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(54) **IMPROVED SURFACES FOR SPORTING AND OTHER ACTIVITIES**

BODENOVERFLÄCHE ZUR NUTZUNG FÜR SPORT- UND ÄHNLICHE ZWECKE

**SURFACES PERFECTIONNEES DESTINEES A LA PRATIQUE DE SPORTS ET D'AUTRES
ACTIVITES**

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Description**FIELD OF THE INVENTION**

5 The present invention relates to improved surfaces for sporting and other activities, and more particularly to surfaces suitable for equestrian usage, for ball games, such as football and golf, and other leisure activities.

BACKGROUND OF THE INVENTION

10 The natural surface for most equestrian events, particularly horse jumping, is grass. This is acceptable for large areas such as racecourses where the usage is low and the grass therefore has time to recover between race meetings. Where the surface is used more extensively, for example, in training areas, grass, particularly in the autumn and winter period, becomes worn and muddy patches appear. These patches form dusty hard surfaces in dry conditions, and this may lead to an unacceptable incidence of leg injuries.

15 As an alternative to grass a number of artificial surfaces have been used. A first known surface comprises natural wood fibre and this when new provides a good surface. It is, however, a natural material and therefore deteriorates with age. Thus, it has to be replaced and, since it is fairly expensive, the replacement cost is high. A second known surface comprises finely chopped PVC often from used electrical cable insulation material. This produces a good surface but if laid deeply the surface is rather loose and the cost of the material is very high. A third known surface
20 comprises ashes from power stations. The ashes provide a surface which drains readily when newly laid in wet weather but in dry conditions the surface produces dust and becomes compacted becoming hard especially after prolonged use. An alternative surface is silica sand which provides a good surface in wet weather conditions but in dry weather conditions the sand provides an extremely difficult surface for both jumping and landing, particularly for an equestrian practise ring. The principal problem of silica sand is that it lacks cohesion therefore providing a surface which is described as riding too deep and loose.

25 The natural surface for most ball games is also grass. The damage to the turf and soil structure which is caused by normal usage is intensive and the scale of damage can exceed the rate of such recovery. This is particularly pronounced in areas such as goal mouths and centre circles of football pitches and on golf tees where the turf can be totally destroyed and the soil severely compacted. In wet weather this means mud; in dry weather the surface is hard
30 and bumpy.

As an alternative to grass, a number of artificial surfaces have been used. A first known surface, commonly known as hard porous, comprises water bound grit/sand/clay mixtures of differing proportions, normally laid over a drainage layer of coarser material. This surface provides inadequate cushioning and is too abrasive. The surface material also becomes destructured and therefore loses permeability. In dry weather dust is a problem.

35 A second known surface comprises a synthetic material designed to imitate real turf. This may be laid on soil or on a drainage layer of sand or other material. This synthetic turf may or may not be infilled by a top dressing of sand. Such a surface is expensive to install and has insufficient resilience for falling players. Maintenance and repairs are difficult and costly.

40 A third known surface comprises a layer of fibres which are joined together in a loose pattern, laid in a bed of sand which in turn may be laid on a drainage layer of other material. Maintenance and repairs are difficult and costly. Play characteristics are poor.

A fourth known surface comprises a layer of sand or granular material bound by bitumastic or similar material. Such a surface has insufficient resilience, is too abrasive and is difficult and costly to repair and maintain.

45 In US Patent No. 4073753 there is described a resilient, water pervious composition for playing surfaces, consisting of a mixture of particulate rubber and particulate inorganic solids, the particulate rubber being 10 - 50% by volume and having a particle size such that not more than 10% by volume passes a No. 100 sieve and substantially all passes a No. 8 sieve, the particulate inorganic solids being 90 - 50% by volume having a particle size such that 80 - 100% by volume passes a No. 8 sieve and not more than 15% by volume passes a No. 200 sieve. These compositions lack stability, and the rubber particles supply insufficient reinforcement, for many applications. This is particularly important
50 in the case of equestrian events.

It can be seen from the above that where the wear on a playing surface is severe, the tendency has been to move away from grass to synthetic surfaces of various kinds, notwithstanding their known disadvantages.

55 In British Patent No. 2184765B, the entire disclosure of which is incorporated herein by reference, there is described and claimed an all-weather surface for equestrian events which has proved to be highly successful in practice. The surface comprises a layer of material, the material comprising a mixture of sand and elongate synthetic fibres, the fibres being randomly dispersed as separate individual fibres throughout the sand, and in which the fibres are in the range of 25 to 75mm in length and are of uncrimped form.

