The invention is a new napped mesh abrasive cloth that is made with a gray cloth that is a napped fabric. It is used in the coated abrasives industry. Its uniqueness is in the construction. It is formed by a base material, an abrasive layer and a multilayer adhesive. On the bottom surface of the material there is nap, on the top surface of base material, there is an abrasive layer that is attached by a layer of primer. Finally, the surface of the abrasive layer is then coated with a multilayer adhesive.
MESH ABRASIVE CLOTH

CROSS-REFERENCE TO RELATED APPLICATION

[0001] This application claims the priority of Chinese Patent Application No. 201320163684.8, filed Apr. 3, 2013, which is incorporated herein by reference.

FIELD OF THE INVENTION

[0002] The invention is of a new napped mesh abrasive cloth that is used in the coated abrasives industry.

BACKGROUND OF THE INVENTION

[0003] There are many forms that traditional abrasive paper and abrasive cloth come in, such as discs, belts, and sheets. All the abrasives products used right now are comprised of a separate flannel backing that is attached to the abrasive paper or cloth, and then attached to the sanding tool to perform its sanding functions. This sanding method is a complicated process. Even if you directly plant the abrasives onto the flannel, it might be adhesive, but clogging becomes a severe problem. There is a type of abrasive product on the market right now that is of a mesh construction with an attached Velcro backing, but the grinding area is reduced and the manufacturing process is complicated with additional procedures.

BRIEF DESCRIPTION OF THE INVENTION

[0004] The objective of the invention is to overcome the inadequacies of the current technology to provide users with a new anti-clogging napped mesh abrasive cloth that improves dust removal capacity and increases the sanding surface area.

[0005] The new technological solutions are developed to combat the abovementioned problems: to use a napped mesh abrasive cloth that is comprised of a base material, an abrasive layer, a multilayer adhesive with anti-clogging or anti-static coating. On the top bottom surface of the base material there is nap, on the top surface of the base material is an abrasive layer attached by a layer of primer, and the surface of the abrasive layer is a multilayer adhesive and an anti-clogging or anti-static coating.

[0006] The material for the base material is a nap cloth that can be chosen from a group consisting of cotton cloth, polyester cloth, acrylic cloth, polypropylene cloth, bonding cloth or linen cloth.

[0007] The fabric preferably has loops on the surface.

[0008] The shape of the mesh construction can be one or a combination of circular, elliptical, polygonal and irregular shapes.

[0009] The product works best if there are vents around the cutouts. Vents are even smaller shapes of cutouts on the mesh that can be circular, elliptical, polygonal or irregular shapes. Even though the vents do not allow dust to pass, it can balance the internal and external pressure of the abrasive cloth, making debris easier to remove which leads to less clogging.

[0010] The multilayer adhesive has an anti-clogging or anti-static coating.

[0011] A single or multi-layer of abrasives can form the abrasive layer. The method used can be electrostatic abrasives planting or gravity sand planting.

[0012] The adhesive binders of the layer of primer and the multilayer adhesive can be made from aphenolic resins, epoxy resins, urea-formaldehyde, polyvinyl alcohols, latexes or a combination thereof.

[0013] The abrasives used to produce the abrasive layer can be selected from aluminum oxide, silicon carbide, calcined alumina, semi brittle alumina, diamond, ceramic-abrasive or a combination thereof.

[0014] Roller raising machines can be used to create the nap on the fabric or the loops can be created during the weaving process. The nap is only present around the mesh cut-outs.

[0015] Compared to current technology, the benefits of the new invention of the napped mesh abrasive cloth are the following: the product adopts the napped mesh fabric as the grey cloth for the backing which already has nap and fabric loops to enable direct attachment to sanding tools, thus eliminating a separate attachment to Velcro. The new napped mesh abrasive cloth does not require the process of compressing a new nap layer on top of the base material; instead, adhesives can be directly planted onto the base material. The end product can be directly fastened to sanding tools, thus reducing the manufacturing process and cost. At the same time, the mesh construction of the product has a greater anti-clogging effect that greatly improves sanding efficiency and product lifetime.

BRIEF DESCRIPTION OF THE DRAWING

[0016] FIG. 1 shows the structure diagram of a napped mesh abrasive cloth according to an embodiment.

[0017] FIG. 2 shows the positive schematic diagram of a napped mesh abrasive cloth according to an embodiment.

WHEREIN IN THE FIGURES:

[0018] 1: Base material
[0019] 2: Abrasive Layer
[0020] 3: Multilayer Adhesive
[0021] 4: Nap
[0022] 5: Mesh

DETAILED DESCRIPTION OF PREFERRED EMBODIMENTS

[0023] FIGS. 1 and 2 show the preferred embodiment of a napped mesh abrasive cloth. The disclosure may be more completely understood in consideration of the following detailed description of various embodiments of the disclosure.

