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3	Drawings-only black and white line drawings	TRC3_0300_Drawing.pdf	501732	no	2
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10 A METHOD OF APPLYING A THEROMPLASTIC POLYMER COATING

FIELD OF THE INVENTION

15 The present invention generally relates to a method of applying a thermoplastic polymer coating to a fabric. More particularly, the present invention relates to a method for securing tufted yarns or filaments in a primary backing. The present invention also related to the lamination of fabrics. More particularly, the present invention relates to a method of laminating fabrics using an aqueous dispersion of thermoplastic polymer particles. Specifically, the present invention relates to a method of attaching a secondary backing material to a primary backing material of a carpet or
20 synthetic turf using an aqueous dispersion of thermoplastic polymer particles.

BACKGROUND OF THE INVENTION

25 Carpets are typically constructed from a primary backing material and a face pile formed on one side. Face pile can be form in the primary backing by tufting or by adhesively attaching a face pile to the primary backing. Currently, the majority of carpet being manufactured in the U.S. is made by a tufting process. The tufting process forms looped or cut pile on one side of a primary backing and loop backs on the opposite side by a process well known in the art. The primary backing can be made from a woven or nonwoven fabric of natural or synthetic materials. Synthetic turf is also made by
30 tufting synthetic filaments into a synthetic primary backing.

35 After the primary backing is tufted, an adhesive precoat may be applied to lock the tufts in the primary backing. Then, a secondary backing may optionally be adhesively attached by applying a coating of adhesive on the side of the primary backing opposite the face pile, contacting the adhesive with the secondary backing and allowing the adhesive to cool or cure.

5 An adhesive frequently used as an adhesive pre-coat or for attaching a secondary backing to a primary backing is polyurethane. However, polyurethane generally is not recyclable. To solve the problem of non-recyclability, thermoplastic adhesives have been used. However, attaching a secondary backing to a primary backing with a hot melt thermoplastic adhesive generally requires relatively large amount of
10 adhesive. This relatively large amount of adhesive contributes to the overall cost of the finished product.

 It would be desirable to be able to attach a secondary backing to a primary backing of a carpet or synthetic turf using an adhesive system that requires the use of relatively smaller amounts of adhesive. It would also be desirable to be able to attach a
15 secondary backing to a primary backing of a carpet or synthetic turf using reduced amounts of adhesive without sacrificing desired physical properties of the finished product.

SUMMARY OF THE INVENTION

20 The present invention satisfies the foregoing needs by providing an improved adhesive system for carpet and synthetic turf.

 In one disclosed embodiment, the present invention comprises a method. The method comprises applying a quantity of an aqueous dispersion of thermoplastic polymer particles to a primary backing and loop backs of a tufted carpet or a tufted
25 synthetic turf, wherein the thermoplastic particles have an average particle size less than 1,000 microns. The method also comprises heating the aqueous dispersion to a temperature sufficient to remove water therefrom, and heating the thermoplastic particles on the primary backing and loop backs to a temperature at or above the melting temperature of the thermoplastic particles. The method further comprises allowing the
30 heated thermoplastic polymer particles to cool below their melting temperature whereby the loop backs are adhered to the primary backing.

 In another disclosed embodiment, the present invention comprises a method. The method comprises preparing a foam of an aqueous dispersion of thermoplastic polymer particles, wherein the thermoplastic polymer particles have a particle size of
35 approximately 10 microns to approximately 200 microns and applying a quantity of the

5 foamed aqueous dispersion to a primary backing and loop backs of a tufted carpet or
tufted synthetic turf. The method also comprises heating the aqueous dispersion on the
primary backing and loop backs to a temperature sufficient to remove water therefrom
and heating the thermoplastic particles on the primary backing and loop backs to a
temperature at or above their melting temperature. The method further comprises
10 cooling the heated thermoplastic polymer particles to below their melting temperature
whereby the loop backs are adhered to the primary backing.

In another disclosed embodiment, the present invention comprises a
method. The method comprises applying a quantity of an aqueous dispersion of
thermoplastic polymer particles to a primary backing and loop backs of a tufted carpet or
15 a tufted synthetic turf, wherein the thermoplastic particles have an average particle size
less than 1,000 microns and heating the aqueous dispersion to a temperature sufficient to
remove water therefrom. The method also comprises heating the thermoplastic particles
on the primary backing and loop backs to a temperature at or above the melting
temperature of the thermoplastic particles and placing a secondary backing in contact
20 with the heated thermoplastic polymer particles on the primary backing. The method
further comprises allowing the heated thermoplastic polymer particles to cool below their
melting temperature whereby the primary and secondary backings are adhered together.

Accordingly, it is an object of the present invention to provide an
improved carpet and synthetic turf adhesive system.

25 Another object of the present invention is to provide a carpet and synthetic
turf adhesive system that requires the use relatively smaller amounts of adhesive.

A further object of the present invention is to provide a carpet and
synthetic turf adhesive system that does not sacrifice desired physical properties of the
finished product.

30 Another object of the present invention is to provide an adhesive system
for carpet and synthetic turf that utilizes an aqueous dispersion of thermoplastic particles.

Yet another object of the present invention is to provide an improved
adhesive system for attaching a secondary backing to a primary backing of a carpet or
synthetic turf.

5 A further object of the present invention is to provide an improved adhesive system for securing tuft loop backs to a primary backing of a tufted carper or a tufted synthetic turf.

 These and other objects, features and advantages of the present invention will become apparent after a review of the following detailed description of the disclosed
10 embodiments and the appended drawing and claims.

BRIEF DESCRIPTION OF THE DRAWINGS

 Fig. 1 is a schematic view of a disclosed embodiment of an apparatus for preparing carpet or synthetic turf using the adhesive system of the present invention.

15 Fig. 2 is a cross-sectional side view of a tufted carpet.

DETAILED DESCRIPTION OF THE DISCLOSED EMBODIMENTS

 Referring now to the drawing in which like numbers indicate like elements throughout the several views, there is shown in Fig. 1 a disclosed embodiment of an
20 apparatus 10 for attaching a secondary backing material to a primary backing material of a carpet or synthetic turf in accordance with the present invention. The apparatus 10 comprises an endless conveyor belt 12 extending along and endless conveyor path over four drive rollers 14, 16, 18 and 20, which are driven by an electric motor (not shown), idler rollers 22, 24, belt guide rollers 26, 28, 30 and belt tensioner rollers 32, 34 and 36.
25 The speed of the belt 12 is variably controllable to adjust to varying manufacturing needs.

 From the drive roller 14, the conveyor belt 12, which preferably is constructed from Teflon coated fiberglass, is seen to pass around the drive rollers 16, 18, 20. The belt 12 is delivered to the idler rollers 22, 24, to the belt guide rollers 26, 28, 30, the belt tensioner 32, 34, 36 and then back to the drive roller 14.

30 Positioned above the belt 12 adjacent the drive roller 14 is a supply roll 38 of tufted greige goods 40 (Fig. 2). The tufted greige goods 40 comprise a primary backing material 42 and tufted yarns that form a face pile 44 on one side of the primary backing material and loop backs 46 on the other side of the primary backing material. The face pile 44 is shown in the disclosed embodiment as looped pile. However, the face pile
35 useful in the present invention can also be cut pile, or in the case of synthetic turf,

5 individual filaments. In addition, the primary backing material 42 is shown as being tufted. However, face pile useful in the present invention can also be formed on one side of the primary backing material 42 in any way known in the art. The primary backing material 42 can be woven or nonwoven. Both the face pile 44 and the primary backing material 42 can be made from natural or synthetic materials. Furthermore, the face pile 44 and primary backing material 42 can be made from the same material or different materials. However, it is particularly preferred that the face pile 44 and the primary backing material 42 both be made from thermoplastic material. Suitable thermoplastic materials for the face pile 44 and primary backing material 42 include, but are not limited to, nylon, including polyadipamide, polycaprolactam, copolymers, and blends thereof; 10 polyolefin, including polyethylene, polypropylene, copolymers and blends thereof; thermoplastic polyester, including polytrimethyleneterephthalate and polyethyleneterephthalate, and blends thereof; acrylics, including polyacrylonitrile; copolymers and blends thereof.

