

(19)



Europäisches Patentamt

European Patent Office

Office européen des brevets



(11)

EP 0 615 419 B1

(12)

EUROPEAN PATENT SPECIFICATION

(45) Date of publication and mention
of the grant of the patent:

06.05.1998 Bulletin 1998/19

(21) Application number: **92901648.3**

(22) Date of filing: **27.11.1991**

(51) Int. Cl.⁶: **A47G 27/02**, D05C 17/02

(86) International application number:
PCT/DK91/00357

(87) International publication number:
WO 93/10696 (10.06.1993 Gazette 1993/14)

(54) TUFTED CARPET OR MAT PRODUCT

GETUFTETER TEPPICH ODER GETUFTETE MATTE

TAPIS OU PAILLASSON TUFTE

(84) Designated Contracting States:
DE FR GB NL SE

(43) Date of publication of application:
21.09.1994 Bulletin 1994/38

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Description

The present invention relates to a tufted carpet or mat product according to the preamble of independent claim 1.

For a long time it has been known for mats and carpets to use a nap of inflammable natural fibres, such as cotton fibres, and it is also known to use synthetic polymeric inflammable fibres, such as cellulose fibres, acrylic fibres, polyester fibers, nylon fibers and polypropylene fibres for the manufacture of nap materials.

Attempts have been made in order to make such nap materials less inflammable or self-extinguishing, however, with no appreciable success. Although the treatment with the known fire inhibiting agents are reducing the inflammability, the treated mats and carpets expose certain undesired properties, such as the emission of unfavourable vapours by intense heat. The most undesired effect is, however, that said fire inhibiting agents are removed from the mats or carpets in question, when said carpets or mats are exposed to washing procedures, and this involves further finishing treatment of the mats or carpets after the washing operation. In this connection it should be mentioned that the receivers of such washed mats or carpets do not have any visible guarantee for the products having been impregnated with fire inhibiting agents. Unfortunately, this does not appear until the product in question has been exposed to a fire test or a fire accident. Consequently, on places where a fire could have disastrous consequences, it should be avoided to use mats and carpets, the fire inhibiting properties of which are only based on fire inhibiting impregnation agents, since promises on the presence of such agents may cause a false feeling of security. Document US-A-4 513 042 discloses a fabric adapted to be used as coverings for floors and having high flame resistance.

Consequently, it is the purpose of the present invention to provide a new tufted carpet or mat product which is not provided with flame and fire inhibiting chemicals in the nap, but which per se is self-extinguishing and can pass the so-called California firetest, and which also fulfill the conditions for being called a washable dirt and liquid binding service product of the carpet or mat type for floor covering.

Said purpose is achieved with a mat product according to the independent claim 1. Thereby it has surprisingly turned out that for mat and carpet products a hitherto unknown self-extinguishing or fire inhibiting effect may be obtained when using a hitherto unknown combination of otherwise well known and often used materials.

A mat according to the invention has turned out to pass the mentioned California fire test IN ACC W.FAR 25.853 (b), and furthermore it turned out that a carpet or a mat according to the invention in spite of the large quantity of animal wool is water and dirt binding, and said properties are maintained even after several wash-

ing processes of the mat with intermediate periods of use where the mat was laid on heavily trafficked locations. The carpet or mat manufactured according to the invention is therefore well suited as water and dirt binding floor covering material in areas, such as escape ways, where it is very important that such floor covering materials do not promote the spreading of fire.

One of the reasons for not earlier having used animal wool for water and dirt binding floor covering materials is presumably the inherent capability of the wool to reject water and dirt. However, by composing the wool of animal wool and not-flame-promoting synthetic fibres in a weight share of from 2,3:1 to 19:1, preferably 5:1, it has as mentioned above turned out that a floor covering material is achieved which beyond being fire inhibiting also is washable and dirt and water binding.

The primary support fabric material preferably comprises a layer of woven or non-woven fiber having an area weight of from 90 to 130, preferably 110 g/square meter, selected from the group of fibers which are fire inhibiting, such as acryl, fluorocarbons, polyacrylates, polyamides, polyesters, polyethylenes, polypropylenes, polyurethanes etc.

The primary support fabric and the part of the nap, viz. the nap nap bottom parts, which e.g. by a needle technique are needled through the primary support fabric, are in a preferred embodiment partly vulcanised into the layer of natural or synthetic rubber.

