E2-04 Flame resistant coconut fibre

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Coconut fibre is used for the production of cushioning pads in car seats and upholstery, mattresses, as a packing material and in insulation. These products can be manufactured by binding a random web of curled coconut fibre with rubber latex. Both rubber and the fibre are highly flammable. Presently flame resistivity is achieved by adding a flame retardant to latex only and was unsatisfactory. Coconut fibre is exported as pads or as fibre material to developed countries and one of the requirements is the specific degree of flame resistivity. The objective of this work is to manufacture flame resistant coir according to safety standards.

Of the 4 flame retardants studied urea/phosphoric acid mixture had better retaining flame resistivity even after repeated washing. The coir samples were soaked in flame retardant solutions for about 4 - 8h dried and cured at 140°C for 10 min.

Then the samples were tested according to American Motor Vehicle safety standard MVS 302. The optimum reaction conditions such as soaking time of 6h, concentration of 15% and ratio of urea to phosphoric acid, and curing temperature were studied. Physical and ageing properties of the treated fibre were tested and compared with untreated coconut fibre.

The excellent flame resistant activity of urea-phosphoric acid mixture may be due to chemical linking of phosphoric acid with hydroxyl group of cellulose fibre.