The tufted greige goods 40 is fed from the supply roll 38, around a roller 20 46 and onto the belt 12 where it lays flat on the surface of the belt and moves in unison with the belt. As can be seen in Fig. 1, the tufted greige goods 40 is positioned so that the face pile 44 extends downwardly from the primary backing material 42 so that the face pile is adjacent to and contacts the belt 12 and the primary backing material faces upward. The tufted greige goods 40 on the belt 12 moves from the roller 46 to a polymer 25 deposition station 48. The polymer deposition station 48 includes a traversing downwardly extending spout 50 disposed above the tufted greige goods 40 on the belt 12. An aqueous dispersion of thermoplastic polymer particles is delivered into a mixer/frothing machine (not shown) where the aqueous dispersion is made into a frothed foam. While the present invention has been disclosed as preparing a foam using a 30 frothing machine, it is specifically contemplated that a foam of the aqueous dispersion of thermoplastic polymer particles can be prepared by any method known in the art, including incorporating a blowing agent in the aqueous dispersion composition. The aqueous dispersion foam is transferred from the mixer/frothing machine through a flexible hose (not shown) to the spout 50. The spout 50 traverses back and forth across the width 35 of the tufted greige goods 40 on the belt 12 and polymer foam is dispensed from the spout

5 onto the primary backing material 42. The aqueous dispersion foam forms a puddle 52 on
the upper surface of the primary backing material 42. As the aqueous dispersion foam-
bearing tufted greige goods 40 moves with the belt 12, it passes under a doctor bar 54
which transforms the puddle of aqueous dispersion foam 52 into a layer 56 of uniform
thickness across the width of the primary backing material 42 of the tufted greige goods
10 40. The doctor bar 54 is set to a height so that the foam puddle 52 is transformed into a
layer 56 of a thickness so that sufficient thermoplastic polymer particles are applied to the
primary backing material 42 so that sufficient tuft lock is achieved for the loop backs 46
in the primary backing material and sufficient bond strength is provided so that a
secondary backing material can be attached to a primary backing material. Preferably, the
15 doctor bar 54 is set to a height so that the foam is formed into a layer of a thickness so that
approximately 2 ounces per square yard to approximately 16 ounces per square yard of
thermoplastic polymer particles are uniformly applied to the primary backing material 42;
more preferably, approximately 4 ounces per square yard to approximately 12 ounces per
square yard; more preferably approximately 6 ounces per square yard to approximately 10
20 ounces per square yard; especially, approximately 8 ounces per square yard.

While the present embodiment has been disclosed as applying an aqueous
dispersion foam to the primary backing material 42, it is specifically contemplated that the
aqueous dispersion can also be applied to the primary backing material 42 as a liquid
dispersion of thermoplastic particles; *i.e.*, in a non-foamed state.

25 The aqueous dispersion of thermoplastic particles comprises water,
thermoplastic particles and a dispersing agent. The aqueous dispersion of thermoplastic
particles contains approximately 5% to approximately 90% by weight solids, preferably
approximately 30% to approximately 70% by weight solids. The aqueous dispersion of
thermoplastic particles preferably comprises approximately 50% to approximately 90% by
30 weight water, approximately 5% to approximately 40% by weight thermoplastic polymer
particles and approximately 0.1% to approximately 0.5% by weight dispersion agent. The
aqueous dispersion of thermoplastic particles more preferably comprises approximately
60% to approximately 80% by weight water, approximately 20% to approximately 40%
by weight thermoplastic polymer particles and approximately 3% to approximately 5% by
35 weight dispersion agent. The aqueous dispersion of thermoplastic particles most

5 preferably comprises approximately 65% to approximately 67% by weight water, approximately 30% by weight thermoplastic polymer particles and approximately 3% to approximately 5% by weight dispersion agent. If the aqueous dispersion of thermoplastic particles is to be made into a foam, the composition can additionally include a foaming agent, preferably approximately 0.5% to approximately 5% by weight foaming agent, 10 more preferably approximately 1% to approximately 2% by weight foaming agent, most preferably approximately 1% by weight foaming agent.

Suitable dispersion agents are those typically used to make aqueous dispersions from solid, non-soluble particles of the sizes set forth above and include, but are not limited to guar gum, agar gum and xanthan gum. Suitable foaming agents are 15 those typically used in the carpet industry and include, but are not limited to, sodium lauryl sulfate and sodium lauryl ether sulfate.

The aqueous dispersion of thermoplastic particles can optionally include one or more of the following additional ingredients: a plasticizer, a thickener, a lubricant, a wetting agent, a colorant, a fire retardant and an inert filler. These additives generally 20 are added to the aqueous dispersion at the rates shown in Table 1 below.

TABLE 1

Ingredient	% by Weight
Plasticizers	3% to 5%
Foaming agent	0.1% to 2%
Thickeners	0.1% to 2%
Lubricants	0.1% to 2%
Wetting agents	0.1% to 2%
Colorants	0.05% to 0.1%
Fire retardants	0.05% to 0.1%
Fillers	10% to 50%

The thermoplastic polymer particles in the aqueous dispersion are of a particles size such that when mixed with water and a dispersion agent, as specified above, 25 form a stable aqueous dispersion of thermoplastic polymer particles. The thermoplastic polymer particles preferably have an average particles size of less than 1,000 microns, more preferably approximately 1 micron to approximately 1,000 microns, most preferably approximately 10 micron to approximately 1,000 microns, especially approximately 1 micron to approximately 100 microns, more especially approximately 10 microns to

5 approximately 100 microns, most especially approximately 1 micron to approximately 80 microns. The polymer particles can be ground from polymer pellets to the desired particle sizes using methods known in the art including, but not limited to, a pulverizer or a hammer mill.

10 The thermoplastic polymer particles can be made from any thermoplastic polymer that can be used in carpet or synthetic turf. Preferred thermoplastic polymers include, but are not limited to, nylons, polyethylene, polypropylene, polystyrene, poly(methyl methacrylate), poly(vinyl chloride), poly(vinyl acetate), polycarbonate, polycaprolactone, poly(ethylene oxide), poly(vinyl alcohol), poly(ethylene terephthalate), poly(ether sulphone), poly(butyl terephthalate), poly(ethyl methacrylate), ultrahigh
15 molecular weight polyethylene. Particularly preferred polymers include nylon, including polyadipamide, polycaprolactam, copolymers, and blends thereof; polyolefin, including polyethylene, polypropylene, copolymers and blends thereof; thermoplastic polyester, including polytrimethyleneterephthalate and polyethyleneterephthalate, and blends thereof; acrylics, including polyacrylonitrile; co-polymers and blends thereof. The polymer
20 particles may be amorphous, semi-crystalline or crystalline before they are heated. The process is applicable to single polymers and to mixtures of polymers. For example, the mixture may be of polymers of the same composition but of different molecular weight, or chemically different polymers.

The tufted primary backing material 42 bearing the layer 56 of foam of
25 aqueous dispersion of thermoplastic polymer particles on the belt 12 moves from the polymer deposition station 48 to a heated air oven 58. While the aqueous dispersion of thermoplastic polymer particles is applied to the primary backing material 42 as foam, it is preferred that the foam collapse relatively quickly after it is formed into a layer on the primary backing material. Preferably, the foam of the layer 56 will collapse somewhere
30 between the doctor bar 54 and exiting the oven 58.

The heated air oven 58 is operated at a temperature sufficient to evaporate water from the foam of aqueous dispersion of thermoplastic polymer particles. Preferably, the heated air oven 58 is operated at a temperature sufficient to evaporate water from the foam of aqueous dispersion of thermoplastic polymer particles but below
35 the melting temperature of the thermoplastic polymer particles. More preferably, the

5 heated air oven 58 is operated at a temperature of approximately 212 °F. (100 °C.). Most preferably, the heated air oven 58 is operated at a temperature of approximately 212 °F. to approximately 250 °F., especially, approximately 212 °F. to approximately 225 °F.

10 The speed of the belt 12, the length of the oven 58 and the temperature of the oven are all designed so that the layer 56 of aqueous dispersion of thermoplastic polymer particles on the primary backing material 42 has a residence time in the oven such that the layer 56 is substantially dry when it leaves the oven. When the water is substantially removed from the aqueous dispersion of thermoplastic polymer particles, the result is a layer 60 of substantially dry thermoplastic polymer particles on the primary backing material 42.

