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PROCESS FOR FACE-SEAMING CARPETING
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ABSTRACT OF THE DISCLOSURE

A process for face-seaming segments of carpeting is disclosed. A seaming tape comprising an open-weave tape coated with a hot-melt adhesive is positioned adjacent to and parallel with the backing of the sections to be joined. Thereafter the edges of the segments are upwardly bent and the adhesive of the tape is rendered tacky by the application of heat after which the backing of the segments is pressed into the adhesive before it cools.

This invention relates to a carpet seaming process, a seaming tape for said process, and a process for making the seaming tape.

In the laying or fitting of wall-to-wall carpeting, and in carpet repair, seaming is employed to join the adjacent abutting edges of carpet segments. Depending on the nature and shape of the carpeting, the face-seam or back-seam techniques are employed. According to the face-seam technique the carpet segments are laid on the floor face up, and the two segments to be joined are fastened to the floor by temporary or "stay" tacks at locations somewhat spaced from the adjoining edges. The edges of the carpet to be joined are bent upwardly, a carpet seaming tape such as of glass fiber, cotton, jute or muslin or blends thereof, is placed on the floor below the carpet and overlapping both segments to be joined, a latex solution is applied onto the upward facing surface of the tape, sometimes also onto the upward bent edges of the carpet backing, then the carpet edges are lowered onto the tape, preferably some pressure is applied, and the solvent is allowed to evaporate, whereby the latex adhesive bonds the tape to the carpet backing and an adhesive seam is created.

In employing the back-seam technique the carpet segments to be joined are laid on the floor face down, temporary or "stay" tacks are applied, a latex solution is applied onto the carpet backing or onto a tape to be applied, or both and the tape is pressed onto the carpet backing on both segments to be joined. After the solvent evaporates, an adhesive bond is created; and "stay" tacks are removed and the joined carpet segments can be reversed and handled.

The above-described prior art techniques have several drawbacks. A serious drawback is presented by the fact that the solvent for the latex has to evaporate, requiring considerable time before the joined carpet segments can be handled. When using the back-seam technique, about 20 minutes is required for taping and evaporation in case of a 15 ft. seam. When using the more preferred face-seam technique, even longer time is required, because the dense carpet backing and the carpeting itself considerably retard evaporation of the solvent for the latex. Another drawback of the prior art techniques is that the highly fluid latex solution tends to bleed through to the front of the carpet, creating unsightly stains and emphasizing the location of the seam which would be preferably concealed. Tape materials other than glass fiber, when the seamed carpet is stretched, result in an opening up of a seam, when the seaming is made with the prior art latex bonding technique.

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Latex solutions suitable for carpet sealing cannot be stored at cold temperatures, because the solutions become inoperative. The solutions are commercially provided in cans which are increasingly difficult to reseal after the contents of the can has been used a number of times, resulting in substantial exaporation of the solvents and loss of usefulness of the contents.

In accordance with the present invention a carpet seaming tape, a process for preparing it, and a method for seaming carpets therewith, are provided, all of which overcome the disadvantages and drawbacks of the prior art materials and techniques.

The seaming tape of the invention comprises an open web tape impregnated with a hot-melt adhesive. The tape of the invention can be prepared by applying a hot-melt adhesive onto at least one side of a carpet seaming tape. According to the seaming process of the invention, the seaming tape prepared in accordance with the invention is applied to the backing of abutting carpet sections, the hot-melt adhesive is rendered tacky by application of heat, followed by a pressing together of the carpet segments and the tacky tape. The hot-melt adhesive cools within a very short period and creates a firm, adhesive bond between the abutting carpet segments.

The term "hot-melt adhesive" refers to bonding agents which achieve a solid state and resulting strength by cooling, as contrasted with other adhesives which achieve the solid state through evaporation, removal of solvents or crosslinking. In the cold stage a hot-melt adhesive is a thermoplastic solid material. Application of the heat brings the material to a liquid, tacky state, and after removal of the heat the adhesive is set by simple cooling. Hot-melt adhesives provide nearly instantaneous bonding, together with a high degree of wetting. Typical hot-melt adhesives are based on coumarone-indene resins, rosin and its derivatives; mineral, vegetable, and petroleum waxes; alkyds; terpene resins; heat-stable phenol-formaldehyde resins. All of the foregoing are preferably modified with higher molecular weight polymers, such as: ethyl cellulose; polyvinyl acetate and its derivatives; butyl methacrylates; polyethylene; polystyrene and styrene copolymers; polyisobutylene.

