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(54) **METHOD OF PRODUCING A WOVEN WEBBING**

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(57) **ABSTRACT**

Disclosed is a method for the production of a planar textile structure, especially a woven belt band, especially for safety belts in motor vehicles, consisting of warp threads and at least one weft thread. The method is characterized in that at least one hybrid multi-filament thread, made up of at least first and second filaments, is used for weaving, said second filaments having a higher melting point than the first filaments. Flexible elliptical and flat interlacing points are formed during shed closing of the warp threads, and the belt band is thermofixed after weaving, whereby the first filaments melt and the second filaments of the multifilament yarn are at least partially glued together.

METHOD OF PRODUCING A WOVEN WEBBING

CROSS REFERENCE TO RELATED APPLICATIONS

[0001] This is a continuation application of PCT/EP2003/012151, filed Oct. 31, 2003, which claims priority to German Application No. 102 55 360.2, filed Nov. 27, 2002; both of which are incorporated by reference herein.

BACKGROUND AND SUMMARY OF THE INVENTION

[0002] The invention relates to a method of producing a textile sheet fabric, particularly a woven webbing, more particularly a vehicle occupant restraint belt, comprising warp threads and at least one weft thread.

[0003] A wide variety of methods of producing such webbing and their attendant disadvantages are known. As a rule, the warp threads thereof consist of multifil yarns whereas for the weft thread(s) multi- or monofil yarns are employed singly or in combination. Whilst making a webbing exclusively of multifil yarn for the weft thread material has the disadvantage of it having practically no CD stiffness and elasticity, webbing with weft threads of monofil material although featuring the desired CD and elasticity, suffer the disadvantage that after a certain number of chaffing actions the monofil weft threads at the edges where the weft returns, juts from the belt in forming a hard sawtooth-like woven edge damaging to the clothing of the vehicle occupant or even causing injury to the chest and neck of the occupant. By comparison, webbing made of monofil weft material is thick as compared to webbing made exclusively of multifil material.

[0004] The invention is based on the object of proposing a method for producing a woven webbing which eliminates, or at least greatly reduces, the disadvantages known from prior art. This object is achieved by a method as it reads from claim **1**. This method has the advantage that incorporating the hybrid multifil yarn in the weft now makes it possible to achieve the positive structures of the keying points in the woven.

DETAILED DESCRIPTION

[0005] The hybrid multifil yarn comprises at least first and second filaments. This yarn simply termed "hybrid yarn" hereinafter is wefted in forming flexible elliptical and low profile keying points in shed closure of the warp threads, as is unattainable with monfil yarns. In setting, after weaving, the multifil yarn in accordance with the invention is heated to above the melting point of the low-melting filaments. It is this melting of the low-melting filaments that results in the high-melting filaments of the multifil yarn interbonding at least in part so that the multifil yarn is or can also be bonded as a whole or preferably its outlying filaments in addition to the keying points with the intersecting warp threads in thus achieving the high CD consolidation of the webbing. The process as described for modifying the mechanical properties—in achieving the description CD stiffness and elasticity—is done with the threads ondulated, i.e. the thickness of the woven webbing is thinner and the webbing surface formed by the warp threads is smoother because the heads of the keying points are configured less prominent.

[0006] As already indicated above, producing a webbing in accordance with the invention results in a elliptical low-profile, soft weft reversal in the region of the edges, because of the multifil yarn structure. Now, abrasion of the selvedge no longer results in the feared sawtooth effect and its negative consequences as in prior art from damage to the edges of the webbing.

[0007] In one aspect of the method in accordance with the invention polyamide is used for the first filaments and polyester for the second filaments, resulting in an optimum harmonizing pairing of the materials in the webbing. In another advantageous aspect of the invention polyester is used for both the first and second filaments in the hybrid multithread of the weft thread. This has the additional major advantage of the material permitting better recycling. Advantageously the first filaments in this case are made of a modified polyester.

[0008] Thermally treating the hybrid yarn textile sheet fabric at approximately 220° C. by the method in accordance with the invention results in the individual second filaments interbonding so that in the weft thread a monofil-type yarn body is achieved having the mechanical properties (resiliency, low fluffiness, stiffness) of a monofil yarn in thus combining all positive features of multifil yarn and monofil yarn in the method in accordance with the invention and the resulting product.

[0009] The method in accordance with the invention is applicable, of course, to all known types of webbing, the achievable advantages of which for the first time now combine low thickness of the webbing, smoother surface thereof, soft reversals in the region of the edges, resiliency, CD stiffness and perfect surface quality. Advantageously, multifil yarns are employed as the weft thread, the mass ratio of first filaments to second filaments being in the range of approximately 20%-90% to approximately 10%-80%.

1. A method of producing a textile sheet fabric, particularly a woven webbing, more particularly a vehicle occupant restraint belt, comprising warp threads and at least one weft thread comprising the steps of:

weaving at least one hybrid multifil yarn as the weft thread composed of at least first and second filaments, the second filaments having a melting point higher than that of the first filaments,

forming flexible elliptical low-profile keying points in the shedding closure of the warp threads, and

thermosetting the webbing after weaving, the first filaments melting and the second filaments of the multifil yarn interbonding at least in part.

2. The method as set forth in claim 1, wherein polyamide is employed for the first filaments and polyester for the second filaments.

3. The method as set forth in claim 1, wherein polyester is employed for the first filaments and for the second filaments.

4. The method as set forth in claim 1, wherein the mass ratio of first filaments to second filaments is in the range of approximately 20%-90% to approximately 10%-80%.

5. The method as set forth in claim 1, wherein the at least one weft thread is woven only over part of the warp threads

and a second weft thread shedded with the at least one warp thread, but running over the full width of the webbing.

6. The method as set forth in claim 1, wherein the webbing is woven with round selvedge.

7. The method as set forth in claim 1, wherein the webbing is provided in the region of its edges with additional threads.

8. The method as set forth in claim 1, wherein at least one of the warp threads is meshed at one or both edges with tucking and/or locking threads.

9. The method as set forth in claim 1, wherein the textile sheet fabric is woven with differing warp threads.

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