÁS, Eszter**; Maros utca 28. 1. em. 4, H-1122 Budapest (HU).

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(54) Title: METHOD FOR PRODUCING MULTI-COMPONENT INSULATING PLASTER

(57) Abstract: Procedure for the manufacturing of a multi-component mortar, that in principle consists of three basic components, furthermore by adding additional adhesives and paint materials a mortar mixture with good insulation features will be achieved. Mortar has thermally insulating and fireproof characteristics, dry phase and water-based. Mortar can be laid on the requested surface in a pulpy phase. Treatment of surface is possible with the adequate tools.

Method for producing multi-component insulating plaster

The subject of the patent is the various compositions of heat insulating, fireproof, water-based dry plaster used in the construction industry, that can be applied in a pasty form. Plastering materials can be applied to the surface by using the proper traditional tools, or by spray plastering.

Plastering is a very labor-intensive construction process. During the construction of a house it can be seen that the house will be under roof within a relatively short time, but the final completion of the house takes much more time. Depending on the size, intended use and segmentation of the building, plastering works account for one fifth of the full workload. In case of a traditional family house, plastering requires three times more effort than the construction of the walls. Machine plastering with high quality, fast-to-use dry mortars is essential for today's construction. The builder is also interested in the rapid completion of finishing works. However, one of the most time-consuming process of these works is plastering. Dry mortar is a factory ready-mixed mixture containing some sort of binder, fill material and additives to improve physical properties. Pure water must be added to this mixture immediately before use. Two types of dry mortars can be distinguished: mortars for general-purposes and special mortars. The general-purpose plastering and profiling masonry mortars are lime, cement or gypsum based materials, that are used for bricklaying, plastering and profiling in the construction industry. These mortars contain additives beside mineral fillers, which are facilitating the workability and improvig phisical characteristics. Special mortars stand out from the general-purpose mortars with some properties.

These may be e.g impermeable, flexible, embedding, acid and alkali-resistant, fast setting, soundproofing or thermal insulating mortars. Beside cement, lime and gypsum their binding material may be e.g soluble glass (sodium silicate). These mortars also contain additives in all cases to improve workability and phisical properties. The masonry mortars are used for connecting masonry elements, filling gaps and distributing load. These are usually lime-cement based mortars with mineral fillers. Plastering mortars have to be applied to the surfaces of walls, ceilings in order to correct unevenness, protect their condition and provides proper surface for subsequent works. Facade plasters may only be lime-cement or plastic based materials, which are resistant to weathering and show lower water absorption and higher bond strength than indoor plasters. Indoor plasters can only be used at places that are protected from the weather. Consequently, the binding material may also be lime, cement or gypsum. Finishing plasters are mortars that can be used to develop the final surface of the inner or outer walls. Within covering plasters fine plasters, thin-layer-plasters and grit plasters can be distinguished. Colored covering plasters contain weather resistant and colorfast inorganic pigments. Lime-, cement-, cement-lime-, lime-cement, light cement-lime and thermal insulating cement-lime mortars can be distinguished by the quantitative composition of binding materials. Among them, cement, hydraulic lime and cement-lime plasters can be used for indoor and outdoor plastering, but for wet surfaces and foundations cement based plasters can only be used. Lightened plaster is a hydraulically bonded, low-density material with high flexibility and it can be used as a base coat of well insulated walls. This plaster can be used manually or with plastering machine, but it should not be confused with insulating plasters. The binding material of thermal insulating plasters is usually lime and cement, their insulation properties originate from the use of additives, such as expanded perlite, or polystyrene beads. This type of coating can be used as a base coat to outdoor surfaces – applying by hand or by plastering machine. Gypsum based plaster is used indoors, usally as a single-layer plaster.