15 The tufted primary backing material 42 bearing the layer 60 of substantially dry thermoplastic polymer particles moves with the belt 12 from the heated oven 58 to a thermoplastic polymer particle melting station 62. The thermoplastic polymer particle melting station 62 comprises a plurality of infrared heaters 64, 66, 68, 70 disposed above tufted primary backing material 42 bearing the layer 60 of
20 substantially dry thermoplastic polymer particles on the belt 12. The infrared heaters 64-70 are of a strength and are positioned a distance from the primary backing material 42 so that the layer of substantially dry thermoplastic polymer particles on the primary backing material are heated to a temperature higher than when in the heated oven 58. The infrared heaters 64-70 are positioned a distance above the belt 12, the belt is at a speed
25 and the infrared heaters are of a size such that the residence time of the tufted primary backing material 42 bearing the layer 60 of substantially dry thermoplastic polymer particles under the infrared heats is such that the thermoplastic polymer particles are heated to a temperature equal to or higher than the melting point of the thermoplastic polymer particles. Preferably, the layer 60 of substantially dry thermoplastic polymer
30 particles on the tufted primary backing material 42 is heated by the infrared heaters 62-68 to a temperature of approximately 212 °F. to approximately 350 °F., more preferably, approximately 212 °F. to approximately 275 °F. The objective of using the infrared heaters 64-70 is to convert the solid thermoplastic polymer particles that make up the substantially dry layer 60 to at least a mesophase between a solid and a liquid, and
35 preferably, to a flowable material or a liquid.

5 Disposed above the belt 12 is a supply roll 72 of a secondary backing material 74. The secondary backing material 74 feeds from the supply roll 72 under a chilled press roller 76. The chilled roller is a hollow roller into which cold water is circulated. As the tufted primary backing material 42 bearing the melted thermoplastic polymer particles moves from the thermoplastic polymer particle melting station 62 and
10 passes under the chilled press roller 76, the secondary backing material 74 is pressed into intimate contact with the melted thermoplastic polymer particles on the tufted primary backing material 42. The pressure of the chilled press roller 76 on the primary backing material 42 and the secondary backing material 74 causes the melted thermoplastic polymer particles to flow into both the primary backing material and the secondary
15 backing material. Then, the chilled press roller 76 cools the secondary backing material 74, which in turn removes heat from the melted thermoplastic polymer particles and causes them to solidify thereby securely attaching the secondary backing material to the primary backing material 42 and also securely anchoring the loop backs 46 in the primary backing material, which forms a laminated carpet structure 78.

20 The secondary backing material 74 can be woven or nonwoven. The secondary backing material 74 can be made from natural or synthetic materials. Furthermore, the primary backing material 42 and the secondary backing material 74 can be made from the same material or different materials. However, it is particularly preferred that the face pile 44, the primary backing material 42 and the secondary
25 backing material 74 all be made from thermoplastic polymer materials. Suitable thermoplastic polymer materials for the secondary backing material 74 include, but are not limited to, nylon, including polyadipamide, polycaprolactam, copolymers, and blends thereof; polyolefin, including polyethylene, polypropylene, copolymers and blends thereof; thermoplastic polyester, including polytrimethyleneterephthalate and
30 polyethyleneterephthalate, and blends thereof; acrylics, including polyacrylonitrile; copolymers and blends thereof.

 The laminated carpet structure 78 moves with the belt 12 from the chilled press roller 76 to a stripping roller 80 where the laminated carpet structure is removed from the belt and collected in a take up roll 82.

5 While the foregoing embodiment of the present invention has been disclosed as being useful for the manufacture of a carpet, it is specifically contemplated that the present invention can be used for the manufacture of synthetic turf. For example, a synthetic turf can be made using the present invention wherein the synthetic turf comprises thermoplastic face yarns, fibers or filaments, such as polyethylene,
10 polypropylene, nylon or combinations thereof and a thermoplastic primary backing. Typically, synthetic turf does not include a secondary backing. However, if it is desired a thermoplastic secondary backing can be attached to the thermoplastic primary backing of a synthetic turf using the present invention. The primary backing can be attached to the secondary backing with thermoplastic polymer particles in accordance with the present
15 invention. This provides a synthetic turf product that is completely recyclable which has been long sought by the industry.

 When a secondary backing is not applied to the primary backing of a synthetic turf, the present invention is useful for providing tuft lock to the loop backs of the tufted yarns, fibers or filaments in a primary backing of the synthetic turf. Similarly,
20 the present invention is useful for providing tuft lock to the loop backs of the tufted yarns in a primary backing of a carpet. The present invention can provide tuft lock by practicing the invention as described above with respect to Fig. 1, except the secondary backing 74 is not applied to the primary backing material 42 of the greige goods 40. Thus, when the tufted primary backing material 42 bearing the layer 60 of substantially
25 dry thermoplastic particles passes under the infrared heaters 64-70, they are preferably heated to a flowable or liquid state. This allows the molten thermoplastic material to flow into the interstices of both the primary backing material 42 and the loop backs 46 of the tufted yarns, fibers or filaments that form the face pile. As the tufted primary backing material 42 bearing the melted thermoplastic polymer particles moves from the
30 thermoplastic polymer particle melting station 62 and passes under the chilled press roller 76, molten thermoplastic particles are pressed into intimate contact with the tufted primary backing material 42 and loop backs 46. The pressure of the chilled press roller 76 on the primary backing material 42 and the loop backs 46 causes the melted thermoplastic polymer particles to flow into both the primary backing material and the
35 loop backs. Then, the chilled press roller 76 cools the primary backing material 42 and

5 loop backs 46 which in turn removes heat from the melted thermoplastic polymer particles and causes them to solidify thereby securely anchoring the loop backs in the primary backing material.

Most synthetic turf is made from polyethylene face fiber, which is relatively heat sensitive. When processing synthetic turf that is sensitive to prolonged
10 temperatures above 212 °F. (100 °C.), the thermoplastic for the polymer particles should be selected so that it melts at a temperature near 212 °F. (100 °C.), such as at approximately 225 °F. This prevents the synthetic turf fibers from being adversely affected while the thermoplastic polymer particles are being melted and mechanically driven into the primary backing material by the chilled press roller. Additionally, the
15 heated air oven 58 can be partitioned so that the lower portion of the oven, in which the face fiber of the synthetic turf is disposed, can be at a lower temperature than the upper portion of the oven, in which the primary backing material 42 bearing the layer 56 of foam of aqueous dispersion of thermoplastic polymer particles is disposed.

On the other hand, carpets are primarily made from nylon or polyester
20 face fiber, which are not as heat sensitive and synthetic turf. Therefore, for carpet the polymer chosen for the thermoplastic polymer particles can have a relatively higher melting point, if needed or desired for specific properties. The higher melting point polymers for the thermoplastic polymer particles provide greater flexibility of increased oven processing temperatures, if desired, which can reduce overall processing time.

25 As used herein the term "substantially dry" means containing less than 5% by weight moisture.

A particular advantage of the present invention is that the polymers used for the thermoplastic polymer particles in the aqueous dispersion can be regrind polymers, off-specification polymers and recycled polymers. Regarding the use of
30 recycled polymers, it is specifically contemplated that the thermoplastic polymer particles in the aqueous dispersion can be obtained from recycled synthetic turf. In that regard, it is contemplated that the process disclosed in U.S. Patent No. 8,809,405 (the disclosure of which is incorporated herein by reference in its entirety) can be used to provide thermoplastic polymer pellets for use in the present invention. In addition, a carpet or
35 synthetic turf made in accordance with the present invention employing a thermoplastic

5 face pile, primary backing and secondary backing will be completely recyclable and can be used as feedstock for the process disclosed in U.S. Patent No. 8,809,405.

Another advantage of the present invention is that the use of a foam of an aqueous dispersion of thermoplastic polymer particles provides a convenient way to uniformly and repeatable deposit relatively small amounts of thermoplastic polymer particles on a primary backing of a carpet or synthetic turf. These relatively small amounts of adhesive provide cost saving in manufacturing costs while not significantly adversely affecting physical properties, especially tuft lock and bond strength between the primary backing and secondary backing.

The following examples are illustrative of selected embodiments of the present invention and are not intended to limit the scope of the invention.