Notwithstanding the improvement obtained with the surface of British Patent No 2184765B, for certain equestrian

events, such as, for example, show jumping and dressage, a surface which even more closely approximates to the properties of an ideal grass surface would be desirable.

In EP-A-0314622 there is described an athletic field or playground having an essentially planar surface consisting, at least in part, of tree bark particles consolidated to form an essentially tread resistant top layer of the athletic field or playground, the top layer consisting, at least predominantly, of a mixture of particulate tree bark and of flexible fibres dispersed in the mixture, and at least a predominant portion of the fibres having a fibre length that is greater than the average largest dimension of the tree bark particles.

SUMMARY OF THE INVENTION

We have now discovered that an improved all-weather surface for sporting and other activities, particularly equestrian events, can be obtained by using a material comprising sand, woodchip and/or chopped geotextile material, and natural or synthetic fibres.

According to one aspect of the invention there is provided a surface for sporting and/or other activities which comprises a layer of material comprising (i) sand, (ii) woodchip and/or chopped geotextile material, and (iii) 0.05% to 0.4% by weight, based on the total weight of the material, of elongate natural or synthetic fibres, the fibres being dispersed as separate individual fibres.

In another aspect the invention provides a material suitable for the formation of a surface for sporting and/or other activities which comprises (i) sand, (ii) woodchip and/or chopped geotextile material, and (iii) 0.05% to 0.4% by weight, based on the total weight of the material of elongate natural or synthetic fibres, the fibres being dispersed as separate individual fibres.

DETAILED DESCRIPTION OF THE INVENTION

The material of the present invention can, for example, be laid on top of a soil or prepared drainage base to form a surface as required.

Sand, suitable for use in the present invention, is preferably of a type which allows drainage and does not readily break down through attrition. It may, for example, be a naturally occurring sand such as for example sea sand or dune sand or a processed quarry sand, for example, a sand derived from crushed rock. The sand may be washed if desired, but in many circumstances it is not necessary, and in some cases it may be even advantageous not to do so.

An example of a suitable sand for use in the present invention is silica sand.

Silica sand is a sand which is relatively clean, and is a well graded sand produced by a wet classification method.

Preferably the sand particles have a diameter such that they will pass through a sieve of 1mm hole size, and/or preferably such that they have an average diameter in the range of from 100 to 1000 microns.

The woodchip used in the present invention can be derived from any suitable hard or soft wood, or mixtures thereof, such as, for example, oak, elm, ash, beech, and pine.

Woodchip suitable for use in the present invention preferably comprises irregular wood particles which are substantially free, or at most comprise only small amounts of, sawdust, wood shavings, or splinters (which might injure a horse). The woodchip particles are usually substantially rectangular in shape, although not necessarily so. Typically the woodchip particles have an average length of from 10 to 80mm, an average width (breadth) of 5 to 25mm and an average thickness of 2 to 3mm.

Geotextile materials are widely used for a variety of surface preparations, for example, as part of a drainage base, or to stabilize slopes or landscape features, and in road laying and other civil engineering projects. They are extensively used in synthetic playing surfaces, for example, artificial turf, and football pitches. Usually geotextile materials comprise a flexible sheet, membrane or web of water-permeable fabric, the sheet, membrane, or web material being substantially non-biodegradable and preferably having a non-woven construction. The geotextile material usually has pores of a suitable size to allow liquid to drain through but to prevent the passage of small particles.

The geotextile material can comprise a high molecular weight polymeric composition, for example, a polyolefin polymer, such as polyethylene, polypropylene, or co-polymers of ethylene and propylene with each other and with other vinyl monomers, or a substituted polyolefin polymer, such as polyvinylchloride, or a polyester. Typical examples of geotextile materials comprise a porous web of non woven, and especially, spun-bonded, polyethylene or polypropylene. The filaments of the geotextile material can, for example, be chemically bonded with a binder comprising an acrylic resin and a melamine.

Preferably the geotextile material has a bulk density of from about 0.1Kg/cu. metre to about 0.4Kg/cu. metre, more preferably from 0.2 to 0.3Kg/cu. metre, and, for example, can have a compacted density of about 220Kg/cu. metre. The geotextile material is preferably chopped into irregular pieces, which can, for example, have a triangular, quadrilateral, or polygonal shape. Preferably the pieces of geotextile material have a greatest dimension (length or width) of less than 100mm, preferably less than 50mm, with the majority of the pieces preferably having a greatest dimension

of from 10 to 30mm, and a smallest dimension of from 5 to 12mm.

