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⑤④ **Thermoplastic textile material.**

⑤⑦ The invention pertains to a thermoplastic textile material having hardening properties at room temperature, which is comprised on the one hand of textile fibers and glass fibers, and on the other hand of monofilaments or small ribbons which have plastic and adhesive properties at a temperature about 55°C, which monofilaments and ribbons are made from a crystalline polyester with high molecular weight.

"Thermoplastic textile material".

This invention relates to a thermoplastic textile material which has room-temperature hardening properties.

5 The object of the invention is to provide a thermoplastic material which may find varied applications, but the properties of which will be mainly described hereinafter as a substitute for so-called plasters or plaster gauzes.

10 From the many applications may be mentioned the following : decorating, coating or protecting materials. The coating material is mainly considered for vehicles, containers, pipes and similar. The thermoplastic textile material according to the
15 invention is also to be considered as moisture-protection for cables, wood, textile and similar. Finally, the thermoplastic textile material according to the invention may also perfectly be used for mending plastic elements, such as polyester boats or surfboards.

20 Notwithstanding such varied application possibilities, the thermoplastic textile material according to the invention will be mainly described here in the new and specific applications thereof for manufacturing splints to replace plaster and plaster gauze for orthopaedics and ergotherapy, as well as for laying so-called medical tapes.

To make this possible according to the invention, the thermoplastic textile material according to the invention is comprised on the one hand of textile fibers and glass fibers, and on the other hand of monofilaments or small ribbons which have plastic and adhesive properties at a temperature about 55°C, which monofilaments and ribbons are made from a crystalline polyester with high molecular weight.

Further according to the invention, said crystalline polyester has a molecular weight of at least 5000.

A feature of the invention lies in said crystalline polyester being extruded from a mass which contains a viscosity-modifier on the basis of silica.

A detail of the invention lies in the thermoplastic textile material which may have any texture, being coated on the one side at least with a film on the basis of crystalline polyester with a molecular weight of at least 5000 wherein a viscosity-modifier on the basis of silica is incorporated.

The invention also relates to using a selvage in combination with a thermoplastic material having the above-defined properties, which selvage is formed by a tape from said crystalline polyester with a molecular weight of at least 5000 to which a silica-based viscosity modifier is added, which tape has a lengthwise fold line.

Finally the invention pertains also to

a monofilament to be used by itself, which is formed by a crystalline polyester having a molecular weight of at least 5000.

5 The thermoplastic textile material according to the invention may have any texture whatsoever, which means that said material may be present in the shape of fabric, knitware, or else may be produced by a technique which does make use neither of weaving nor of knitting.

10 To bring the thermoplastic textile material according to the invention to a temperature suitable for the working thereof, said material may be treated with hot water or hot air. Due to the presence in the crystalline polyester with high molecular weight from
15 which as well the monofilaments, the small ribbons, the film, as the tapes to be used as selvedge are made of a silica-based viscosity modifier, the thermoplastic material does not adhere to the hands or to objects wherewith said thermoplastic material may be processed.

20 When the thermoplastic textile material according to the invention is used for orthopaedics, for example for applying splints or similar dressings, the dressing may be shaped again by using as necessary hot air or hot water, after some time, and the structural
25 dimensions thereof may be varied. This means a very large advantage relative to the previously used products known as plaster bandages.

30 A large advantage of the material according to the invention is to be considered in the fact that monofilaments, selvedge and the thin film may be obtained by extruding, in such a way that said products

may be manufactured with the required cross-sections.

Another advantage of the material according to the invention lies in becoming soft and thus thermoplastically distortable from 55°C, in such a way that it may be worked with bare hands.

A very marked advantage of the textile material (monofilament, selvedge and film), lies in becoming translucent at 55°C in such a way that during the working thereof, it is possible to see the underlying layers. Due to such property, the material shows by itself the condition thereof, in other words when the material is white and opaque, said material is rigid (at a temperature below 55°C), while when the material is translucent, this is an indication that the material may be distorted or shaped.