EXAMPLE 1

A tufted carpet product is prepared in accordance with the present invention. The carpet comprises a 0.5 inch pile height polyester face fiber tufted into a woven polypropylene primary backing. An aqueous dispersion of thermoplastic polymer particles is prepared having the following formulation as shown in Table 2:

TABLE 2

Ingredient	Percent by Weight
Water	69.3
Dispersion agent (xanthan gum)	0.2
Polyethylene particles (having an average particle size of 80 microns)	30.0
Sodium lauryl sulfate	0.5

The carpet is processed in accordance with the present invention as described above. The aqueous dispersion of Table 2 is converted to a foam in a frothing machine. The foamed aqueous dispersion of thermoplastic polymer particles is applied to the carpet primary backing and formed into a uniform layer at the rate of 10 ounces per square yard and the resulting layer is approximately 0.25 inches thick. The foam coated polypropylene primary backing is heated in a heated oven at a temperature of 212 °F. for a period of 4 minutes until the aqueous dispersion is substantially dry. In the heated oven the foam quickly collapses and the substantially dry coating has no remaining foam

5 structure. The thermoplastic polymer particle coated carpet primary backing is then heated at a temperature of 225 °F. for a period of 4 minutes until the thermoplastic polymer particles melt. A woven secondary backing made from polypropylene is then applied to the melted thermoplastic polymer particles. The carpet primary backing and secondary backing are run under a chilled press roller so that the primary backing and
10 secondary backing are pressed into intimate contact and the melted thermoplastic polymer particles flow both between the fibers of the woven primary and secondary backings and also into the interstices of the yarns that make up the primary and secondary backings and into the loop backs of the face pile. The chilled press roller removes heat from the molten thermoplastic polymer particles and causes them to solidify. The result
15 is that the secondary backing is securely attached to the primary backing and the carpet face pile yarns are securely locked into the primary backing.

EXAMPLE 2

A synthetic turf product is prepared in accordance with the present
20 invention. The synthetic turf comprises a 2.5 inch pile height polyethylene face fiber tufted into a woven polypropylene primary backing. An aqueous dispersion of thermoplastic polymer particles is prepared having the formulation as shown in Table 2 above.

The synthetic turf is processed in accordance with the present invention as
25 described above. The aqueous dispersion of Table 2 is converted to a foam in a frothing machine. The foamed aqueous dispersion of thermoplastic polymer particles is applied to the synthetic turf polypropylene primary backing and formed into a uniform layer at the rate of 16 ounces per square yard and the resulting layer is approximately 0.25 inches thick. The foam coated polypropylene primary backing is heated in a heated oven at a
30 temperature of 212 °F. for a period of 4 minutes until the aqueous dispersion is substantially dry. In the heated oven the foam quickly collapses and the substantially dry coating has no remaining foam structure. The thermoplastic polymer particle coated synthetic turf primary backing is then heated at a temperature of 225 °F. for a period of 4 minutes until the thermoplastic polymer particles melt. The synthetic turf primary
35 backing is then run under a chilled press roller so that the melted thermoplastic polymer

5 particles flow between the fibers of the woven primary backing, into the interstices of the
yarns that make up the primary backing and at least partially cover the loop backs of the
face pile. The chilled press roller removes heat from the molten thermoplastic polymer
particles and causes them to solidify. The result is that the loop backs of the face pile are
securely attached to the primary backing of the synthetic turf.

10

EXAMPLE 3

A 2.5 inch pile height polyethylene face fiber synthetic turf with a
polypropylene woven primary and a thermoset polyurethane precoat is selected for
testing. The synthetic turf is comprised of 51% by weight polyethylene, 14% by weight
15 polypropylene and 35% by weight thermoset polyurethane. The synthetic turf is removed
from a sports facility using a Turf Muncher to strip the turf from the field, 95% by weight
of the infill material is remove and the turf is rolled into a roll. The turf roll is cut into
strips 36 inches wide. The strips are fed into a Series 14 Grinder from Jordon Reduction
Solutions of Birmingham, AL where the turf strips are ground/cut into particles having a
20 maximum dimension of 3/8 inch. The size reduced synthetic turf is processed through a 4
inch single screw extruder with a 26:1 L/D at 400 °F, which is a sufficient temperature to
melt the thermoplastic material from which the synthetic turf is made. The extruder is
equipped with a 300 horsepower electric motor. The extruder is a Model 6 PM III from
NRM Corporation from Columbiana, OH. Optionally, 8.6% by weight Westlake GA7502
25 from Westlake Chemical, which is a maleic anhydride modified methyl acrylate
copolymer is added to the molten material during the extrusion process. The extruded
molten polymer is pelletized under water using a Gala 6 underwater pelletizer
manufactured by Gala Industries, Inc., Eagle Rock, VA.

The thermoplastic polymer pellets are ground to an average particle size of
30 80 microns by feeding the thermoplastic polymer pellets into a pulverizer. The resulting
thermoplastic polymer particles are incorporated into the aqueous dispersion of Table 2
and processed in the same manner as described above in Example 1. The resulting carpet
product has excellent physical properties, the secondary backing is securely attached to
the primary backing and the loop backs of the face pile yarns are securely locked in the
35 primary backing.

EXAMPLE 4

Aqueous dispersions of thermoplastic particles are prepared according to the formulations listed in Tables 3-8 below as follows:

TABLE 3

Ingredient	Percent by Weight
Water	65.5
8201 Paste Base (dispersion agent)	4
1502 Polypropylene granules (having a particle size of 500-1,000 microns)	30.0
PS 8300 Thickener	0.5

10

TABLE 4

Ingredient	Percent by Weight
Water	65.5
8201 Paste Base (dispersion agent)	4
1502 Polypropylene granules (having a particle size of 500-1,000 microns)	30.0
PS 8300 Thickener	1
Manwet sodium lauryl sulfate	2

TABLE 5

Ingredient	Percent by Weight
Water	63.25
8201 Paste Base (dispersion agent)	4
Ace 2000P low density polyethylene powder (having an average particle size of 0-841 microns)	30.0
PS 8300 Thickener	0.75
Manwet sodium lauryl sulfate	2

15

TABLE 6

Ingredient	Percent by Weight
Water	67.25
N100-20 Polypropylene granules (having an average particle size of 80 microns)	30.0
PS 8300 Thickener	0.75
Manwet sodium lauryl sulfate	2

TABLE 7

Ingredient	Percent by Weight
Water	69.3
N100-20 Polypropylene granules (having an average particle size of 80 microns)	30.0
Xanthan gum	0.2
Sodium lauryl sulfate	0.5

TABLE 8

Ingredient	Percent by Weight
Water	69.3
N100-20 Polypropylene granules (having an average particle size of 80 microns)	20.0
Xanthan gum	0.2
Calcium carbonate	10

10 The aqueous dispersions of thermoplastic particles prepared according to the formulations of Tables 3-8 above are used to prepare carpets in accordance with Example 1, except the formulations of Tables 3 and 8 are applied to the primary backing as a liquid instead of as a foam. All of the foregoing formulations produce carpets having excellent adhesion of the secondary backing to the primary backing and excellent tuft lock.

15 It should be understood, of course, that the foregoing relates only to certain disclosed embodiments of the present invention and that numerous modifications or alterations may be made therein without departing from the spirit and scope of the invention as set forth in the appended claims.

What is claimed is:

1. A method comprising:
10 applying a quantity of an aqueous dispersion of thermoplastic polymer particles to a primary backing and loop backs of a tufted carpet or a tufted synthetic turf, wherein the thermoplastic particles have an average particle size less than 1,000 microns;
 heating the aqueous dispersion to a temperature sufficient to remove water therefrom;
15 heating the thermoplastic particles on the primary backing and loop backs to a temperature at or above the melting temperature of the thermoplastic particles; and
 allowing the heated thermoplastic polymer particles to cool below their melting temperature whereby the loop backs are adhered to the primary backing.
- 20 2. The method of Claim 1, wherein the thermoplastic polymer particles have a particle size of approximately 1 micron to approximately 1,000 microns.
3. The method of Claim 1, wherein the thermoplastic polymer particles have a particle size of approximately 1 micron to approximately 100 microns.
- 25 4. The method of Claim 1, wherein the thermoplastic polymer particles have an average particle size of approximately 1 micron to approximately 80 microns.
5. The method of Claim 1, wherein the aqueous dispersion comprises:
30 approximately 50% to approximately 90% by weight water;
 approximately 1% to approximately 10% by weight dispersion agent; and
 approximately 5% to approximately 40% by weight thermoplastic polymer particles.

