

# United States Patent

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[56]

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[54] **ADHESIVE COMPOSITION**  
**1 Claim, No Drawings**

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**161/67, 406; 117/122**

**ABSTRACT:** An adhesive composition for floor coverings, particularly, though not exclusively for reinforced textile stair carpets comprises one part of contact adhesive components which are sticky at room temperature, and which bring about an adhering effect, and one part of synthetic thermoplastic components which are nonsticky at room temperature, but which, however, on heating to a temperature above 60° C. suffer temporary partial loss of their cohesion and become a strong sealing adhesive, which is adapted to form a permanent bond with the base to be bonded.

# ADHESIVE COMPOSITION

## BACKGROUND OF THE INVENTION

The present invention concerns an adhesive composition for floor coverings, particularly, though not exclusively for reinforced textile stair carpets.

Floor coverings are known which are held in place by special adhesives compatible with the covering material. Thus, for example, impervious floor coverings have been used with adhesives which after application have been allowed to partially set in air before the final laying of the covering, also pervious coverings have been used with aqueous dispersions of synthetic resin adhesives or solvent adhesives.

Recently textile floor coverings have had a back coating of contact adhesive deposited either from a solution or from a dispersion, so as to permit detachable sticking with the floor to be covered. This is particularly desirable when the impairing of the condition of the floor is to be avoided.

Stairs, because of their nature and the type of wear they are subjected to, present difficulties and generally special contact adhesives are applied to both the stairs and the covering, then after exposing the adhesive to air for a period of time to promote tackiness, the covering is laid. However, even this method has inherent disadvantages, in that the solvent used for the adhesive is often inflammable, thus creating a fire risk, and also while coating both the stairs and the covering, it is easy to spill or splash the adhesive onto nearby easily corrodible articles.

Difficulties arise in covering the riser and nose parts of the stair satisfactorily because, in these areas, the adhesive is subjected to shear forces. The use of iron plates to hold the covering in place over these areas while the adhesive sets fully has been tried, but is not wholly satisfactory.

The problem of providing an easy, quick and economical method of holding stair coverings in place with adhesive has thus not been solved. This means that skilled craftsmen are required, particularly for laying carpets on intricately shaped stairs, such as winding stairs and those with projecting profiled edges.

## SUMMARY OF THE INVENTION

It is another object of the present invention to provide an easy, quick and economical method of holding floor covering in place by applying to the floor covering an adhesive composition comprising 90 to 40 parts by weight of contact adhesive components which are sticky at room temperature, and which bring about an adhering effect, and 10 to 60 parts by weight of synthetic thermoplastic components of a conventional nature which are nonsticky at room temperature, but which, however, on heating to a temperature above 60° C. suffer temporary partial loss of their cohesion and become a strong sealing adhesive, which is adapted to form a permanent bond with the base to be bonded.

Particularly on horizontal floors, the adhesive composition, at room temperature, is sufficient to achieve satisfactory adhesion between the covering and the floor, merely by applying pressure thereto such as might, for example, result from walking thereon.

The cohesion of the adhesive composition of the present invention, is such that no adhesive remains on the floor when the covering is removed. This is unlike most, less cohesive adhesives which, on removing the covering from the floor either separate into two layers, one remaining on the covering and the other on the floor, or more or less flow apart.

The adhesive composition has, as well as its cohesion properties, sufficient adhesion with respect to the floor covering, in that it is deposited thereon as a fusion and consequently, the "hot-tack" or the hot stickiness of the cohesive portion is utilized, in order to attain a sufficient, generally permanent, bond with the base of the carpet. There is, of course, built into these adhesives a special sealing constituent which, at room temperatures, provides sufficient cohesion for adhesive, while, if subjected to higher temperatures, becomes sticky and loses its cohesive properties (called "hot-tack").

At sealing temperature, the sealing constituent has the capacity of exercising a strong adhesive force on most substances, even those which are not susceptible to normal adhesives, for example plastics of the polyolefine type, smooth metal parts or highly polished wood.

## DESCRIPTION OF PREFERRED EMBODIMENTS

The sealing properties of the adhesive composition are utilized, for example, in the covering of a stair having built-in reinforcing nosespices on the perpendiculars, by laying the treated covering and then activating the sealing constituent by heating, for example with a hot-air dryer, infrared heater or simply a taper, to a temperature between 70° C. to 100° C., whereby the adhesive becomes substantially softer and stickier in consistency. While the adhesive is in this condition, the covering is pressed onto the surface until it has cooled to about room temperature. This generally continues by the exchange of heat with the surfaces having generally a temperature between 15° and 20° C. Then there occurs immediately at the places thus treated a reversible adhesion, which is surprisingly firm and considered unusually good by experts. In this way, there is the possibility of obtaining a permanent adhesion where the circumstances require it and the advantages of a contact adhesive suffices.

In contrast to conventional contact adhesives, if a floor covering, coated with the adhesive composition, according to the present invention, is applied to a vertical wall merely by pressing, a permanent bond will not be formed and after a time the covering will fall off. A permanent adhesion can only be attained by repeated pressure such as by walking on a floor covering treated with the adhesive, or by the aforementioned heating and cooling process during which sealing occurs.

Thus, the adhesive of the present invention can be regarded as having properties intermediate between those of a contact adhesives and sealing adhesives.

A further advantage of the composition is that if it partially loses its stickiness over a period of time at room temperature, in consequence of surface soiling, becoming dusty or picking up floor particles, such as gravel, concrete or wood splinters, it can easily be reactivated again by heating to a temperature between 60° C. and the melting point of the adhesive or the fibers. Rebedding of the adhesive composition takes place causing the contaminants to resettle and become harmless.

The extent to which activation and neutralization can be carried out is of course dependent on the thickness and nature of the adhesive material deposited on the covering base.

It will be appreciated, that the adhesive can be used for other purposes where similar conditions prevail.

A typical composition, according to the present invention, of a combined fusion, contact and sealing adhesive is given in the following nonlimiting example.

## EXAMPLE

20 part by weight	Ethylene-Vinylacetate Copolymer with a Vinylacetate content of 28% and a fusion index of about 150.
30 part by weight	Polyterpene resin with a softening range of 75°-85° C.,
23 part by weight	Polyester resin with a softening range of 15°-25° C.,
15 part by weight	Polysisobutylene with a molecular weight of about 5,000,
2 part by weight	Butylized hydroxytolene as antioxidant,
10 part by weight	Technical Lanolin
100 parts by weight.	

It will be understood that the above description of the present invention is susceptible to various modifications, changes, and adaptations. While I have disclosed one embodiment of the present invention, it is to be understood that this embodiment is given by example only and not in a limiting sense.

I claim:

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1. A textile floor surface covering material, comprising  
a textile floor covering base,  
an adhesive applied to the reverse side of said textile floor  
covering base in its hot-melt state,  
said adhesive including 90 to 40 parts by weight of a first 5  
component and 10 to 60 parts by weight of a second com-  
ponent,  
said first component being substantially nonsticky at room  
temperatures and having cohesive characteristics and  
being a thermoplastic synthetic heat activatable adhesive 10  
material softening above 60° C. and having above the

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latter temperature a first degree of adhesiveness and par-  
tially losing its cohesive characteristics,  
said second component being a pressure sensitive adhesion  
means causing a second degree of adhesiveness at room  
temperature, and  
said second degree of adhesiveness being a cold tack  
releasable adhesion on a surface to which said covering  
material is to be secured, and said first degree of adhe-  
siveness being a nonreleasable hot tack adhesion on said  
surface.

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