Another advantage lies in the product being very soft and extensible at 55°C, in such a way that the product may take any shape whatsoever, while when hardening said product clamps on any surface whatsoever.

It is to be noted that at 55°C, the product is extensible to a long length in every direction. As stated above, the product has a so-called "resiliency memory", which means that when heated, for example in water or with hot air, it may always take the original shape thereof.

Finally it is to be noted that the material is self-adhering both to itself, even in moist condition, and to other materials, even as they are heated to more than 100°C. This clamping does not however occur when the materials the thermoplastic textile

material according to the invention is applied on, are cool, unless the cool materials are of fiber-like nature, as this is the case for textile cloth.

5 Other advantages of the material are to be found in it being very fast hardenable when desired; in the material being heatable and shapable as many times as desired; in the material having a smooth finish and being easily cleaned with water and/or soap; in the material not inflaming the skin in the
10 case of medical applications (splints and immobilizing bandages), which is also of importance when the material is to be kneaded and worked with the bare hands; in the material being odour-less and not being attacked neither by UV radiations, nor by liquids, such as oil
15 and similar.

The thermoplastic material according to the invention is very strong, stiff and unflexible, but still locally distortable by using hot water or hot air. An advantage lies in the product according to
20 the invention crimping by 2%, which is of importance for a tight connection, for example when covering round materials.

In some embodiments, the thermoplastic material may be combined with a foam layer.

25 The composition according to the invention on the basis of a crystalline polyester with high molecular weight wherein a silica viscosity modifier is incorporated, is remarkably suited as medical suture thread and as welding thread. The adherence proper-
30 ties of the thermoplastic textile material according to the invention are dependent on the amount mono-

filament or film in the product proper. Preferably the addition of monofilament in the product proper will lie between 25 and 75 weight percent, whereby the adherence strength of the thermoplastic textile material according to the invention at a temperature
5 above 55°C, to itself and to other products is higher with an addition of 75% than with a lower addition.

The product according to the invention which is coated with a film from the same crystalline polyester with high molecular weight, has a thickness
10 which preferably lies between 50 and 500 microns. The tape from the same thermoplastic material which is used as selvedge for finishing a bandage for example, is 10 to 30 mm wide. The tape has in the center thereof
15 a lengthwise thinning, in such a way that said tape is foldable along said lengthwise center line. After heating the tape as usual to the required temperature, the tape may be kneaded and worked with the textile material proper at such temperature.

20 It must be understood that the invention is not limited to the above embodiments and that many changes may be brought thereto without departing from the scope of the invention as defined in the appended claims.

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CLAIMS.

1. Thermoplastic textile material having hardening properties at room temperature, which is comprised on the one hand of textile fibers and glass fibers, and on the other hand of monofilaments or small ribbons which have plastic and adhesive properties at a temperature about 55°C, which monofilaments and ribbons are made from a crystalline polyester with high molecular weight.

2. Thermoplastic textile material as defined in claim 1, in which said crystalline polyester has a molecular weight of at least 5000.

3. Thermoplastic textile material as defined in either one of claims 1 and 2, in which said crystalline polyester is extruded from a mass which contains a viscosity-modifier on the basis of silica.

4. Thermoplastic textile material as defined in any one of claims 1 to 3, with any texture whatever, in which said material is coated on the one side at least with a film on the basis of crystalline polyester with a molecular weight of at least 5000 wherein a viscosity-modifier on the basis of silica is incorporated.

5. Thermoplastic textile material as defined in claim 4, in which said film has a thickness lying between 50 and 500 microns.

6. Thermoplastic textile material as defined in any one of claims 1 to 5, in which said monofilaments or ribbons in the thermoplastic textile material are present with a ratio from 25 to

75 weight percent.

5 7. Selvedge to be used in combination with
a thermoplastic material as defined in any one of claims
1 to 6, which is formed by a tape from said crystalline
polyester with a molecular weight of at least 5000 to
which a silica-based viscosity modifier is added, which
tape has a lengthwise fold line.

10 8. Monofilament to be used by itself,
which is formed by a crystalline polyester having a
molecular weight of at least 5000.

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