- 5 6. The method of Claim 1, wherein the aqueous dispersion comprises:
 approximately 60% to approximately 80% by weight water;
 approximately 3% to approximately 5% by weight dispersion agent; and
 approximately 20% to approximately 40% by weight thermoplastic
polymer particles.
- 10 7. The method of Claim 1, wherein the aqueous dispersion comprises:
 approximately 65% to approximately 67% by weight water;
 approximately 3% to approximately 5% by weight dispersion agent; and
 approximately 30% by weight thermoplastic polymer particles.
- 15 8. The method of Claim 5, wherein the aqueous dispersion further comprises
one or more of a plasticizer, a foaming agent, a thickener, a lubricant, a wetting agent, a
colorant, a fire retardant or filler.
- 20 9. The method of Claim 1, wherein the step of heating the aqueous
dispersion to remove water therefrom comprises heating to a temperature of
approximately 150 °F. to approximately 350 °F.
10. The method of Claim 1, wherein the step of heating the aqueous
25 dispersion to remove water therefrom comprises heating to a temperature of
approximately 175 °F. to approximately 275 °F.
11. The method of Claim 1, wherein the step of heating the aqueous
dispersion to remove water therefrom comprises heating to a temperature of
30 approximately 212 °F.
12. The method of Claim 1, wherein the thermoplastic polymer particles
comprise polypropylene, polyethylene, thermoplastic polyester, polystyrene,
polyvinylchloride, thermoplastic polyurethanes, thermoplastic copolymers thereof and
35 mixtures thereof.

5

13. The method of Claim 1, wherein the thermoplastic polymer particles are reground polymers, off-specification polymers or recycled polymers.

14. The method of Claim 1, wherein the aqueous dispersion is applied to the primary backing and the loop backs in the form of a foam.

15. A method comprising:
applying a quantity of an aqueous dispersion of thermoplastic polymer particles to a primary backing and loop backs of a tufted carpet or a tufted synthetic turf,
15 wherein the thermoplastic particles have an average particle size less than 1,000 microns;
heating the aqueous dispersion to a temperature sufficient to remove water therefrom;
heating the thermoplastic particles on the primary backing and loop backs to a temperature at or above the melting temperature of the thermoplastic particles;
20 placing a secondary backing in contact with the heated thermoplastic polymer particles on the primary backing; and
allowing the heated thermoplastic polymer particles to cool below their melting temperature whereby the primary and secondary backings are adhered together.

25

5 16. A method comprising:
 preparing a foam of an aqueous dispersion of thermoplastic polymer
 particles, wherein the thermoplastic polymer particles have a particle size of
 approximately 50 microns to approximately 100 microns;
 applying a quantity of the foamed aqueous dispersion to a primary backing
10 and loop backs of a tufted carpet or tufted synthetic turf;
 heating the aqueous dispersion on the primary backing and loop backs to a
 temperature sufficient to remove water therefrom;
 heating the thermoplastic particles on the primary backing and loop backs
 to a temperature at or above their melting temperature; and
15 cooling the heated thermoplastic polymer particles to below their melting
 temperature whereby the loop backs are adhered to the primary backing.

 17. The method of Claim 16 further comprising applying a secondary backing
 to the primary backing while the thermoplastic particles are still at or above their melting
20 temperature.

 18. The method of Claim 17, wherein the step of heating the aqueous
 dispersion to a temperature sufficient to remove water therefrom comprises heating to a
 temperature of approximately 212 °F. to approximately 350 °F.
25

 19. The method of Claim 17, wherein the step of heating the aqueous
 dispersion to a temperature sufficient to remove water therefrom comprises heating to a
 temperature of approximately 212 °F. to approximately 275 °F.

30 20. The method of Claim 19, wherein the thermoplastic polymer particles
 comprise polypropylene, polyethylene, polyester, polystyrene, polyvinylchloride,
 thermoplastic polyurethanes, thermoplastic copolymers thereof and mixtures thereof.

35

5

ABSTRACT

The invention comprises a method. The method comprises applying a quantity of an aqueous dispersion of thermoplastic polymer particles to a primary backing and loop backs of a tufted carpet or a tufted synthetic turf, wherein the thermoplastic particles have an average particle size less than 1,000 microns. The method also
10 comprises heating the aqueous dispersion to a temperature sufficient to remove water therefrom, and heating the thermoplastic particles on the primary backing and loop backs to a temperature at or above the melting temperature of the thermoplastic particles. The method further comprises allowing the heated thermoplastic polymer particles to cool below their melting temperature whereby the loop backs are adhered to the primary
15 backing.

Docket No. TRC3-0300

20

25

UNITED STATES DEPARTMENT OF COMMERCE
BUREAU OF ECONOMIC ANALYSIS
INTERNATIONAL TRADE COMMISSION
STATISTICAL STATEMENT OF EXPORTS AND IMPORTS

Country: _____
Commodity: _____
Period: _____

Value in U.S. Dollars: _____
Quantity: _____
Unit of Measure: _____

Country of Origin: _____
Country of Destination: _____
Mode of Transport: _____

Value in U.S. Dollars: _____
Quantity: _____
Unit of Measure: _____

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Unit of Measure: _____

Value in U.S. Dollars: _____
Quantity: _____
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DEPARTMENT OF THE ARMY, ARMY ENGINEERING CENTER, WASHINGTON, D.C. 20315-5000
APPLICATION FOR AGRICULTURAL UTILITY OR OTHER APPLICATIONS, AN APPLICATION DATA SHEET (77 DTR 579)

TITLE (Project Name)	PROJECT NUMBER (If any)
-------------------------	-------------------------

PROJECT LOCATION	(State, County, Township, Range, Section)
PROJECT DESCRIPTION	(Brief description of project)
PROJECT PURPOSE	(Purpose of project)
PROJECT STATUS	(Status of project)
PROJECT FUNDING	(Funding source)
PROJECT CONTACT	(Contact person)
PROJECT DATE	(Date of project)
PROJECT TYPE	(Type of project)
PROJECT AREA	(Area of project)
PROJECT SIZE	(Size of project)
PROJECT COST	(Cost of project)
PROJECT BENEFIT	(Benefit of project)
PROJECT RISK	(Risk of project)
PROJECT IMPACT	(Impact of project)
PROJECT REVIEW	(Review of project)

1. Project Description: (Detailed description of the project, including its purpose, objectives, and scope. This section should provide a clear and concise overview of the project and its goals.)

2. Project Location: (Detailed description of the project location, including the state, county, township, range, and section. This section should provide a clear and concise overview of the project location and its surroundings.)

3. Project Status: (Detailed description of the project status, including the current phase of the project and the expected completion date. This section should provide a clear and concise overview of the project status and its progress.)

4. Project Funding: (Detailed description of the project funding, including the source of funds and the amount of money available. This section should provide a clear and concise overview of the project funding and its sources.)

5. Project Contact: (Detailed description of the project contact, including the name, title, and phone number of the person responsible for the project. This section should provide a clear and concise overview of the project contact and their role.)

6. Project Date: (Detailed description of the project date, including the start and end dates of the project. This section should provide a clear and concise overview of the project date and its duration.)

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9. Project Size: (Detailed description of the project size, including the number of acres or other units of measurement. This section should provide a clear and concise overview of the project size and its scale.)