The invention can make use of chopped, recycled geotextile material, and this is the preferred source of geotextile material for use in the present invention.

The elongate natural or synthetic fibres preferably comprise fibres of a natural or synthetic polymeric material having good resistance to environmental conditions. Synthetic fibres of polyolefins such as polyethylene, polypropylene, polybutene or co-polymers thereof are particularly suitable, together with polyamides such as nylon, halogenated polymers such as PVC, and other similar materials.

The fibres can have a fibre length of from 5 to 75mm, preferably from 10 to 75mm, most preferably from 20 to 40mm. The average diameter of the fibres is preferably from 50 to 150 denier, for example, about 65 denier.

The fibres are preferably polypropylene fibres which are preferably used in an uncrimped form commonly referred to as straight staple fibre.

Preferably, the layer of material forming the surface is from 25 to 150mm thick, most preferably from 50 to 150mm thick.

If desired, the layer of material can comprise a plurality of layers of different composition. For example, a preferred surface according to the invention can comprise an upper layer comprising a mixture of (i) sand, and (ii) woodchip and/or chopped geotextile material, optionally with (iii) up to about 1% by weight based on the total weight of the material layer of randomly dispersed elongate natural or synthetic fibres, and a lower layer comprising (i) sand, and (ii) randomly dispersed elongate natural or synthetic fibres.

The ratio of the components of the material will depend to some extent on the nature of the components chosen. The sand preferably comprises, for example, from 20 to 80% by volume, more preferably from 40 to 60% by volume, of the total material.

The amount of woodchip in the material will depend to some extent on the required properties of the material but is usually at least 20% by volume, and is preferably in the range 40 to 60% by volume, based on the total volume of the material.

The woodchip in the material can be wholly or partly replaced by chopped geotextile material, and the amount of chopped geotextile material used will depend on the amount of woodchip present, if any. In general, the chopped geotextile material is used in an amount of up to 50% by volume, preferably from 10 to 40% by volume, based on the total volume of the material.

The percentage of elongate natural or synthetic fibres in the total material composition is preferably in the range of 0.05% to 0.4% by weight, preferably from 0.1% to 0.3% and most preferably about 0.2% by weight. The fibres may be coloured to conform to the colour of the material and thereby be substantially invisible in use.

An example of a first preferred material composition according to the invention is as follows:

Silica sand (particle size less than 1mm)	50% by volume
Polypropylene fibres (65 denier average fibre length 40mm)	0.2% by weight
Woodchip	50% by volume

An example of a second preferred material composition according to the invention is as follows:

Selected sand	70% by volume
Polypropylene fibres (65 denier average fibre length 40mm)	0.2% by weight
Chopped Geotextile material	30% by volume

Small quantities of other materials, for example stabilizers, fillers, additives which assist with water retention properties and colouring materials, may be added to the material composition in amounts not sufficient to impair the physical properties of the material.

Using the material of the invention, an all weather surface can be prepared which is free-draining, such that even after prolonged periods of heavy rain, water will not stand on the surface. The surface remains relatively cohesive and mud free, to provide a firm footing for sporting activities. In addition, it is found that the surface resists compaction, and retains a good structure even when subjected to heavy wear under wet conditions.

It is found that the preferred surfaces of the invention have a greatly improved combination of properties over known sports surfaces. Some advantages over the material of GB2184765B which are important for show jumping and dressage events are as follows:

1. Improved cushion or "give" for jumping. When horses jump over an obstacle they require a landing area which allows some forward movement, for example, about 10cm, without excessive depth, for example greater than about 2.5cm. The preferred surfaces of the invention can satisfy this requirement.

2. Improved resilience giving a less "dead" surface.
3. Improved resistance to compaction, thereby providing a less dense surface which is more suitable for events such as dressage.
4. Improved moisture retention in dry weather, so that less watering is necessary.
5. Less fibre separation in dry weather.
6. Improved softness, reducing the impact on limbs and tendons.
7. Reduced maintenance due to the improved flexibility of the surface. Also, the type of sand required is less critical due to the reduced abrasion which takes place when particles are moved under horses' feet or machinery. This results in reduced particle breakdown.

