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(54) **Manufacture of flexible intumescent sheet.**

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(56) References cited :
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Description

This invention relates to the manufacture of flexible intumescent sheet.

In the specification of British patent 1 513 808 published June 1978 there is described flexible intumescent sheet comprising heat-expandable micaceous mineral, such as vermiculite; inorganic fibrous material, for example refractory aluminosilicate fibres, rockwool or glass fibres; and organic binder, such as natural rubber, styrene-butadiene rubber, butadiene-acrylonitrile rubber, or other elastomeric material. The sheet is suitable for use as a mounting for ceramic catalyst-supports in metal containers, particularly in automobile exhaust systems. The sheet is of dry bulk density at least 0.5 gm/ml and is typically of thickness 2.5 mm. In the manufacture of it a standard paper-making technique is employed, in which an aqueous suspension of the ingredients is de-watered as a layer on a Fourdrinier screen, and the resulting green sheet is compressed to a bulk dry density of 0.5 gm/ml or more, and dried at about 90°C to give the final paper. Now, although precautions may be taken to attain substantially uniform distribution of the solid particles of the aqueous suspension across the thickness of the paper, yet it is a matter of great difficulty to ensure this when forming paper of thickness above 2.5 mm. What happens is that the particles, especially those of the micaceous mineral, tend to concentrate at that surface of the layer undergoing dewatering which is adjacent to the Fourdrinier screen. A consequence of this lack of uniformity in distribution of the heat-expandable micaceous mineral is that, when the product is used as a mounting for ceramic catalyst supports in automobile exhaust systems, non-uniform expansion of it occurs and there is a tendency (through the strains which are then set up) for premature failure of the mounting to occur.

We have now found that this tendency to non-uniform distribution of the mineral is much reduced if the dewatered sheet is wound onto a drum so as to obtain a laminar product (as in standard board making techniques) instead of forming it (as in paper making techniques) to its desired thickness as a monolithic product.

The invention is further illustrated by the following Example:

EXAMPLE

An aqueous suspension of vermiculite ore (70 parts by weight), aluminosilicate fibres sold under the name FIBERFRAX (20 parts by weight) and styrene-butadiene latex sold under the name HYCAR (equivalent to 10 parts by weight solids) is prepared as in Example 1 of British patent specification 1 513 808, and to it is added alum solution to reduce the pH to 4.5. The suspension is then pumped to the head box

(flow box) of a standard board making machine ("intermittent machine"), generally as described on page 291, Chapter 12, of "Paper and Board Manufacture" by Julius Grant, James H Young and Barry G Watson (publishers: Technical Division, the British Paper and Board Industry Federation, London 1978). The slurry is distributed from the head box over the width of the water-permeable conveyor felt of the machine and is progressively de-watered as it travels on the felt. From the felt, the de-watered layer is passed to the drum (or 'making roll') of the machine, on which it is wound until a thickness of 5 mm has been built up. The hollow laminar cylinder formed is then slit axially, and the sheet thus released is laid flat and dried to moisture content of about 2% by weight.

If desired, operation of the drum can be continued until a thickness of 10 mm or more has been built up.

Claims

1. A process for the manufacture of flexible intumescent sheet for use as a mounting for ceramic catalyst supports in automobile exhaust systems, by dewatering a layer of aqueous suspension comprising heat-expandable vermiculite ore, inorganic fibrous material, and organic binder, and drying the dewatered layer to a sheet of bulk dry density at least 0.5 gm/ml, characterised by winding the dewatered layer onto a drum so as to obtain a laminar product of thickness greater than 2.5 mm, and then drying the laminar product.

2. A process according to claim 1, in which the inorganic fibrous material is refractory aluminosilicate fibre.

Ansprüche

1. Verfahren zur Herstellung einer biegsamen aufblähbaren Pappe zur Verwendung als Halterung für keramische Katalysatorträger bei Automobilabspuffsystemen durch Entwässerung einer Schicht einer wässrigen Suspension, die durch Hitze aufblähbares Vermiculitmineral, anorganisches faseriges Material und organischen Binder enthält und Trocknen der entwässerten Schicht zu einer Pappe von einer scheinbaren Trockendichte von wenigstens 0,5 g/ml, dadurch gekennzeichnet, daß man die entwässerte Schicht auf eine Trommel wickelt, so daß man ein laminares Produkt mit einer Dicke von mehr als 2,5 mm erhält und dann das laminare Produkt trocknet.

2. Verfahren nach Anspruch 1, dadurch gekennzeichnet, daß das anorganische faserige Material eine feuerfeste Aluminosilikatfaser ist.

Revendications

1. Procédé pour la fabrication d'une feuille flexible intumescence pour utilisation en tant que châssis pour des porte-catalyseurs en céramique dans les systèmes d'échappement d'automobiles, en déshydratant une couche de suspension aqueuse comprenant un minéral de vermiculite dilatable à la chaleur, une matière fibreuse inorganique, et un liant inorganique, puis en séchant la couche déshydratée en une feuille de densité globale à sec d'au moins 5 g/ml, caractérisé par l'enroulement de la couche déshydratée sur un tambour afin d'obtenir un produit laminaire d'une épaisseur supérieure à 2,5 mm, et en séchant le produit laminaire.

2. Procédé selon la revendication 1, dans lequel la matière fibreuse inorganique consiste en des fibres d'aluminosilicate.

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