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PROJECT REVIEW	(Review of project)
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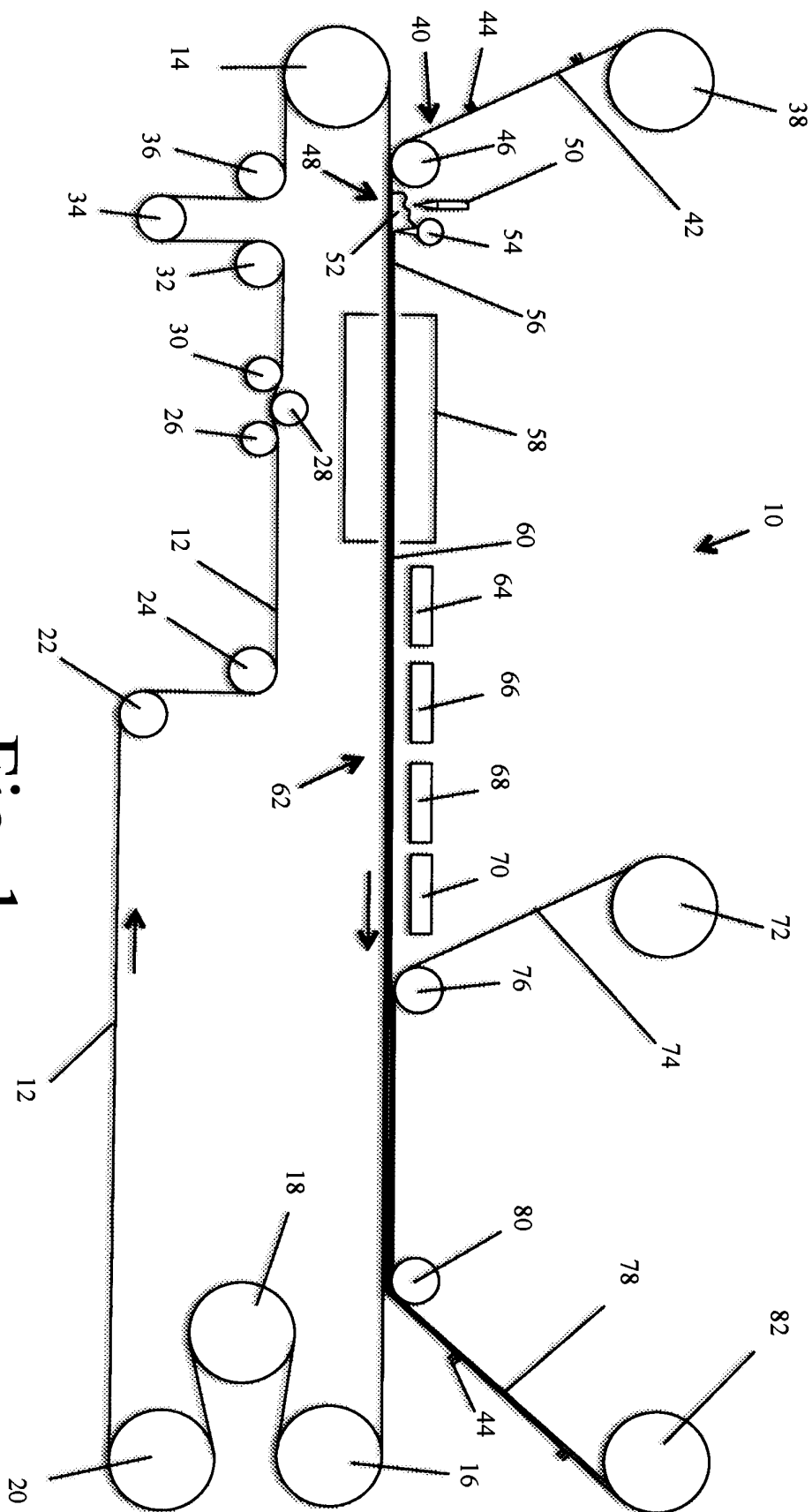


Fig. 1

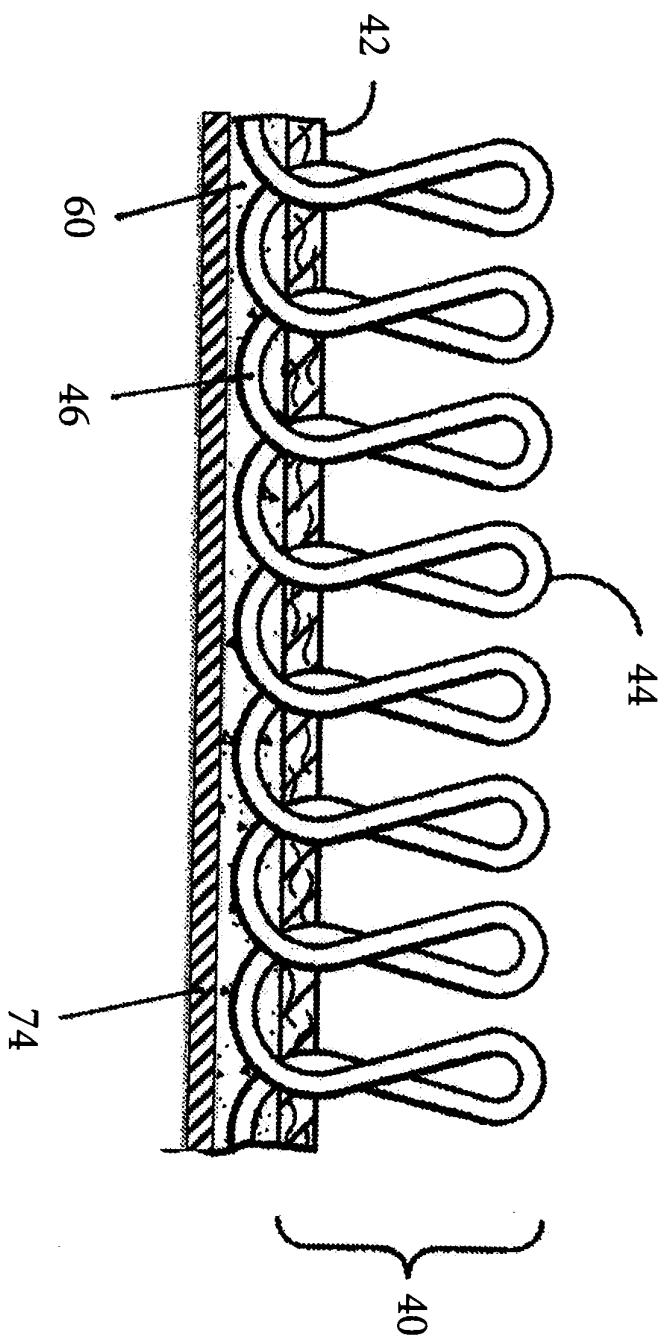


Fig. 2

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Application Data Sheet 37 CFR 1.76		Attorney Docket Number	TRC3-0300
		Application Number	
Title of Invention	A METHOD OF APPLYING A THEROMPLASTIC POLYMER COATING		
The application data sheet is part of the provisional or nonprovisional application for which it is being submitted. The following form contains the bibliographic data arranged in a format specified by the United States Patent and Trademark Office as outlined in 37 CFR 1.76. This document may be completed electronically and submitted to the Office in electronic format using the Electronic Filing System (EFS) or the document may be printed and included in a paper filed application.			

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Mailing Address of Inventor:

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Mailing Address of Inventor:

Address 1	2290 Engineers Drive, S.E.				
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Application Data Sheet 37 CFR 1.76		Attorney Docket Number	TRC3-0300
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Title of Invention	A METHOD OF APPLYING A THEROMPLASTIC POLYMER COATING		

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This section allows for the applicant to claim benefit of foreign priority and to identify any prior foreign application for which priority is not claimed. Providing this information in the application data sheet constitutes the claim for priority as required by 35 U.S.C. 119(b) and 37 CFR 1.55(a).

			Remove
Application Number	Country	Filing Date (YYYY-MM-DD)	Priority Claimed
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☒ Authorization to Permit Access to the Instant Application by the Participating Offices

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Application Data Sheet 37 CFR 1.76

Attorney Docket Number TRC3-0300

Application Number

Title of Invention

A METHOD OF APPLYING A THEROMPLASTIC POLYMER COATING

Applicant 1

If the applicant is the inventor (or the remaining joint inventor or inventors under 37 CFR 1.45), this section should not be completed. The information to be provided in this section is the name and address of the legal representative who is the applicant under 37 CFR 1.43; or the name and address of the assignee, person to whom the inventor is under an obligation to assign the invention, or person who otherwise shows sufficient proprietary interest in the matter who is the applicant under 37 CFR 1.46. If the applicant is an applicant under 37 CFR 1.46 (assignee, person to whom the inventor is obligated to assign, or person who otherwise shows sufficient proprietary interest) together with one or more joint inventors, then the joint inventor or inventors who are also the applicant should be identified in this section.