The preferred surfaces, according to the invention, also have substantial advantages over other known surfaces formed from materials such as, for example, woodchip, plastic granules, rubber particles, sand, and rubber and sand mixtures. Some of these advantages are as follows:

1. Less movement and depth, and much greater cohesion.
2. Less slippery under severe weather conditions.
3. Improved stability after laying.
4. Improved drainage during wet weather.
5. Extended life compared with surfaces comprising woodchip alone.

The components of the material may be mixed in any order, or simultaneously, to give one or more substantially homogeneous mixtures. It is important to distribute the fibres evenly and randomly throughout any mixture containing fibres, and it has been found in practice, for example, that it is preferable to pre-mix the sand and the woodchip and/or geotextile material together and then introduce the fibres to obtain an even, random dispersion.

In the preparation of an all weather surface according to the invention, turf and top soil are removed to the required depth and replaced with a layer of the surface material. A greater depth of turf and top soil may be removed, particularly if the drainage characteristics are poor, and in such cases the lower layer should be replaced with a drainage base comprising clean crushed rock or gravel of appropriate size laid to an appropriate thickness in accordance with normal drainage engineering design rules, if desired, on a geotextile membrane.

In a particularly preferred all weather surface according to the invention, a bed of material in accordance with British Patent No. 2184765B comprising sand and fibres is first laid down, and then overlaid with a bed, about 5cm thick, of a material comprising (i) sand, (ii) woodchip and/or chopped geotextile material, and (iii) optionally up to about 1% by weight, based on the weight of the total surface material, of randomly dispersed natural or synthetic fibres.

Another preferred material can be prepared, for example, by taking a quantity (usually thirty to forty tonnes) of sand and woodchip and/or chopped geotextile material mix which is in a fairly moist condition and incorporating into the mix a quantity of polypropylene fibres of the desired length. The sand/woodchip chopped geotextile mix can be mixed with the fibres, for example, in a high intensity mixer of the contra rotating type which mixes the fibres homogeneously in a randomly orientated distribution throughout the material.

The random distribution of fibres stabilises the material imparting resistance to particle movement under load from horses hooves etc, thus minimising spreading and hoof penetration such that a sure footing is obtained. The fibre length is required to be long enough such that a "crosslinking" effect is produced thereby preventing the material from moving under the pressure of the horses hooves, players feet, or other users such as wheeled vehicles or implements.

Thus the particle sizes of the material components and the diameter and length of the fibres require to be carefully selected within the preferred ranges to suit the intended use.

Relatively straight fibres need to be used since crimped fibres are not readily mixed to produce a substantially "homogeneous" mixture. The length of the fibres is of particular importance since this provides, in the homogenous mixture, the crosslinking which is necessary to prevent the mixture from spreading under the shock loading produced by horses hooves, players feet, or other users as aforesaid.

Following mixing, the material is delivered to the prepared site and laid out to the required depth to give the desired surface characteristic. The characteristic of the surface can be altered by the choice of particle sizes and the percentages of the individual components.

It is found that the preferred surfaces of the invention have greatly improved shear resistance, stability, resilience and other mechanical and physical properties as discussed hitherto.

The new all-weather surface is particularly suitable for sporting areas having high usage, for example, equestrian training areas, and show jumping arenas.