Depending on the amount of binding materials and additives, gypsum, lime-gypsum and gypsum-lime mortars can be distinguished. Due to its favorable physical properties this is a popular type of interior plasters today. Without claiming completeness, plasters with organic or plastic based binding materials can also be mentioned, which are usually finishing plasters. Additives are mainly of mineral origin. Earlier there had also been ideas of creating plaster compositions that can be used for various purposes. One example of such a composition is the Hungarian patent number **P1400470**, called **„PROCEDURE FOR THE PRODUCTION OF WATERTIGHT, BREATHABLE PLASTER".** The subject of this patent is a procedure for creating a watertight, breathable plaster, which will be an industrially produced, cement based, dry plastering mixture containing hydrophobic, watertight additives. Due to its porous structure it remains breathable. The plaster created by the procedure subject to this invention is a cement based dry plaster with silica sand as additive. By adding water, this mixture is turning into a dense, cream-like material, which is immediately suitable for plastering and insulating purposes. This plaster can be a solution in the fields of contruction industry and deep architecture, and it can be used for the subsequent (permanent) waterinsulation of damp, wet and musty basement walls or foundations of houses. Furthermore it can be applied both indoors and outdoors as a drying plaster. The Hungarian patent **„PROCEDURE FOR THE PRODUCTION OF A CONSTRUCTION MATERIAL AND THERMAL INSULATING PLASTER, LIGHTWEIGHT CONCRETE, SHAPED BUILDING ELEMENTS AND AUXILIARY BUILDING MATERIALS PRODUCED FROM IT",** number **P1400470** describes a further solution. On the one hand the method is suitable for the production of a building material. This is made from contacting a plant oil and an emulsion (containing a solvent) with burnt lime. Then water and binding material must be added to the burnt lime soaked with oil and emulsion. This construction material can also be used as thermal insulating plaster, or lightweight concrete, furthermore insulating

building elements, auxiliary building materials can be produced from it. „**WALL-PANEL SYSTEM FOR FACADE MATERIALS**" is an American standard (number: **US2016215497 (A1)**) that demonstrates a solution that can also be used in decorative masonry. The patent describes a wall system, that completely prevents interior water damages and minimizes the probability of mold growth on the walls. Insulation between individual elements of the wall system has a high quality, consequently quality deterioration, or corrosion of elements does not occur, or it has a very minimal chance. The advantage of the method described in this patent, that it also provides an opprtunity to use decorative masonry for exterior walls in order to create sophisticated and aesthetic design. The title of the next patent: „**FREE-RADICALLY POLYMERISABLE FASTENING MORTAR HAVING SILANE ADDITIVES**" (number: **ZA201202905 (B)**) This patent introduces a method that is different from the previous ones. Bicomponent or multicomponent fixing mortar provides the basis for creating a reactive, unsaturated synthetic resin. The fixing mortar contains silane, which does not have reactive groups, thus able to participate in the polymerization process. The result is a synthetic resin based curable artificial resin. The aim is to create a thermal insulating, fireproof, dry, water-based plaster, that is easy to apply on surfaces of walls and provide durable and reliable protection against weather conditions. The multicomponent plaster may be applied to walls by using the right tools – in a pasty form or by spray plastering. The solution is based on the following recognition: by mixing three basic components (with different insulating properties), a plaster composition can be created which has exceptionally beneficial insulating properties in several respects. The three components are corkwood, vacuum filled ceramic microspheres and foam glass granulate.

Therefore the patent is a process for creating an independent surface plaster, that is applicable to raw concrete, bare brickwork and other metal, plastic, wood, organic and inorganic or conventional surfaces. In addition, it can be used for

thermal insulation of conventional plasters and concrete and it can be applied under wallpaper. Furthermore it has vibration and resonance damping effect, and insulation of buildings, wooden houses and metal objects against moisture and humidity can be solved through the application of the plaster in question. This product is suitable for eliminating condensation, through the insulation of outer and inner thermal bridges and low-temperature edges and corners. Gaps can not be formed between the surface and the insulating material. Mold and instect-free layers can be created this way. Using this plaster the filling and sealing of craks, gaps, renovation of old roofs can easily be carried out. It is suitable for insulation, water-proofing, coating metal beams, so multicomponent plaster is a feasible solution to increase fire resistance of metal objects. Its major advantage is the remarkable protection against oxidation (e.g iron columns, containers, tanks). Insulating properties provide protection against fungal attack, allow renovation of buildings damaged by saltpetre, insulation and fire protection of industrial buildings, filling of expansion joints or insulation of pools. In addition, it is suitable for isulation of petrol-, oil- or water tanks, for treatment of pavements, stairs, walking surfaces and it can also be used as flooring for recreational facilities, gyms. There is an opportunity to apply it to the inner surfaces of cars, and it's suitable for insulation of engine rooms of watercrafts. Depending on the type of application, density of the plaster can be different. Density and composition shall be determined by the quality and thickness of the surface to be treated. Density of pastes can be controlled by the amount of water. Dense pastes are suitable for sealing larger gaps, medium density pastes can be used as plasters and pastes with high water saturation allow the use of the spraying method. Such physical conditions can be achieved by following the instructions of the manual. These mixtures can be colored and painted as desired before use for making colored coatings, colored outdoor plasters. The coated surface can be overpainted at any time. When applying the plaster to any surfaces (smooth, uneven, cement, concrete, metal, wood or even glass) it becomes a highly adhesive material,