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/Robert E. Richards/

Date (YYYY-MM-DD)

2016-11-01

First Name

Robert

Last Name

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		Application Number	
Title of Invention	A METHOD OF APPLYING A THEROMPLASTIC POLYMER COATING		

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8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspections or an issued patent.
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31 de octubre de 2017

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SOLICITUD DE MARCA: *15/340,616*

FECHA DE SOLICITUD: *01 de noviembre de 2016*

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Número de solicitud:	15340616
Número de solicitud internacional:	
Número de confirmación:	8896
Título de la invención:	UN MÉTODO PARA APLICAR UN REVESTIMIENTO DE POLÍMERO TERMOPLÁSTICO
Primer inventor nombrado/nombre del solicitante:	Larry E Mashburn
Número del cliente:	117828
Declarante:	Robert E. Richards
Declarante autorizado por:	
Número de expediente:	TRC3-0300
Fecha de recepción:	01 de noviembre de 2016
Fecha de presentación:	
Marca de tiempo:	16:42:52
Tipo de solicitud:	Utilidad bajo el 35 USC 111(a)

Información de pago:

Presentado con pago	Sí
Tipo de pago	TARJETA
Pago recibido exitosamente en RAM (contabilidad y gestión de ingresos)	\$ 730
Número de confirmación RAM	110216INTEFSW16434501
Cuenta de depósito	
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1	Hoja de solicitud	TRC3_0300_aia0014.pdf	1881822	no	6
			56ff94612c1d5f211767b7ac8aa936610d1e51f9		

Advertencias:

Información:					
2	Especificación	TRC3_0300_spec.pdf	217897 32338f4e47c7a14af267bbdfded78f0c07a63846	no	22
Advertencias:					
Información:					
3	Dibujos-sólo dibujos en blanco y negro	TRC3_0300_Drawing.pdf	501732 46cb49750c1c957f9af8efa7e82963320a266b11	no	2
Advertencias:					
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Información:					
4	Juramento o declaración presentado	Declarations_Mashburn.pdf	259536 f883b8de927c0b96b993c20219a6f3eca8a5f1db	no	1
Advertencias:					
Información:					
5	Juramento o declaración presentado	Declaration_Tambasco.pdf	371206 759425195cb3628b387a4071368ffc3716bc0467	no	1
Advertencias:					
Información:					
6	Hoja de cálculo de tarifas	fee-info.pdf	34652 fef926003c7a203a7dfec6fa2ec93d76e9327833	no	2
Advertencias:					
Información:					
Tamaño total de archivos (en bytes):			3266845		
Este Acuse de Recibo demuestra el recibo, por parte de la Oficina de Marcas y Patentes de Estados Unidos (USPTO), de los documentos indicados en la fecha señalada, caracterizados por el solicitante e incluyendo los números de página, si aplica. Sirve como evidencia de recibo similar a una postal, tal y como se describe en MPEP 503. <u>Nuevas solicitudes conforme a 35 U.S.C.111</u> Si se está presentando una nueva solicitud y la solicitud incluye los componentes necesarios para una fecha de solicitud (véase 37 CFR 1.53(b)-(d) y MPEP 506), se emitirá un Recibo de Presentación (37 CFR 1.54) a su debido tiempo y la fecha que figura en este Acuse de Recibo determinará la fecha de presentación de la solicitud. <u>Etapas nacionales de una solicitud internacional conforme a 35 U.S.C. 371</u>					

Si la presentación oportuna de una solicitud internacional que va a entrar a una etapa nacional cumple con las condiciones de 35 U.S.C.371 y con los demás requisitos aplicables, se emitirá un Formato PCT/DO/EO/903 indicando que se ha admitido la solicitud en la etapa nacional conforme a 35 U.S.C.371, además del Acuse de Recibo, a su debido tiempo.

Nueva solicitud internacional presentada ante la USPTO como Oficina Receptora

Si se está presentando una solicitud internacional nueva y la solicitud internacional incluye los componentes necesarios para obtener una fecha de presentación internacional (ver Artículo 11 del PCT y MPEP 1810), se emitirá una Notificación de Número de Solicitud Internacional y de Fecha de Presentación Internacional (Formato PCT/RO/105) a su debido tiempo, sujeto a las normas establecidas respecto a la seguridad nacional, y la fecha que figura en el presente Acuse de Recibo establecerá la fecha de presentación internacional de la solicitud.

Oficina de Marcas y Patentes de Estados Unidos; DEPARTAMENTO DE COMERCIO DE EE.UU.
Conforme a la Ley de Reducción de Trámites de 1995, nadie está obligado a responder a una solicitud de información a menos que incluya un número de control de la OMB válido.

Ficha técnica de la solicitud 37 CFR 1.76		Número de expediente de abogado	TRC3-0300
		Número de solicitud	
Título de la invención	UN MÉTODO PARA APLICAR UN REVESTIMIENTO DE POLÍMERO TERMOPLÁSTICO		
La hoja de datos de la solicitud es parte de la solicitud provisional o no provisional para la cual está siendo presentada. El siguiente formato contiene los datos bibliográficos distribuidos en un formato especificado por la Oficina de Marcas y Patentes de los Estados Unidos como se indica en 37 CFR 1.76. Este documento puede completarse de manera electrónica y presentarse a la Oficina en formato electrónico usando el Sistema de Presentación Electrónica (EFS) o el documento puede imprimirse e incluirse en una solicitud presentada en papel.			

Orden de confidencialidad 37 CFR 5.2:

☐ Algunas partes o la totalidad de la solicitud relacionada con esta Ficha Técnica pueden estar cubiertas por una Orden de Confidencialidad conforme a 37 CFR 5.2 (únicamente solicitudes impresas. Las solicitudes supeditadas a la Orden de Confidencialidad no pueden ser presentadas por vía electrónica).

Datos del inventor:

Inventor	1				Eliminar	
Nombre legal						
Prefijo	Primer Nombre	Segundo nombre	Apellido	Sufijo		
Sr.	Larry	E.	Mashburn			
Información de residencia (seleccione uno)	☒ Residencia estadounidense		Residencia no estadounidense		Servicio militar de E.E.U.U. activo	
Ciudad	Dalton	Estado/Provincia	GA	País de residencia	E.E.U.U.	
Dirección de correspondencia del inventor:						
Dirección 1	1045 Estate Drive					
Dirección 2						
Ciudad	Dalton	Estado/Provincia	GA			
Código postal	30720	País	E.E.U.U.			
Inventor	2				Eliminar	
Nombre legal						
Prefijo	Primer Nombre	Segundo nombre	Apellido	Sufijo		
	Giuseppe	V.	Tambasco			
Información de residencia (seleccione uno)	☒ Residencia estadounidense		Residencia no estadounidense		Servicio militar de E.E.U.U. activo	
Ciudad	Marietta	Estado/Provincia	GA	País de residencia	E.E.U.U.	
Dirección de correspondencia del inventor:						
Dirección 1	2290 Engineers Drive, S.E.					

Dirección 2				
Ciudad	Marietta	Estado/Provincia	GA	
Código postal	30067	País	E.E.U.U.	
Se debe incluir a todos los inventores – Se pueden generar bloques para inventores adicionales en este formato seleccionando el botón Agregar .				Agregar

Información de correspondencia:

Ingrese el Número de Cliente o complete la sección de Información de Correspondencia a continuación.

Para más información, véase 37 CFR 1.33(a).

Se pueden generar Datos sobre la Etapa Nacional/Beneficio Nacional en este formato seleccionando el botón **Agregar**.

Agregar

Información de prioridad extranjera:

Esta sección permite que el solicitante reivindique el beneficio de prioridad extranjera e identifique cualquier solicitud extranjera anterior para la cual no se reivindica prioridad. Proporcionar esta información en la hoja de datos de solicitud constituye la reivindicación de prioridad requerida por 35 U.S.C. 119(b) y 37 CFR 1.55(a).

				Eliminar
Número de solicitud	de	País	Fecha de presentación (YYYY-MM-DD)	Prioridad reivindicada
				☒ Si ☐ No
Se pueden generar datos de prioridad extranjera adicionales dentro de este formato seleccionando el botón de agregar.				

Autorización para permitir el acceso:

X Autorización para permitir el acceso a la presente solicitud por parte de las oficinas participantes

Si se selecciona, por la presente, el abajo firmante concede a la USPTO la autoridad para proporcionar a la Oficina de Patentes Europea (EPO), la Oficina de Patentes Japonesa (JPO), la Oficina de Propiedad Intelectual de Korea (KIPO), la Oficina Mundial de Propiedad Intelectual (OMPI), y cualquier otra oficina de propiedad en donde se presente una solicitud extranjera que reivindique prioridad de la presente solicitud de patente, acceso a la presente solicitud de patente. Ver 37 CFR 1.14(c) y (h). Esta casilla no debe seleccionarse si el solicitante no desea que la EPO, JPO, KIPO, WIPO, u otra oficina de propiedad intelectual en la cual se presente una solicitud extranjera que reivindique prioridad de la presente solicitud de patente, tenga acceso a la presente solicitud de patente.

