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SURFACE COATED ABRASIVE MATERIAL

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7 Claims. (Cl. 51—280)

My invention relates to surface coated abrasive material, comprising an improved adhesive composition for holding the abradant particles in position on backing sheets or the like, and comprising also an improved combination of such adhesive with the abradant and the backing sheets making up a completed abrasive sheet ready for use. Heretofore in the production of sheet abrasives, such as sand-paper or the like, it has been found impossible to hold the abradant particles firmly in position on backing sheets of vulcanized fiber without having the abradant particles covered by a coating of the adhesive, applied to the abradant particles after they are in position on the backing sheet or member. The use of such a coating of adhesive over the particles of abradant is highly objectionable, and it has been one of the objects of my invention to provide an improved form of adhesive which will serve for holding the abradant particles effectively in position on the backing sheets of vulcanized fiber or other material without the use of a covering coating of adhesive about the abradant particles.

It is another object of my invention to provide an improved composition of adhesive adapted to cooperate with suitable sheets for the production of sheet abrasives which will be waterproof, which will not be impaired in their action by the heat generated by friction in use, which will be slow burning, and which will not sour or spoil when stored for an indefinite period. It is another object of my invention to provide a form of adhesive having the qualifications specified above which can be provided in liquid form and can be used at room temperatures without heating.

It is important in connection with a sheet abrasive that it be flexible so as to permit the sheet in use to be distorted at portions of its surface without tearing the sheet and without distorting the sheet as a whole. It has been known prior to my invention that vulcanized fiber is very effective for this purpose, but no one heretofore, so far as I am aware, has been successful in producing an adhesive suitable for application to the face of a sheet of vulcanized fiber and adapted by itself when so used to hold effectively in position abradant particles applied over the coated face and permitted to dry thoroughly thereon.

My improved adhesive by the use of which I have been successful in holding the abradant particles in position on a sheet of vulcanized fiber without the use of the objectionable covering coat of adhesive over and about the abradant particles is made up of a plurality of ingredients. I have had satisfactory results with a mixture of 5 pounds of commercial asbestos cement, ½ pound of zinc oxide, 1 gallon of sodium silicate, and water sufficient to form with the other ingredients a heavy paste, the mass being ready for use and being adapted for use at ordinary room temperatures as soon as the ingredients are thoroughly mixed. I prefer to employ additionally with the other ingredients ¼ pound of rosin, and 4 fluid ounces of glycerin.

In the preparation of my improved surface coated abrasive, I apply a coating of the adhesive as described above upon one face of a sheet of vulcanized fiber or other material, or upon the face of some other article to be coated. A suitable quantity of sand, carborundum, or other abrasive material, is then applied so as to form a coating on the top face of the layer of adhesive and is suitably pressed into contact with the adhesive, whereupon the adhesive is dried out thoroughly,—preferably by subjection to heat at about 100° F. for a period of about three hours.

I have found in practice that satisfactory results are obtained and a satisfactory product produced by the use of my improved adhesive applied to sheets of vulcanized fiber, with the abradant particles applied directly to the face of the layer of adhesive and held in position without the addition of a second or covering coat of adhesive upon and about the abradant particles. As will be readily understood, my improved adhesive will also give satisfactory results in connection with sheets or other shapes of many other types of material.

I have found in practice that my improved surface coated abrasive materials, comprising my improved adhesive in any suitable combination, and comprising also my improved surface coated abrasive products when prepared by the use of vulcanized fiber or other waterproof backing material, are adapted for use with water without deterioration, being quite flexible or resilient when thoroughly moistened so as to be capable of yielding at one point without distorting the remaining portions of the sheet; and that such materials are not injured by subjection to any such heat as is likely to be generated by friction in use, are quite slow burning, and are adapted to keep indefinitely without souring and without any impairment of the adhesive qualities of the adhesive mixture.

I have found further in practice that a sheet abrasive made in accordance with my preferred procedure as above outlined, with the abradant particles held in position upon backing sheets of vulcanized fiber by a layer of my improved

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cement, can be used in thoroughly moistened condition without danger of tearing the sheet except as use under trying conditions is continued for an extended period, and that the sheet is capable of being bent readily so as to smooth surfaces having portions in angular relation to each other whereby it is effective for conditioning parts of pressed metal, such as automobile bodies or the like, for the reception of paint or varnish. Since in my improved product it has been unnecessary to apply a covering coat of adhesive over and about the abradant particles, the initial effectiveness of the product for cutting and smoothing is substantially greater than would be the case if the grit were covered with a coat of cement, and the amount of the foreign matter dislodged from the sheet abrasive during the course of the sanding operation is substantially diminished whereby a better job may be accomplished.

I have found that certain ingredients may be substituted in the place of those mentioned above, white lead being substituted in lieu of zinc oxide, and gum mastic in lieu of rosin, all in suitable amounts.

While I prefer to employ the form of adhesive as above described, and the form of surface coated abrasive as set forth above, it is to be understood that my invention is not limited thereto except so far as the claims may be so limited by the prior art.

I claim:—

1. In an article in the nature of sandpaper and the like, an adhesive comprising asbestos cement, zinc oxide, sodium silicate, and water.

2. An article in the nature of sandpaper and the like, an adhesive comprising asbetos cement, sodium silicate and water as the principal ingredients, and approximately one-tenth as much by weight of zinc oxide as of asbestos cement.

3. In an article in the nature of sandpaper and the like, an adhesive comprising ingredients in proportions approximately as follows,—5 pounds of asbestos cement, ½ pound of zinc oxide, 1 gallon of sodium silicate, and water sufficient for making a paste.

4. In an article in the nature of sandpaper and the like, an adhesive comprising asbestos cement, sodium silicate and water as the principal ingredients, and comparatively much smaller quantities of zinc oxide, rosin, and glycerin.

5. In an article in the nature of sandpaper and the like, an adhesive comprising asbestos cement, a product from the class including zinc oxide and white lead, sodium silicate, and water.

6. In an article in the nature of sandpaper and the like, the combination of a backing member; a layer of adhesive thereon formed of asbestos cement, zinc oxide, sodium silicate and water; and a layer of abradant particles imbedded in said layer of adhesive and held in position thereby with their outer end portions extending from the face of the layer of adhesive.

7. In an article in the nature of sandpaper and the like, the combination of a backing sheet of vulcanized fiber; a layer of waterproof adhesive thereon formed of asbestos cement, sodium silicate and water as the major ingredients and comparatively much smaller quantities of zinc oxide, rosin and glycerine; and a layer of abradant particles imbedded in said layer of adhesive and held in position thereby with their outer end portions extending from the face of the layer of adhesive.

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