developing the typical properties of the coating. Depending on the temperature, humidity, physical properties of the surface to be treated and the thickness of plaster, the setting time is between 8 and 48 hours. Ever-present humidity in bulidings can lead to fungal attack and causes mold, which health hazards have long been known. In addition to harmful effects on health, mold and moisture are also harmful to a large part of building materials. Permanent humidity may be caused by leaky roofs, walls or capillary water absorption from groundwater, soil moisture due to outdated or missing insulation. In many cases, dissolved salts can be found in these waters. Then water evaporates from the surface of the wall, leaving behind the phenomenon of saltpetre caused by precipitated salt. Humidity produced indoors can also cause significant damage. Dew point is the temperature value at which the air is maximally saturated with water vapor. At lower ambient temperatures precipitation, condensation of water vapor begins. Connecting edges, corners and thermal bridges of the buliding play a significant role in moisture condensation, because these surfaces are much colder compared to other parts of the building. This plaster is a warm material by its nature, when contacting wet and cold walls it's absorbing, filtering, and evaporating moisture, without damaging the material itself. The use of this plaster leads to the dehydration of the wall, thus there is no need for aggressive procedures, such as application of drainage holes or cuts. Through its insulation and waterproof properties, it developes a pleasant and healthy indoor climate. This product can be used in many different ways, because it has insulating properties and waterproof, adhesive, sealing and decorative characteristics. Suitable for insulation of residential and industrial buildings, color plastering of exterior and interior walls, renovation and decoration of facades. It's easy to use. In the first step the surface to be treated has to be cleaned, then 0,4-0,5 liters of water has to be added to every kilogram of the dry mixture in order to achieve the desired fluidity. Intermittent dosing of water is preferable, thus the pasting process and the consistency of the desired plaster can be observed during stirring. In order to achieve the uniform distribution of

components, the mixture has to be stirred thoroughly. The proposed speed of mixing is not faster than 400 revolutions per minute, which is important to minimize the number of shattered ceramic spheres. In case of spray plastering the minimum thickness of the first primer coat should reach 10-12 mm. It takes 60 minutes to develop sufficient adhesion factor (at 20 °C ambient temperature), after that the next layer can be applied to the surface. Care should be taken that the two layers have the same thickness. Depending on the degree of porosity of the surface, the setting time is 2-3 days. To achieve greater thickness, additional layers may be applied after drying of plaster. Before application the surface can be colored as desired, but it is also possible after drying. Essential requirement that the final paint should be a water based crystallizing paint in order to preserve the breathable capability and evaporating capacity of the plaster. The plaster is non-flammabe and solvent-free. The material can easily be washed off from hand, tools and equipment before drying. Plaster with high fire resistance can be produced in a similar way, only the quantity of the ceramic increases in proportion to the intended purpose and in accordance with expectations.

Whereas the cork is originally difficultly and poorly combustible, for this product mainly cork granulate of medium size shall be used. Mortar with highly fireproof nature resists even extremely high temperature, prevents the fire spreading, and unlike other sealing materials does not produce toxic agents and gases, even when it's in a glow.

The first component of the mortar is cork, as soundproof insulation absorbing sound vibration. It has characteristics like wapour permeability and drainage, water repellent waterproof, furthermore moisture cannot enter even on capillary ways. Moreover it is anti-freeze, does not have a freezing point, has good thermal insulation features, hardly catches fire, burns poorly and does not produce toxic materials during slow carbonization. Chemically resistant, e.g. against bases