The rubber layer is in a preferred embodiment of the kind being fire inhibiting and resistant against acids, bases, gasoline and mineral oils, at least to the same extent as nitrile butadiene rubber.

The rubber layer is in a preferred embodiment selected from the group of rubbers consisting of nitrile butadiene rubbers, butadiene acryl nitriles, polychlorophrenes, chlorosulphonated polyethylenes, ethylene/acryl elastomers, perfluoroelastomers, fluoroelastomers, polyesterelastomers, urethane rubbers and polysiloxane polymers.

The carpet or mat product according to the invention is well suited as floor covering material on escape ways in hotels and means of transportation, such as aircrafts, ships, trains and buses, partly because the product has passed the above fire test, and partly because the material is washable after use and dirt and water binding during use.

As an example of a carpet or mat product according to the invention may be mentioned a product, the nap of which is composed of 70% wool and 30% 80/20 polyamide or nylon, said nap by a needle technique has been tufted into a primary support fabric of polypropylene having an area weight of 110 g/square meter, whereupon the primary support fabric with the nap was partly vulcanized into a bottom of fire inhibiting washable rubber on nitrile basis. Said product passed said fire test without containing any flame or fire inhibiting additives in the nap, and it had a high dirt and water binding ability during use and was washable several times with a great

number of intermediate periods of use.

Claims

1. A mat product comprising a primary support fabric having an underside and an upper side, a layer of rubber or synthetic rubber adhered thereto, e.g. by vulcanizing to the underside of the primary support fabric, and yarn nops extending through the primary support fabric for forming of a nap on the upper side of the primary support fabric and for forming of nap nop bottom parts between the rubber layer and the primary support fabric, wherein the material of the primary support fabric consists of fibers which per se has a high ignition point, such as fibers of acryl, fluorocarbons, polyacetates, polyamides, polyesters, polyethylenes, polypropylenes, polyurethane and the rubber layer is selected from the group of washable rubbers being flame retardant, **characterized in that** the nap comprises 70-95, preferably 80 weight per cent animal wool and 5-30, preferably 20 weight per cent synthetic fibres, such as fibers of acryl, fluorocarbons, polyacetates, polyamides, polyesters, polyethylenes, polypropylenes, polyurethanes 5 10 15 20 25
2. Tufted product according to claim 1, **characterized in that** the primary support fabric material comprises a layer of woven or non woven fiber having an area weight from 90-130, preferably 110 g/square meter. 30
3. Tufted product according to claim 1, **characterized in that** the part of the nap, viz. the nap nop bottom parts, which e.g. by a needle technique has been needled through the primary support fabric, is partly vulcanized into the layer of natural or synthetic rubber. 35
4. Tufted product according to claim 1, **characterized in that** the rubber layer is resistant against acids, bases, gasoline and mineral oils, at least to the same extent as nitrile butadiene rubber. 40
5. Tufted product according to claim 1, **characterized in that** the rubber layer is selected from the group of rubbers consisting of nitrile butadiene rubbers, butadiene acryl nitriles, polychlorophrenes, chlorosulphonatedpolyethylenes, ethylene/acryl elastomers, perfluoro elastomers, fluoroelastomers, polyesterelastomers, urethane rubbers and polysiloxan polymers. 45 50

Patentansprüche

1. Ein Mattenprodukt, beinhaltend ein Hauptstützgewebe mit einer Unterseite und einer oberen Seite, einer daran z. B. durch Vulkanisieren an die Unter-

seite des Hauptstützgewebes angehefteten Lage Gummi oder synthetisches Gummi und Garnnopen, die sich zum Formen eines Flors an der oberen Seite des Hauptstützgewebes und zum Formen von Flornoppenbodenteilen zwischen der Gummilage und dem Hauptstützgewebe durch das Hauptstützgewebe erstrecken, wobei das Material des Hauptstützgewebes aus Fasern besteht, die per se einen hohen Entzündungspunkt haben, wie z. B. Fasern aus Acryl, Fluorkohlenstoffen, Polyacetalharzen, Polyamiden, Polyestern, Polyethylenen, Polypropylenen, Polyurethanen, und die Gummilage ist aus einer Gruppe von waschbaren Gummis, die flammenverzögernd sind, ausgewählt, dadurch gekennzeichnet, daß der Flor 70 bis 95, vorzugsweise 80 Gewichtsprozent tierische Wolle und 5 bis 30, vorzugsweise 20 Gewichtsprozent synthetische Fasern, wie z. B. Fasern aus Acryl, Fluorkohlenstoffen, Polyacetalharzen, Polyamiden, Polyestern, Polyethylenen, Polypropylenen, Polyurethanen, beinhaltet.