Natural asphalts and vegetable and coal-tar-pitches are also used as base materials in hot-melt adhesives. Polyethylene, polyvinyl acetate, a polyamide derived from dimerized fatty acids and diamines, are also known as useful hot-melt adhesives, by themselves. The particular hot-melt adhesive composition most suitable for particular carpet backing materials and seaming tapes, can be selected by routine experimentation.

The hot-melt adhesive used in accordance with the invention, preferably contains a plasticizer to permit handling and storage of the adhesive-applied tapes in a roll form.

Seams made in accordance with the invention, with tapes other than glass fiber, do not open up when stretched.

The seaming tape of the invention is made by applying a hot-melt adhesive to one or both sides of a seaming tape. This can be accomplished by drawing a tape through a melt of the adhesive, preferably followed by removal of excess of the adhesive from the tape, such as by rollers, doctor blades, or the like. According to another method the seaming tape can be drawn through a solution of the hot-melt adhesive, followed by an evaporation of the solvent. Alternatively, a melt or a solution of the adhesive can also be sprayed onto the tape. The only special requirement with regard to the hot-melt adhesive used in connection with the invention, is that it should be inert to solvents customarily used in rug cleaning. The tape is of an open web construction, whereby the interstices

between the warp and weft fibers become filled up with the adhesive and are capable of storing a sufficient amount of adhesive on and within the tape.

The hot-melt adhesive can also be applied onto the tape by way of doctored rolls, intaglio techniques or extruded as a hot-melt layer onto the tape.

In preparing bonded carpet seams in accordance with the invention, in the case of back seaming, the tape of the invention is simply laid over the carpet backing of adjacent segments and pressed against the backing with a heated roller or a heated sadiron. The heat of the applicator and the simultaneous pressure are sufficient to melt the adhesive and press the tape against the backing.

When the carpet seams are created by the face seaming technique, in accordance with the invention the hot-melt adhesive surface of the tape is brought to a tacky state with a heated roller, sadiron, or the like, and the backing of the abutting segments is immediately pressed onto the tacky adhesive surface before it cools.

In the following example the best mode contemplated for carrying out the invention is presented, the invention not being limited to all details of the example.

Example

A thermoplastic hot-melt adhesive sold by the B. B. Chemical Division of the United Shoe Machinery Corporation under the trademark Thermogrip glue was melted in a water-jacketed pot. A 2" wide strip of glass fiber seaming tape was drawn through the molten adhesive and the excess adhesive was drawn off the tape on both sides, before the melt cooled. Carpet seams were prepared with this tape both by the face-seam and back-seam techniques, utilizing a sadiron equipped with a non-stick surface liner over the metal bottom of the sadiron. A 15 foot-long seam was completed within 3 minutes and could be handled freely after this period.

In the tensile testing of the bond strength, it was determined that the use of the 2" wide glass fiber seaming

tape in accordance with the invention provided a bond, the strength and tenaciousness of which could be duplicated only by a 3" wide tape applied with latex adhesive in accordance with the prior art.

I claim:

1. Process for face-seaming abutting segments of carpeting, which comprises positioning a seaming tape comprising an open-weave tape coated with a hot-melt adhesive adjacent to and parallel to the backing of the abutting carpet segments to be joined, upwardly bending the edges of said segments, rendering the adhesive of the seaming tape tacky by application of heat thereto and pressing the backing of the abutting segments onto the tacky adhesive surface before it cools.

2. Process according to claim 1, wherein the adhesive surface is rendered tacky by contacting said surface with a heated sadiron.

3. Process according to claim 1, wherein pressure is applied to the face of the carpeting to effect contact between the backing of the carpeting and the tacky adhesive.

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