and acids, organic solvents and petroleum derivates. Light and flexible, gains back its shape flexibly after mechanical load, absorbs part of the energy. Has good anti-vibration characteristics. Beside the above, it is antistatic, does not conduct electricity, antiallergenic, does not attract dust as it cannot be charged. One of its best characteristics is that it provides healthy environment, therefore it is not attacked by fungi, bacteria, insects and rodents. It is environmentally friendly, natural material, long lasting and versatile. The advantageous features of the cork are provided by its specific structure. The cork is formed by the cells of the trunk and branches of cork oak which are dead and accumulated on the surface and mainly contain nitrogen gas. This is due to the fact that the density of cork is four times lower than that of water. The cell walls composed of cellulose remain intact and a suberin plate is formed on its surface. From chemical aspect, the suberin is classified as wax with hydrophobic, water repellent characteristics. Cork has a high level of water resistance, that remains unchanged even at high pressure and on boiling temperature. In 1 cm2 of cork there are approx. 40-50 millions of cells with hexagonal, prism shaped structure that are situated side by side without gaps. This results in its excellent thermo- and sound insulation characteristics. The cells of cork acting as air cushion stay intact even under great load. In case of a fabric containing small sized cells, the transmission of heat by heat radiation is of a bad efficiency. As being developed from living cells, the cells composing the cork are of the order of micrometers. Heat conduction of cork is poor, i.e. the good thermal insulation feature is due to its structure consisting of small sized cells. Cork is not combustible, therefore it will just glow even in a fire of high temperature, meanwhile no toxic smoke or gas is produced even when glowing. As this fire and thermally insulating mortar ingredient, the cork and also other ingredients have no freezing point, this results in the extremely good physical characteristics of the mortar. Second ingredient of the mortar is ceramics. The ceramics used as the ingredient of the mortar is such a ceramics granulate that is known from space technology and produced applying nanotechnology, also manufactured for

industrial purposes for years. It provides the so called heat-shield for spaceships as having a fire resistance of over 3000°C and a heat transfer coefficient of 0,001 W/mK. Diameter of the balls can vary between 0.001-1 mm. In these balls of barely one micrometer there is a vacuum or more precisely hydrogen that - such as in case of cork - fulfill and provide best insulation parameters. It has a smaller specific gravity than the cork grind of 1 mm in size. As being ceramics, it has zero water absorption. Whereas cork has positive and ceramics has negative charge, can be mixed very well in their dry phase as these adhere to each other, which is not influenced by the adhesive being present even in dry matter, moreover, it improves the binding effect of different materials to each other by the principle of static. The different household and industrial glasses are grinded as far as glass powder is achieved. Glass powder is to be foamed applying different procedures, goes through a granulating procedure, then by adequate heat treatment solid but spongy plates or granulate is produced. This results in a light specific gravity product that floats on water but absorbs no water. As foam glass is transformed to a meal of adequate size then granulated, such a product becomes available that - by dosing to the components of the mortar - significantly increases the product's fire resistance. When laying on, it supports adhesion and balanced fastening of the layer.

The mixture of the three components forms the basis of the thermally insulating and fireproof mortar. Its several beneficial characteristics are due to cork and ceramics, furthermore the adhesives specifically. All of the components are present in several fields of our everyday life as individual products. The material of mortar as a whole consists of cork grinds of different particle sizes, vacuum ball ceramics, foam glass, acrylic resin, vegetable fats and adhesives. This combination of components is applied in a form not found in the industry. During the mixing procedure the individual components do not loose their beneficial features, moreover, by supporting and complementing each other, provide an end-product with special characteristics and structural features.

Claims

1. Procedure for the manufacturing of a multi-component mortar, that in principle consists of three basic components, furthermore by adding additional adhesives and paint materials a mortar mixture with good insulation features will be achieved, ***specified as follows:*** mortar has thermally insulating and fireproof characteristics, dry phase and water-based.
2. Procedure according to Claim No. 1 for the manufacturing of a multi-component mortar that contains cork grind with the particle diameter of 0.01-0.5 mm in the quantity of 5 liters, cork grind with the particle diameter of 0.5-1.2 mm in the quantity of 3 liters, cork grind with the particle diameter of 1.2-2.5 mm in the quantity of 2 liters, 2.5 kg in total, furthermore contains ceramics powder with the particle diameter of 0.001 mm in the quantity of 1 liter, ceramics powder with the particle diameter of 0.2-0.5 mm in the quantity of 2 liters, ceramics powder with the particle diameter of 0.5-1.5 mm in the quantity of 3 liters, 1.1 kg in total, and contains foam glass powder with the particle diameter of 0.5-1.5 mm in the quantity of 1 liter, foam glass powder with the particle diameter of 1.5-3.0 mm in the quantity of 3 liters, 0.5 kg in total, moreover it contains 4.1 kg of 30% solid adhesive, 4.1 kg of 10% fixing material, 4.1 kg of 10% acrylate, 4.1 kg of 5% fire-retardant and finally 4.1 kg of 10% foaming material, ***specified as follows:*** fine particle structured, thermally insulating, fireproof mortar is achieved, suitable for

general use, with traditional and machined laying on and construction, water-based in dry phase.