[0024] Refer to FIGS. 1 and 2, the napped mesh abrasive cloth is comprised of a base material (1), an abrasive layer (2), and a multilayer adhesive (3). The bottom of the fabric has a nap (4), and a mesh construction is used. On the top of the base material, there is a layer of phenolic resin primer that adheres the layer of aluminum oxide abrasives to the fabric. The multilayer adhesive on top of the abrasive layer is of phenolic resin also. The side of the product with nap can be directly attached to the sanding tools, making the process more convenient.

[0025] Small vents are formed around the mesh (5) cut-outs.

[0026] The abrasive layer (2) can be formed by a single layer of abrasive planting.

[0027] The abrasive planting process takes place after the napped fabric that is the base material has been chemically treated, chemically coated or physically polished.
[0028] The multilayer adhesive has an anti-static coating, anti-clogging coating or a combination of both. The anti-static coating can be made from hot rubber cement; the anti-clogging coating can be made from stearic acid salt.

[0029] The adhesive binders in the primer and multilayer adhesive is made from aliphatic resins, epoxy resins, urea-formaldehydes, polyvinyl alcohols, latexes, or a combination thereof.

[0030] The naps or loops of the backing, are formed either by roller raising machine or during weaving, which around the meshes.

[0031] The abrasive layer is made from one of the following materials: aluminum oxide, silicon carbide, calcined alumina, diamond, ceramic abrasives.

[0032] All the nap on the fabric is formed by the roller raising machine, only the area surrounding the mesh has nap, the mesh cut-outs do not have nap.

[0033] The base material is a nap fabric. It can be chosen from the following fabrics: cotton cloth, polyester cloth, acrylic cloth, polypropylene cloth, bonding cloth, linen cloth.

Specific Manufacturing Process

[0034] Exemplary Process 1: Using the napped mesh fabric as illustrated in FIG. 2, with the mesh cut out in a diamond shape, the gray cloth is made into the base material after it is sprayed with adhesives. The layer of primer is then applied that includes resin adhesive binders, fillers and additives. The aluminum oxide is then planted and finished with multilayer adhesive that also includes resin adhesives binders, fillers, and additives and laid out to dry. The finished product is cut into disc shapes and used directly on the sanding tools to provide great sanding power and anti-clogging abilities.

[0035] Exemplary Process 2: The base material is obtained by treating the napped mesh fabric with circular mesh cutouts with special roller coating technology. A primer is applied that includes resin adhesives binders, fillers and additives, then the abrasive is planted and a final layer of adhesives that includes resin adhesive binders, fillers and additives is applied. The final product can be cut into disc shapes.

[0036] Exemplary Process 3: A fabric with looped surface is chosen as the base material and treated with a special roller coating technology. A primer is applied that includes resin adhesive binders, fillers and additives, then the abrasive is planted and a final layer of adhesives that includes resin adhesive binders, fillers and additives is applied. The final product can be cut into disc shapes.

[0037] The above describes exemplary embodiments of the invention, and not a limitation of the use of this invention or similar products. Any person having ordinary skill in the art can take on various modifications and alterations without departing from the spirit and scope of the disclosure. Accordingly, it is to be understood that the embodiments of the present disclosure to be controlled by the limitations set forth in the claims and any equivalents thereof.

1. A napped mesh abrasive fabric, comprising:
   a base material with mesh, bottom surface of the base material being nap;
   an abrasive layer on top of the base material attached by a coating of primer; and
   multilayer adhesive on top of the abrasive layer.

2. The napped mesh abrasive fabric of claim 1, wherein the base material is a napped mesh fabric.

3. The napped mesh abrasive fabric of claim 1, wherein the base material is at least one of: cotton, polyester, acrylic, polypropylene, bonding or linen fabrics.

4. The napped mesh abrasive fabric of claim 1, wherein the base material includes a fabric with loops on the surface.

5. The napped mesh abrasive fabric of claim 1, wherein the mesh of the base material comprises separate small vents.

6. The napped mesh abrasive fabric of claim 1, wherein the shape of the mesh is one of circular, ellipse, polygonal, or irregular shape.

7. The napped mesh abrasive fabric of claim 1, wherein the multilayer adhesive comprises an anti-static coating, an anti-block coating, or both.

8. The napped mesh abrasive fabric of claim 1, wherein the abrasive layer is formed by a single-layer abrasive planting or the multilayer abrasive planting.

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