2. Getuftetes Produkt gemäß Anspruch 1, dadurch gekennzeichnet, daß das Hauptstützgewebematerial eine Lage aus gewebten oder nicht gewebten Fasern mit einem Flächengewicht von 90 bis 130, vorzugsweise 110 g pro Quadratmeter beinhaltet.
3. Getuftetes Produkt gemäß Anspruch 1, dadurch gekennzeichnet, daß der Part des Flors, nämlich die Flornoppenbodenteile, die z. B. durch Nadeltechnik durch das Hauptstützgewebe genadelt worden ist, teilweise in die Lage aus natürlichem oder synthetischem Gummi vulkanisiert ist.
4. Getuftetes Produkt gemäß Anspruch 1, dadurch gekennzeichnet, daß die Gummilage zumindest in dem gleichen Ausmaß wie Nitrilbutadiengummi gegen Säuren, Basen, Benzin und Mineralöle beständig ist.
5. Getuftetes Produkt gemäß Anspruch 1, dadurch gekennzeichnet, daß die Gummilage aus der Gruppe, die aus Nitrilbutadiengummis, Butadienacrylnitrilen, Polychloroprenen, chloresulfonierten Polyethylenen, Ethylen/Acrylelastomeren, Perfluorelastomeren, Fluorelastomeren, Polyesterelastomeren, Urethangummi und Polysiloxanpolymeren bestehen, ausgewählt ist.

Revendications

1. Produit du type paillason comportant un support textile primaire ayant un côté supérieur et un côté inférieur, sur lequel est collée une couche de caoutchouc ou de caoutchouc synthétique par exemple par vulcanisation du côté inférieur du support textile primaire, et des nopes filées traversant ce dernier

et formant un revêtement tufté sur son côté supérieur ainsi que des parties intérieures à nopes tuftées entre la couche de caoutchouc et le support textile primaire, le matériau de ce dernier consistant en des fibres à haut point d'ignition, telles que des fibres acryliques, en fluorocarbone, polyacétal, polyamide, polyester, polyéthylène, polypropylène, polyuréthane, alors que la couche en caoutchouc est choisie dans le groupe des caoutchoucs lavables retardateurs de flamme, **caractérisé** en ce que le revêtement tufté comprend de 70 à 95, de préférence 80 pour cent en poids de laine animale et de 5 à 30, de préférence 20 pour cent en poids de fibres synthétiques telles que des fibres acryliques, en fluorocarbone, polyacétal, polyamide, polyester, polyéthylène, polypropylène, polyuréthane.

2. Produit tufté selon la revendication 1, **caractérisé** en ce que le support textile primaire comporte une couche en fibres tissées ou non tissées dont le poids surfacique est de 90 à 130, de préférence 110 g/m².
3. Produit tufté selon la revendication 1, **caractérisé** en ce qu'une partie du revêtement tufté, c'est-à-dire les parties inférieures à nopes tuftées, qui ont été piquées à travers le support selon une technique de piquage, sont partiellement vulcanisées dans la couche de caoutchouc synthétique ou naturel.
4. Produit tufté selon la revendication 1, **caractérisé** en ce que la couche de caoutchouc est résistante aux acides, aux bases, à l'essence et aux huiles minérales, au moins autant que le caoutchouc en nitrile butadiène.
5. Produit tufté selon la revendication 1, **caractérisé** en ce que la couche de caoutchouc est sélectionnée dans le groupe des caoutchoucs comprenant les nitriles butadiènes, les acrylonitriles butadiènes, les polychloroprènes, les polyéthylènes chlorosulfonates, les élastomères éthylène/acryliques, les perfluoroélastomères, les fluoroélastomères, les polyesterélastomères, les caoutchoucs uréthanes et les polymères polysiloxanes.

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