3. Procedure according to Claim No. 1 for the manufacturing of a multi-component mortar that contains cork grind with the particle diameter of 0.01-0.5 mm in the quantity of 5 liters, cork grind with the particle diameter of 0.5-1.2 mm in the quantity of 5 liters, cork grind with the particle diameter of 1.2-2.5 mm mm in the quantity of 3 liters, 3.5 kg in total, furthermore contains ceramics powder with the particle diameter of 0.2-0.5 mm in the quantity of 5 liters, ceramics powder with the particle diameter of 0.5-1.5 mm in the quantity of 5 liters, 1 kg in total, and contains foam glass powder with the particle diameter of 0.5-1.5 mm in the quantity of 0 liter, foam glass powder with the particle diameter of 1.5-3.0 mm in the quantity of 5 liters, 0.6 kg in total, moreover it contains 5.1 of 30% solid adhesive, 5.1 kg of 10% fixing material, 5.1 kg of 10% acrylate, 5.1 kg of 10% fire-retardant and finally 5.1 kg of 5% foaming material, ***specified as follows:*** rustic looking, thermally insulating mortar is achieved, with traditional and machined laying on in a covering layer of 3-6 mm, to be leveled manually, water-based in dry phase.
4. Procedure according to Claim No. 1 for the manufacturing of a multi-component mortar that contains cork grind with the particle diameter of 0.5-1.2 mm in the quantity of 5 liters, cork grind with the particle diameter of 1.2-2.5 mm mm in the quantity of 5 liters, 4 kg in total, furthermore contains ceramics powder with the particle diameter of 0.2-0.5 mm in the quantity of 5 liters, ceramics powder with the particle diameter of 0.5-1.5 mm in the quantity of 5 liters, 1 kg in total, and contains foam glass powder with the particle diameter of 0.5-1.5 mm in the quantity of 0 liter, foam glass powder with the particle diameter of 1.5-3.0 mm in the quantity of 10 liters, 1.2 kg in

total, moreover it contains 6.2 of 40% solid adhesive, 6.2 kg of 10% fixing material, 6.2 kg of 10% acrylate, 6.2 kg of 5% fire-retardant ***specified as follows:*** thermally insulating footing mortar is achieved, to be laid on the requested surface mainly manually, water-based in dry phase.

5. Procedure according to Claim No. 1 for the manufacturing of a multi-component mortar that contains cork grind with the particle diameter of 0.01-0.5 mm in the quantity of 10 liters, cork grind with the particle diameter of 0.5-1.2 mm in the quantity of 13 liters, cork grind with the particle diameter of 1.2-2.5 mm mm in the quantity of 10 liters, 13.2 kg in total, furthermore contains ceramics powder with the particle diameter of 0.001mm in the quantity of 1 liter, ceramics powder with the particle diameter of 0.2-0.5 mm in the quantity of 12 liters, ceramics powder with the particle diameter of 0.5-1.5 mm in the quantity of 13 liters, 2.6 kg in total, and contains foam glass powder with the particle diameter of 0.5-1.5 mm in the quantity of 1 liter, foam glass powder with the particle diameter of 1.5-3.0 mm in the quantity of 18 liters, 2.3 kg in total, moreover it contains 4.9 of solid adhesive, 4.9 kg of 10% fixing material, 4.9 kg of 10% acrylate, 4.9 kg of 10% fire-retardant and finally 4.9 kg of 5% foaming material, ***specified as follows:*** mortar will be achieved for the insulation of roofs, balks, underlays, adequate for the prevention of damages caused by rain, storm, ice, for the protection of houses, water-based mortar in dry phase.
6. Procedure according to Claim No. 1 for the manufacturing of a multi-component mortar that contains cork grind with the particle diameter of 1.2-2.5 mm mm in the quantity of 20 liters, 6 kg in total, furthermore contains ceramics powder with the particle diameter of 0.5-1.5 mm in the quantity of 20 liters, 7 kg in total, moreover it

contains 13 kg of 20% solid adhesive, 13 kg of 10% acrylate, 13 kg of 15% fire-retardant, finally 13 kg of 15% foaming material ***specified as follows:*** water-based, dry matter mortar is achieved, adequate for underlayment leveling, self-spreading, installing tiles.

