TUFTED CARPETS WITH ELASTOMERIC NET BACKING

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ABSTRACT

A tufted carpet with an elastomeric net backing is disclosed. The tufts of the carpet are inserted through the net while the net is under tension whereafter the tension on the net is released thereby holding the tufts in place without the need for conventional adhesive materials such as latexes.

7 Claims, 2 Drawing Figures
FIG. 1

FIG. 2
TUFTED CARPETS WITH ELASTOMERIC NET BACKING

The present invention relates to a new and useful carpet which has an elastomeric net backing.

Tufted carpets are well known in the art and have been produced for quite a number of years. The carpets are usually produced from continuous strands of nylon, polyester, acrylic or similar materials. The continuous strands are "poked" through a fabric mesh-type backing material so that loops are formed, which loops are positioned adjacent each other. The material is then held in place in the backing material by a suitable adhesive such as a latex which is applied to the underside of the fabric. The backing materials commonly employed are woven fabrics and perhaps the most common fabric in use today is one formed from polypropylene wherein the polypropylene is first made as a film, slit into strips, and then woven to form the fabric. While these prior art carpets have proven quite satisfactory, they have a number of process disadvantages. For example, the additional step of applying the backing adhesive such as the latex is costly and expensive since additional application apparatus is required. Environmental problems have also been encountered at late with respect to disposal of the excess adhesive material and the cleaning up of equipment used in the application of the material.

In accordance with the present invention these disadvantages of prior art carpets are overcome by using as a backing material an elastomeric net. The elastomeric net is placed under tension, preferably in both longitudinal and transverse direction, whereafter the carpet material is poled through the holes of the net. The tension of the net is then released whereby the net holds the loops of pile in position without the need for adhesive.

While one of the primary advantages of the present invention is the elimination of the need for the adhesive backing material, it will be understood that adhesive material can be used with carpets made according to the present invention where it is desired to have additional strength, or where the adhesive material also serves as the underlying pad. It will therefore be understood that the present invention is not limited to the exclusion of adhesive materials.

It will also be understood that it is not necessary to stretch the elastomeric net when tufting the carpet. It is only necessary that the net be held under tension. The carpet material can then be poled through the holes in the net and the net will expand due to its elasticity when the tufts are poled through and then when the pokey tool is removed, the net material will relax and hold the tufted carpet material.

One of the principal advantages of the present invention is that the carpet can be made with great speed as compared to the speed of existing processes. Furthermore, the relative accuracy of location of the tufts is enhanced because of the uniformity of the elastomeric net.

The material from which the carpet backing of the present invention is formed is an elastomeric material. The elastomeric material must have an elongation of at least 50 percent with a tensile set under 50 percent of that elongation. Preferred compounds for use in the present invention are the polyurethanes, either the polyester or the polyether prepolymer being suitable.

The formation of nets with strands which are integrally extruded at the joints is well known in the art.
could be sheared at the top to form a sheared pile rather than the loop pile shown. This shearing process is well known in the art.

In one specific example, an elastomeric carpet backing material was made according to the apparatus of U.S. Pat. No. 3,252,181. The backing material was extruded with integral joints and had 15 strands per inch in the direction of extrusion (machine direction) and 15 stands per inch in the transverse direction. The resin used was a polyester polyurethane resin known as Texin 591A available from Mobay Chemical Company. The extruded carpet backing material was cut to suitable shape and was found to have elongation in excess of 50 percent and a tensile set of under 50 percent at that elongation. More specifically, the net had a 10 percent tensile set at 100% elongation and a 32 percent tensile set at 200 percent elongation. The elastomeric net was found to be suitable as a carpet backing material in accordance with the present invention and was found to have the desired properties of holding tufted carpet material in position without the need for adhesive.

It will be understood that the claims are intended to cover all changes and modifications of the preferred embodiments of the invention, herein chosen for the purpose of illustration, which do not constitute departures from the spirit and scope of the invention.

What is claimed is:

1. A tufted carpet consisting essentially of a carpet material and an elastomeric net backing material, said elastomeric net comprising a plurality of spaced sets of strands crossing each other at an angle whereby there are perforations in the elastomeric net, crossings formed by the strands of one set crossing the strands of another set forming integral joints at the crossings, wherein at least one of the sets of strands is composed of an elastomeric material having an elongation of at least 50 percent and a tensile set of less than 50 percent at that elongation, said carpet material passing through the perforations in the net and said elastomeric net helping to hold the carpet material in position.

2. The carpet of claim 1 wherein all of the sets of strands of the elastomeric net are composed of elastomeric material having an elongation of at least about 50 percent and a tensile set of less than 50 percent at that elongation.

3. The carpet of claim 1 wherein there are only two sets of strands in the elastomeric net.

4. The carpet of claim 3 wherein the two sets of strands are normal to each other.

5. The carpet of claim 4 wherein both of the sets of strands are composed of elastomeric material having an elongation of at least about 50 percent and a tensile set of less than 50 percent at that elongation.

6. The carpet of claim 1 wherein the elastomeric material in the net is polyurethane.

7. A process for making a tufted carpet comprising the steps of:
   a. tensioning at least one set of elastomeric strands of an elastomeric net comprising a plurality of spaced sets of strands crossing each other at an angle whereby there are perforations in the elastomeric net, crossings formed by the strands of one set crossing the strands of another set forming integral joints at the crossings, at least one of the sets of strands being composed of an elastomeric material having an elongation of at least 50 percent and a tensile set of less than 50 percent at that elongation.
   b. positioning at least one continuous strand of carpet material immediately adjacent said net;
   c. poking said carpet material through a plurality of the perforations in said net; and
   d. relaxing the tension on said elastomeric net.