Claims

1. A surface for sporting and/or other activities, which comprises a layer of material comprising (i) sand, (ii) woodchip and/or chopped geotextile material, and (iii) 0.05% to 0.4% by weight, based on the total weight of the material, of elongate natural or synthetic individual fibres, the fibres being dispersed as separate individual fibres.
2. A surface according to Claim 1, wherein the layer comprises a random mixture of components (i), (ii) and (iii).
3. A surface according to Claim 1, wherein the layer comprises an upper layer comprising a mixture of (i) sand, and (ii) woodchip and/or chopped geotextile material, optionally with (iii) randomly dispersed elongate natural or synthetic fibres, and a lower layer comprising (i) sand, and (ii) randomly dispersed elongate natural or synthetic fibres.
4. A surface according to any of Claims 1 to 3, in which the sand is silica sand, and in which the sand particles have an average diameter in the range of from 100 to 1000 microns, and/or
 - in which the woodchip is derived from oak, elm, ash, beech, pine, or a mixture thereof, and/or
 - in which the woodchip comprises particles having an average length of from 10 to 80mm, an average width (breadth) of from 5 to 25mm and an average thickness of from 2 to 3mm, and/or
 - in which the geotextile material comprises a porous web of non-woven polyethylene or polypropylene fabric, and/or
 - in which the geotextile material is chopped into irregular pieces, and/or
 - in which the chopped geotextile material has a bulk density of from 0.1 to 0.4, and/or
 - in which the chopped geotextile material is one in which a majority of the pieces have a greatest dimension of from 10 to 30mm, and a smallest dimension of from 5 to 12mm, and/or
 - in which the elongate natural or synthetic fibres have a fibre length of from 10 to 75mm, and/or
 - in which the fibres have an average diameter from 50 to 150 denier, and/or
 - in which the fibres are polypropylene fibres, and/or
 - in which the material comprises from 20% to 80% of sand by volume, based on the total volume of the material, and/or
 - in which the amount of woodchip in the material is in the range of from 40% to 60% by volume, based on the total volume of the material, and/or
 - in which the amount of chopped geotextile material in the material is in the range of from 10% to 50% by volume, based on the total volume of the material, and/or
 - in which the percentage of natural or synthetic fibres in the material is in the range of from 0.1% to 0.3% by weight, based on the total weight of the material, and/or
 - which also comprises stabilisers, fillers, additives which assist with water retention properties and/or colouring materials.
5. A material suitable for the formation of a surface for sporting and/or other activities, which comprises a mixture of (i) sand, (ii) woodchip and/or chopped geotextile material, and (iii) 0.05% to 0.4% by weight, based on the weight of the mixture, of elongate natural or synthetic fibres, the fibres being randomly dispersed as separate individual fibres in the mixture.

Patentansprüche

1. Bodenoberfläche zur Nutzung für Sport und ähnliche Zwecke, die eine Materialschicht enthält, mit (i) Sand, (ii) Holzspänen und/oder zerkleinertem geotextilen Material und (iii) auf Basis des Gesamtgewichts des Materials 0,05 bis 0,4 Gew.-% länglichen Natur- oder Synthetik-Einzelfasern, wobei die Fasern als separate Einzelfasern verteilt sind.
2. Bodenoberfläche nach Anspruch 1, bei der die Schicht eine ungeordnete Mischung der Bestandteile (i), (ii) und (iii) enthält.
3. Bodenoberfläche nach Anspruch 1, bei der die Schicht eine obere Schicht mit einer Mischung aus (i) Sand und (ii) Holzspänen und/oder zerkleinertem geotextilen Material sowie wahlweise (iii) ungeordnet verteilten länglichen Natur- oder Synthetik-Fasern und eine untere Schicht enthält, mit (i) Sand und (ii) ungeordnet verteilten länglichen Natur- oder Synthetik-Fasern.

4. Bodenoberfläche nach einem der Ansprüche 1 bis 3, bei der der Sand Silica-Sand ist und bei der die Sandpartikel einen mittleren Durchmesser in dem Bereich von 100 bis 1000 µm haben und/oder

bei der die Holzspäne aus Eichenholz, Ulmenholz, Eschenholz, Buchenholz, Kiefernholz oder eine Mischung daraus sind und/oder

bei der die Holzspäne Partikel mit einer mittleren Länge von 10 bis 80 mm, einer mittleren Breite (Weite) von 5 bis 25 mm und einer mittleren Dicke von 2 bis 3 mm enthalten und/oder

bei der das geotextile Material eine poröse Bahn aus Polyethylen- oder Polypropylen-Vliesgewebe enthält und/oder

bei der das geotextile Material zu ungleich großen Stücken zerkleinert ist und/oder

bei der das zerkleinerte geotextile Material eine Füllichte von 0,1 bis 0,4 hat und/oder

bei der das zerkleinerte geotextile Material eines ist, bei dem die Mehrzahl der Stücke eine maximale Abmessung von 10 bis 30 mm und minimale Abmessung von 5 bis 12 mm hat und/oder

bei der die länglichen Natur- oder Synthetik-Fasern eine Faserlänge von 10 bis 75 mm haben und/oder

bei der die Fasern einen mittleren Durchmesser von 50 bis 150 Denier haben und/oder

bei der die Fasern Polypropylen-Fasern sind und/oder

bei der das Material auf Basis des Gesamtvolumens des Materials von 20 bis 80 Vol.-% Sand enthält und/oder

bei der der Anteil an Sägespänen in dem Material auf Basis des Gesamtvolumens des Materials im Bereich von 40 bis 60 Vol.-% liegt und/oder

bei der der Anteil an zerkleinertem geotextilen Material in dem Material auf Basis des Gesamtvolumens des Materials im Bereich von 10 bis 50 Vol.-% liegt und/oder

bei der der Prozentanteil an Natur- oder Synthetik-Fasern in dem Material auf Basis des Gesamtgewichts des Materials im Bereich von 0,1 bis 0,3 Gew.-% liegt und/oder

die außerdem Stabilisatoren, Füllmittel und Zusätze enthält, die die Wasserretentionseigenschaften verbessern, und/oder Färbemittel enthält.

