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(54) Laminated belts or blankets.

(57) A laminating blanket comprising a structure woven from polyether-ether-ketone monofilament yarns and having a silicone rubber coating at the support surface thereof. The woven structure being heat set prior to application of the coating and the coating embodying additives to provide enhanced thermal transmission, heat capacity, anti-static or other requisite characteristics. A needled batt may be provided between the coating layer and woven structure.

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IMPROVEMENTS IN OR RELATING TO LAMINATING OR LIKE BELTS OR BLANKETS

The invention concerns improvements in or relating to laminating or like belts or blankets.

Various forms of laminating belts or blankets (hereinafter called 'blankets') are known, but, whilst such blankets are satisfactory in operation, the materials used and the method of manufacture impose limitations on the dimensions of the available end product.

In a typical structure, a flat woven base cloth is brought into endless form, a batt of Nomex fibres is needled to the base cloth and a heat resistant coating is applied to the free surface of the batt. In order to avoid sleaziness in the end product, it is necessary to utilise a thick batt, but the very thickness of the batt does itself give rise to a spongy blanket, and this has an adverse effect on blanket performance. A further disadvantage of this construction is that the blanket is endless, and its application to the laminating machine is thereby inconvenient.

In another known arrangement, the blanket comprises a combination of Kevlar and glass yarns, the yarns usually being coated with polytetrafluoroethylene (PTFE) and the blanket being woven either flat or endless. The nature of the Kevlar and glass yarns is such that fabric stability requires the use of a PTFE coating material. In the case of a flat-woven fabric the ends are joined, as by sewing, and the blankets embodying the same exhibit a tendency towards joint mark-off on the laminated product. Furthermore the effectively non-elastic character of the Kevlar yarn gives rise to tension problems in the running direction of the blanket, any imperfection introduced in joining manifesting itself in the laminated product made using the blanket. As regards endless-woven blankets, whilst these avoid the "mark off" and tension problems of flat-woven blankets, loom considerations preclude the manufacture of endless-woven blankets of a circumference in excess of, say 6-7 metres, on a truly circular loom. Flat circular fabrics can be woven to greater dimensions, but tension irregularities arise in such fabrics as a result of pirn changes in the manufacturing process, and other inherent problems exist.

It is an object of the present invention to provide a blanket capable of use in laminating, fusing, calendering or transfer printing, which avoids some, at least, of the problems inherent in known structures.

According to the present invention there is proposed a laminating or like blanket comprising high-temperature resistant polyaryletherketone monofilament yarns.

A monofilament yarn particularly suitable for

use in the context of the invention is one comprising polyether-ether-ketone. For example as sold by ICI plc under the trade mark ZYEX.

According to a preferred feature, the blanket further includes a silicone rubber coating at the support surface at least of the blanket.

According to a preferred feature, the blanket is woven flat, and the respective fabric ends are joined.

According to a still further preferred feature, the said fabric ends are provided with respective sets of side-by-side loops, the loops at the said respective ends being interdigitatable to receive a pintle wire into the tunnel thus formed.

In a typical arrangement, a laminating blanket is produced by providing a flat-woven structure of duplex form and comprising Zyex monofilament yarns in both warp and weft directions, heat setting such fabric, and applying a silicone rubber coating to the intended support surface thereof.

The fabric may be made endless as by splicing, or the respective opposite ends thereof may include respective sets of side-by-side loops for interdigitation and receipt of a pintle wire.

In the case of a 'seamed' structure, continuity of the support surface along the line of the join is effected by introducing a strip of silicone rubber into the gap between the opposing ends of the coating layer. Alternatively, the coating can be provided as a continuous layer extending across the line of the intended seam and cut transversely of the fabric and normal to the plane thereof at a position spaced from said line, the coating further being separated from the fabric between the cut and the line of intended seam to provide access thereto.

The inherent textile stability of the woven Zyex structure after heat setting makes possible the use of a silicone rubber coating material, in contradistinction to the prior art structures incorporating Kevlar/glass yarns wherein PTFE is required to impart a requisite degree of stability, whilst the inherent capability of the Zyex yarns to accommodate temperatures of up to, say, 250°C fits fabrics embodying such yarns for use in the context of laminating, fusing, calendering and transfer printing.

The use of silicone rubbers as a coating material provides the opportunity to include additives of a kind appropriate to the characteristics required of the blanket. Thus, for a high thermal transmission belt, the monofilament base fabric may be metallised and the coating layer may include, for example, carbon black and metal powders such as aluminium and metal oxides to improve the con-

ductivity of the blanket, the carbon black serving also to impart an anti-static characteristic.

In the case of a pre-heated blanket, as is used in some instances, a thick belt including high heat capacity materials is required, and such capacity can be provided by inclusion of appropriate additives in the coating layer.

The film release characteristics of the belt can be enhanced by inclusion of, for example, micro-fine beads at the surface of the coating.

Although the invention is described in the context of duplex fabrics, it is to be understood that such invention is also of application to the context of single layer fabrics. Such single layer fabric may be made endless as by splicing, and may contain high temperature filler yarns, such as Kevlar, to facilitate the obtaining of an even coating layer thereon. Furthermore, it may be found desirable in some instances to provide a needled batt of fibres at the surface of the woven structure, whether of duplex form or otherwise, and to apply the silicone coating to that needled batt.

In another embodiment of the invention, a calendering belt consists of a flat woven structure, of Zyex monofilament yarns, made endless by means of a seam including spirals of like monofilament, such belt being devoid of a silicone rubber coating. It has been found that non-woven products calendered and thermally bonded using the belt exhibit a silky feel not apparent in such products as produced by means of conventional belts having a continuous coating layer thereto.

Claims

1. A laminating or like blanket comprising a structure woven from high-temperature resistant polyaryletherketone monofilament yarns.

2. A blanket as claimed in claim 1, wherein the polyaryletherketone is a polyether-ether-ketone.

3. A blanket as claimed in claim 1 or 2, wherein the blanket is of flat-woven construction and the respective ends thereof are joined.

4. A blanket as claimed in claim 3, wherein the fabric ends are provided with respective sets of side-by-side loops, the loops at the respective ends being interdigitatable to receive a pintle wire into the tunnel thus formed.

5. A blanket as claimed in any one of the preceding claims, further including a silicone rubber coating at the intended support surface thereof, the woven structure having been heat set prior to application of the coating.

6. A blanket as claimed in claim 5 when dependant upon claim 3 or 4, wherein the silicone rubber coating extends across the line of seam and is slitted to provide access to the seam.

7. A blanket as claimed in claim 5 or 6, wherein the coating includes additives to impart requisite characteristics thereto.

8. A blanket as claimed in any one of claims 5 to 7, wherein the coating includes microfine beads at the free surface thereof, thereby to enhance the film release characteristic of the blanket.

9. A blanket as claimed in any one of claims 5 to 8, further including a needled batt intermediate the woven structure and the silicone rubber coating.

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