De acuerdo con 37 CFR 1.14(h)(3), se proporcionará acceso a una copia de la presente solicitud con respecto a: 1) la presente solicitud de patente tal como fue presentada; 2) cualquier solicitud extranjera a la cual la presente solicitud de patente reivindique prioridad bajo 35 U.S.C. 119(a)-(d) si una copia de la solicitud extranjera que satisface el requerimiento de copia certificada de 37 CFR 1.55 se ha presentado para la presente solicitud de patente; y 3) cualquier solicitud de EE.UU. como fue presentada de la cual se busca beneficio en la presente solicitud de patente.

De acuerdo con 37 CFR 1.14 (c), se puede proporcionar acceso a la información concerniente a la fecha de presentación de esta Autorización.

Información del solicitante:

El suministro de información de cesión en esta sección no sustituye el cumplimiento de los requisitos establecidos en la parte 3 del Título 37 del CFR para registrar una cesión ante la Oficina.				
Solicitante	1			
Si el solicitante es el inventor (o el o los co-inventor(es) restante(s) conforme a 37 CFR 1.45), no se debe completar esta sección. La información que se debe proporcionar en esta sección es el nombre y dirección del representante legal solicitante conforme a 37 CFR 1.43; o el nombre y dirección del cesionario, persona a quien el inventor está obligado a ceder la invención, o la persona que de otra manera demuestre suficiente interés propietario en el objeto de la invención, solicitante conforme a 37 CFR 1.46. Si el solicitante es un solicitante conforme a 37 CFR 1.46 (cesionario, persona a quien el inventor está obligado a ceder, o persona que de otra manera demuestre suficiente interés propietario) junto con uno o más co-inventores, entonces el o los co-inventores que también son solicitantes deben ser identificados en esta sección.				
Borrar				
Cesionario	Representante legal conforme a 35 U.S.C. 117			
Persona a quien el inventor está obligado a ceder.		Persona que demuestra suficiente interés propietario.		
Si el solicitante es el representante legal, indique la autoridad para presentar la solicitud de patente, el inventor es:				
Nombre del inventor difunto o legalmente incapacitado:				
Si el solicitante es una organización, seleccione esta casilla. ☐				
Prefijo	Primer Nombre	Segundo nombre	Apellido	Sufijo
Información de dirección de correspondencia:				
Dirección 1				
Dirección 2				
Ciudad		Estado/Provincia		
País		Código de área		
Teléfono		Fax		
Correo electrónico				
Se puede generar más Información del Solicitante en este formato seleccionando el botón Agregar .				Agregar

Firma:

Eliminar

NOTA: Este formato debe firmarse de acuerdo con 37 CFR 1.33. Ver 37 CFR 1.4 para requerimientos de la firma y certificaciones.

Firma	/Robert E. Richards/			Fecha (DD-MM-AAAA)	01-11-2016
Primer nombre	Robert	Segundo nombre	Richards	Número de registro	29105
Se pueden generar más firmas en este formato seleccionando el botón Agregar.				Agregar	

Esta recopilación de información es exigida por parte de 37 CFR 1.76. Se requiere esta información para obtener o conservar un beneficio por parte del público que es el de presentar (y procesar por parte de la USPTO) una solicitud. La confidencialidad se rige por 35 U.S.C. 122 y 37 CFR 1.14. Se estima que esta recopilación tome 23 minutos para completarse, incluyendo la recolección, preparación y entrega de la hoja de datos de la solicitud completa a la USPTO. El tiempo variará dependiendo de cada caso de manera individual. Cualquier comentario sobre la cantidad de tiempo que se requiere para completar este formato y/o sugerencias para reducir esta carga, deben enviarse al Funcionario Jefe de Información, en la Oficina de Marcas y Patentes de los EE.UU., Departamento de Comercio de los EE.UU., Código postal 1450, Alexandria, VA 22313-1450. NO ENVÍE TASAS O FORMATOS COMPLETOS A ESTA DIRECCIÓN. ENVÍELOS A: Comisionado de Patentes, Código postal 1450, Alexandria, VA 22313-1450.

Declaración de Ley de Privacidad

La Ley de Privacidad de 1974 (P.L. 93-579) exige que se le dé cierta información en relación con su presentación del formato adjunto relacionado con una solicitud de patente o patente. En consecuencia, de conformidad con los requerimientos de la Ley, por favor tenga en cuenta que: (1) la autoridad general para la recolección de esta información es 35 U.S.C. 2(b)(2); (2) la entrega de la información solicitada es voluntaria; y (3) el propósito principal para el cual se usa la información por parte de la Oficina de Marcas y Patentes de los EE.UU. es procesar y/o examinar su comunicación relacionada a una solicitud de patente o patente. Si usted no suministra la información solicitada, la Oficina de Marcas y Patentes de los EE.UU. no podrá procesar y/o examinar su comunicación, lo que puede resultar en la finalización de las actuaciones o el abandono de la solicitud o el vencimiento de la patente.

La información proporcionada por usted en el presente formato estará sujeta a los siguientes usos de rutina:

1. La información en este formato será tratada confidencialmente en la medida permitida bajo la Ley de Libertad de Información (5 U.S.C. 552) y la Ley de Privacidad (5 U.S.C. 552a). Registros de este sistema de registros pueden revelarse al Departamento de Justicia para determinar si se necesita revelar estos registros por la Ley de Libertad de Información.
2. Se puede revelar un registro de este Sistema de registros, como uso de rutina, en el curso de presentación de evidencia a un tribunal, magistrado, o tribunal administrativo, incluyendo divulgaciones al abogado opositor en el curso de negociaciones de conciliación.
3. Se puede revelar un registro en este Sistema de registros, como uso de rutina, a un Miembro del Congreso enviándole una solicitud relativa a un individuo, a quien le corresponde el registro, cuando el individuo ha solicitado ayuda del Miembro con respecto a la materia del registro.
4. Se puede revelar un registro en este sistema de registros, como uso de rutina, a un contratista de la Agencia que necesite la información con el fin de realizar un contrato. Los receptores de la información estarán obligados a cumplir con los requerimientos de la Ley de Privacidad de 1974, en su versión modificada, conforme a 5 U.S.C. 552a(m).
5. Se puede revelar un registro relacionado con una Solicitud Internacional presentada bajo el Tratado de Cooperación de Patente en este sistema de registros, como uso de rutina, a la Oficina Internacional de la Organización de Propiedad Intelectual, conforme al Tratado de Cooperación de Patente.

6. Se puede revelar un registro en este sistema de registros, como uso de rutina, a otra agencia federal para fines de revisión de Seguridad Nacional (35 U.S.C. 181) y para revisión conforme a la Ley de Energía Atómica (42 U.S.C. 218(c)).
7. Se puede revelar un registro de este sistema de registros, como uso de rutina, al Administrador, Servicios Generales, o su designado, durante una inspección de registros realizado por la GSA como parte de la responsabilidad de esa agencia para recomendar mejoras en la práctica del manejo de los registros y programas, bajo la autoridad de 44 U.S.C. 2904 y 2906. Tal revelación debe realizarse de acuerdo con las regulaciones de la GSA que rigen la inspección de registros para este propósito, y cualquier otro directivo (i.e. GSA o de Comercio) relevante. Tal revelación no se usará para hacer determinaciones sobre individuos.
8. Se puede revelar un registro de este sistema de registros, como uso de rutina, al público después de cada publicación de la solicitud conforme a 35 U.S.C. 122(b) o la expedición de una patente conforme a 35 U.S.C. 151. Adicionalmente, un registro puede revelarse, sujeto a las limitaciones de 37 CFR 1.14, como uso de rutina, al público si el registro fue presentado en una solicitud que se abandonó o en donde los trámites terminaron y cuya aplicación se referencia tanto por una solicitud publicada, una solicitud abierta a la inspección pública o una patente expedida.
9. Se puede revelar un registro de este sistema de registros, como uso de rutina, a una agencia del orden público Federal, Estatal, o local, si la USPTO se da cuenta de una violación o violación potencial de la ley o reglamento.