5. Material, das zur Herstellung einer Bodenoberfläche für Sport und/oder ähnliche Zwecke geeignet ist, mit einer Mischung aus (i) Sand, (ii) Holzspänen und/oder zerkleinertem geotextilen Material und (iii) auf Basis des Gewichts der Mischung 0,05 bis 0,4 Gew.-% länglichen Natur- oder Synthetik-Fasern, wobei die Fasern als separate Einzelfasern ungeordnet in der Mischung verteilt sind.

Revendications

1. Surface pour la pratique du sport et/ou d'autres activités, qui comprend une couche d'un matériau comprenant (i) du sable, (ii) des copeaux de bois et/ou un matériau géotextile haché, et (iii) de 0,05 % à 0,4 % en poids, par rapport au poids total du matériau, de fibres individuelles naturelles ou synthétiques allongées, les fibres étant dispersées sous forme de fibres individuelles séparées.

2. Surface selon la revendication 1, dans laquelle la couche comprend un mélange aléatoire des composants (i), (ii) et (iii).

3. Surface selon la revendication 1, dans laquelle la couche comprend une couche supérieure comprenant un mélange de (i) sable, et (ii) copeaux de bois/et ou matériau géotextile haché, éventuellement avec (iii) des fibres individuelles naturelles ou synthétiques dispersées de façon aléatoire, et une couche inférieure comprenant (i) du sable et (ii) des fibres naturelles ou synthétiques allongées dispersées de manière aléatoire.

4. Surface selon l'une quelconque des revendications 1 à 3, dans laquelle le sable est du sable de silice, et dans laquelle les particules de sable ont un diamètre moyen dans la gamme de 100 à 1000 microns, et/ou

dans laquelle les copeaux de bois sont dérivés du chêne, de l'orme, du frêne, du hêtre, du pin ou de leurs mélanges, et/ou

dans laquelle les copeaux de bois comprennent des particules ayant une longueur moyenne de 10 à 80 mm, une largeur moyenne de 5 à 25 mm et une épaisseur moyenne de 2 à 3 mm, et/ou

dans laquelle le matériau géotextile comprend un réseau poreux d'un tissu non tissé de polyéthylène ou polypropylène, et/ou

dans laquelle le matériau géotextile est haché en pièces irrégulières, et/ou

dans laquelle le matériau géotextile haché a une densité apparente de 0,1 à 0,4, et/ou

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dans laquelle le matériau géotextile haché est du type comprenant une majorité de pièces dont la dimension la plus grande va de 10 à 30 mm et la dimension la plus petite de 5 à 12 mm, et/ou

dans laquelle les fibres naturelles ou synthétiques allongées ont une longueur de fibres de 10 à 75 mm, et/ou

dans laquelle les fibres ont un diamètre moyen de 50 à 150 deniers, et/ou

dans laquelle les fibres sont des fibres de polypropylène, et/ou

dans laquelle le matériau comprend de 20 % à 80 % en volume de sable, par rapport au volume total du matériau, et/ou

dans laquelle la quantité de copeaux de bois dans le matériau est située dans la gamme de 40 % à 60 % en volume, par rapport au volume total du matériau, et/ou

dans laquelle la quantité du matériau géotextile haché dans le matériau est dans la gamme de 10 à 50 % en volume, par rapport au volume total du matériau, et/ou

dans laquelle le pourcentage de fibres naturelles ou synthétiques dans le matériau est dans la gamme de 0,1 % à 0,3 % en poids, par rapport au poids total du matériau, et/ou

qui comprend également des stabilisants, des charges, des additifs qui contribuent aux propriétés de rétention de l'eau et/ou des substances colorantes.

5. Matériau approprié pour former une surface pour la pratique du sport et/ou d'autres activités, qui comprend un mélange de (i) sable, (ii) copeaux de bois et/ou matériau géotextile haché, et (iii) 0,05 % à 0,4 % en poids, par rapport au poids total du mélange, de fibres naturelles ou synthétiques allongées, les fibres ayant été dispersées dans le mélange, de manière aléatoire, sous forme de fibres individuelles séparées.