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Description

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 (R.T.M.) 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 (R.T.M.) 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 (R.T.M.) 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 (R.T.M.) 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.

EP-A-077901 relates to a papermakers fabric in which polyaryletherketone yarns are provided to provide hydrolysis resistance at elevated temperatures.

DE-A-2825114 relates to an endless presumably non-seamed conveyor belt for use in moulding presses. The belt has a polyester silk base cloth having a silicone rubber coating. The silicone rubber coating is adhesive repellent.

It is an object of the present invention to provide a coated seamed blanket for use in the fields of laminating, fusing, calendering or transfer printing which does not exhibit sleaziness and which avoids marking of the products supported by the blanket.

According to the present invention there is provided a laminating or like blanket comprising a woven base structure, the base structure being woven from high temperature resistant polyaryletherketone monofilament yarns, the blanket being of flat-woven construction, the respective ends thereof being joined, characterised by the blanket further comprising a coating layer carried by the base structure to define a support surface aforesaid, the coating layer being of silicone rubber, silicone rubber being provided across the joint.

A monofilament yarn particularly suitable for use in the context of the invention is one comprising polyether-etherketone. For example as sold by ICI plc under the trade mark ZYEX.

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 (R.T.M.) 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 trans-

fer 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 conductivity 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, microfine beads at the surface of the coating.

Although the invention is described in the context of 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 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 (R.T.M.), 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.

A calendering belt can also consist of a flat woven structure, of Zyex monofilament yarns, made endless by means of a seam including spirals of like monofilament. 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 woven base structure, the base structure being woven from high temperature resistant polyaryletherketone monofilament yarns, the blanket being of flat-woven construction, the respective ends thereof being joined, the blanket further comprising a coating layer carried by the base structure to define a support surface aforesaid, the coating layer being of silicone rubber, silicone rubber being provided

across the joint.

2. A blanket as claimed in claim 1, characterised in that the polyaryletherketone is polyether/ether/ketone.
3. A blanket as claimed in claim 1 or claim 2, characterised in that the joint comprises sets of side-by-side loops provided at the respective ends of the blanket, the loops being interdigitatable to receive a pintle wire into the tunnel thus formed.
4. A blanket as claimed in any preceding claim, characterised in that the woven structure has been heat set prior to application of the coating layer.
5. A blanket as claimed in any preceding claim, characterised in that the coating layer includes additives to impart requisite characteristics thereto.
6. A blanket as claimed in any preceding claim, characterised in that the coating layer includes microfine beads within the free surface thereof, thereby to enhance the film release characteristic of the blanket.
7. A blanket as claimed in any preceding claim, characterised by further including a needled batt intermediate the woven structure and the silicone rubber coating layer.
8. A blanket as claimed in any preceding claim, characterised in that the silicone rubber provided across the joint is in the form of a strip.
9. A blanket as claimed in any of claims 1 to 7, characterised in that the silicone rubber coating extends across the joint and is slitted to provide access to the seam.

Patentansprüche

1. Drucktuch, insbesondere laminierendes Drucktuch, mit einer gewebten Grundstruktur aus hitzebeständigen Polyaryletherketon-Monofilamenten, wobei die Enden des flachgewebten Drucktuches miteinander verbunden sind und das Drucktuch ferner eine Überzugsschicht aufweist, die auf die Grundstruktur aufgebracht ist, eine Auflagefläche bildet und aus Silikon-gummi besteht, mit dem die Verbindung der Drucktuch-Enden abgedeckt ist.
2. Drucktuch nach Anspruch 1, dadurch gekennzeichnet, daß das Polyaryle-

therketon Polyether/Ether/Keton ist.

3. Drucktuch nach den Ansprüchen 1 oder 2, dadurch gekennzeichnet, daß die Verbindung der Drucktuch-Enden Gruppen von nebeneinanderliegenden Ösen aufweist, die an den jeweiligen Enden des Drucktuches ausgebildet und zum Ineinandergreifen bestimmt sind, so daß in den auf diese Weise gebildeten Tunnel ein Gelenkdraht einzusetzen ist. 5
4. Drucktuch nach einem der vorhergehenden Ansprüche, dadurch gekennzeichnet, daß die gewebte Grundstruktur vor Aufbringen der Überzugsschicht wärmegehärtet wurde. 10
5. Drucktuch nach einem der vorhergehenden Ansprüche, dadurch gekennzeichnet, daß die Überzugsschicht Zusatzstoffe enthält, die ihr die erforderlichen Eigenschaften verleihen. 15
6. Drucktuch nach einem der vorhergehenden Ansprüche, dadurch gekennzeichnet, daß in der freiliegenden Oberfläche der Überzugsschicht Mikrokügelchen vorhanden sind, die die Film-Ablöseigenschaften des Drucktuches verbessern. 20
7. Drucktuch nach einem der vorhergehenden Ansprüche, ferner dadurch gekennzeichnet, daß zwischen der gewebten Grundstruktur und der Überzugsschicht aus Silikongummi ein vernadeltes Vlies vorgesehen ist. 25
8. Drucktuch nach einem der vorhergehenden Ansprüche, dadurch gekennzeichnet, daß der die Verbindung abdeckende Silikongummi als Streifen ausgebildet ist. 30
9. Drucktuch nach einem der Ansprüche 1 bis 7, dadurch gekennzeichnet, daß die Überzugsschicht aus Silikongummi die Verbindung abdeckt und zwecks Zuganges zur Verbindungsnäht geschlitzt ist. 35

Revendications

1. Couverture de stratification ou analogue comportant une structure de base tissée, la structure de base étant tissée à partir de fils monofilamentaires de polyaryléthercétone résistant à une température élevée, la couverture ayant une construction de tissé à plat, ses extrémités respectives étant reliées, la couverture com- 50

portant en outre une couche de revêtement supportée par la structure de base pour définir une surface de support, la couche de revêtement étant constituée de caoutchouc au silicone, le caoutchouc au silicone étant agencé à travers la liaison.

2. Couverture selon la revendication 1, caractérisée en ce que le polyaryléthercétone est du polyéther/éther/cétone.
3. Couverture selon la revendication 1 ou 2, caractérisée en ce que la liaison est constituée d'ensembles de boucles situées côte à côte agencées au niveau des extrémités respectives de la couverture, les boucles pouvant être intercalées pour recevoir un fil de pivotement à l'intérieur du tunnel ainsi formé.
4. Couverture selon l'une quelconque des revendications précédentes, caractérisée en ce que la structure tissée a été établie à chaud avant l'application de la couche de revêtement.
5. Couverture selon l'une quelconque des revendications précédentes, caractérisée en ce que la couche de revêtement comporte des additifs destinés à fournir les caractéristiques requises pour celle-ci.
6. Couverture selon l'une quelconque des revendications précédentes, caractérisée en ce que la couche de revêtement comporte des cordons microfins situés à l'intérieur de sa surface libre, pour renforcer ainsi la caractéristique de libération de film de la couverture.
7. Couverture selon l'une quelconque des revendications précédentes, caractérisée en ce qu'elle comporte en outre une nappe aiguilletée située entre la structure tissée et la couche de revêtement en caoutchouc au silicone.
8. Couverture selon l'une quelconque des revendications précédentes, caractérisée en ce que le caoutchouc au silicone agencé à travers la liaison a la forme d'une bande.
9. Couverture selon l'une quelconque des revendications 1 à 7, caractérisée en ce que le revêtement de caoutchouc au silicone s'étend à travers la liaison et est fendu pour permettre d'accéder à la couture. 55