7. Procedure according to Claim No. 1 for the manufacturing of a multi-component mortar that contains cork grind with the particle diameter of 0.01-0.5 mm in the quantity of 10 liters, cork grind with the particle diameter of 0.5-1.2 mm in the quantity of 10 liters, cork grind with the particle diameter of 1.2-2.5 mm mm in the quantity of 10 liters, 13 kg in total, furthermore contains ceramics powder with the particle diameter of 0.001mm in the quantity of 10 liter, ceramics powder with the particle diameter of 0.2-0.5 mm in the quantity of 10 liters, ceramics powder with the particle diameter of 0.5-1.5 mm in the quantity of 10 liters, 10.5 kg in total, moreover it contains 23.5 kg of 15% solid adhesive, 23.5 kg of 15% fixing material, 23.5 kg of 10% acrylate, 23.5 kg of 10% fire-retardant and finally 23.5 kg of 5% foaming material, furthermore contains powder-based colorants, i.e. 23.5 kg of iron oxide, 23.5 kg of 5% powder coatings, 5%... ***specified as follows:*** pre-colored, thermally insulating, fireproof mortar will be achieved for general use, and applicable for metal, wood, industrial and residential buildings, by traditional or manual laying on, water-based mortar in dry phase.
8. Procedure according to Claim No. 1 for the manufacturing of a multi-component mortar that contains cork grind with the particle diameter of 0.01-0.5 mm in the quantity of 20 liters, cork grind with the particle diameter of 0.5-1.2 mm in the quantity of 20 liters, cork grind with the particle diameter of 1.2-2.5 mm mm in the quantity of 20 liters, 35 kg in total, furthermore contains ceramics powder with the particle diameter of 0.001mm in the quantity of 20 liter, ceramics

powder with the particle diameter of 0.2-0.5 mm in the quantity of 20 liters, ceramics powder with the particle diameter of 0.5-1.5 mm in the quantity of 20 liters, 36 kg in total, moreover it contains 71 kg of 30% solid adhesive, 71 kg of 15% fixing material, 71 kg of 15% acrylate, 71 kg of 20% fire-retardant and finally 71 kg of 20% foaming material, furthermore contains 25 mm glass mesh of 40 g per 3 rows, 25 mm graphite mesh of 40 g per 3 rows, 25 mm keflan mesh of 0.2 mm per 3 rows, ***specified as follows:*** thermally insulating, fireproof panel will be achieved, that can be installed without adhesive, tailored by knife, installed bonded and can be fitted by pre-manufactured joints.

INTERNATIONAL SEARCH REPORT

International application No.
PCT/HU2016/000064

A. CLASSIFICATION OF SUBJECT MATTER

E04F 13/02 (2006.01); C04B 24/00 (2006.01); C04B 26/00 (2006.01); C04B 28/00 (2006.01)

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

E04F; C04B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

EPOQUE, Espacenet, Google, E-Search (HIPO)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	EP 2871169 A1 (DAW SE) 13.05.2015 the abstract, claims 1-10 and 22 and paragraphs [0002, 0011, 0017-0020, 0022, 0023, 0026, 0029-0032, 0043] of the description	1-8
Y	GB1524266 A (RHONE-POULENC INDUSTRIES) 13.09.1978 the description page 1, lines 38-66, 80-91, page 2, lines 79-82 and claims 1, 4, 5	1-8
Y	GB1117424 A (Instytut Techniki Budowlanej) 19.06.1968 the description page 2, lines 13-29, 51-59, 104-115 and claim 1	1-8
Y	US20050255318 A1 (Czerny, Hans) 17.11.2005 the abstract, the description paragraphs [0006, 0009-0011, 0013, 0015, 0017, 0022, 0023, 0026-0029] and claim 15	1-8

☒ Further documents are listed in the continuation of Box C. ☒ See patent family annex.

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Date of the actual completion of the international search	Date of mailing of the international search report
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INTERNATIONAL SEARCH REPORT

International application No.
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C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	http://www.eurabo.be/images/uploads/products/TC_E_087_2_EN_FTec_ADHERE_Vit_ecoCORK_(002).pdf Published:06.2013 the whole document	1-8
Y	http://www.industry.foamglas.com/__/frontend/handler/document.php?id=1265&type=118 Published:08.2012 the whole document	1-8
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