

Study on Properties of Modified Nylon 66 Short Fiber/Natural Rubber Composite

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Abstract: The nylon 66 (PA66) short fiber was treated by ultraviolet irradiation, physical modification via liquid rubber impregnation and chemical modification such as grafting. The modified PA66 short fiber/natural rubber (NR) composite was prepared and the influence of modified PA66 short fiber on the properties of the composite was studied. The results showed that compared with the NR composite filled with unmodified PA66 short fiber, the tensile strength of modified PA66 short fiber/NR composite decreased and the tear strength increased. When the short fiber was chemically grafted first and then treated by ultraviolet light, the modulus at 100% elongation and elongation at break did not change much, while the modulus at 300% elongation increased. When the short fiber was pretreated by ultraviolet light and then chemically grafted, the modulus at 100% and 300% elongation increased significantly, and the elongation at break was significantly reduced. The optimized treatment process of short fiber was as follows: irradiated by ultraviolet light for 4 min, then grafted with vinyl trimethoxysilane, and finally impregnated with 2 g liquid rubber. With the optimized treatment, the composite had the best physical property, adhesion property and dimensional stability.

Key words: nylon 66; short fiber; chemical modification; physical modification; natural rubber; composite; adhesive property; dimensional stability

大连橡塑研发新规格密炼机组

日前,大连橡胶塑料机械股份有限公司(简称大连橡塑)与国内某大型轮胎企业签订合同,为用户研制国内首台套440E+800ET规格串联密炼机组。

作为国内首台套产品,该密炼机组在研发设计上采用多项国内前沿技术和大连橡塑最新的科技创新成果,将以复合作用方式取代传统密炼机单一作用方式炼胶,采用上位机升温混炼与下位机恒温硅烷化反应的独特工艺,适合生产高白炭黑含量的高性能胶料,可提高白炭黑胶料的分散性和均匀性,制造低滚动阻力轮胎,以满足欧盟、美国等市场日趋严格的乘用车排放标准。

该机组可实现一次完成终炼和母炼,减少混炼段数,从而减小占地面积,取消了胶料中间停放和反复热炼环节,可提高炼胶效率和胶料质量,同时减小能耗,降低生产成本。与大连橡塑前期为客户研制的320E+580ET规格串联密炼机组相比,此次研制的440E+800ET规格串联密炼机组单条

生产线产能可提高30%以上。

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一种耐沟底裂的载重用轮胎

由中策橡胶集团有限公司申请的专利(公布号 CN 110588248A,公布日期 2019-12-20)“一种耐沟底裂的载重用轮胎”,涉及的轮胎胎冠部位包括胎面、1[#]带束层、2[#]带束层、3[#]带束层、两层0°带束层、胎体和胎肩垫胶。胎面至少设置3条花纹沟;胎肩垫胶设置在带束层与胎体之间。胎冠部位还包括胎体胶片,设置在胎体与胎肩垫胶之间,1[#]带束层端点与胎肩垫胶内端点的距离为5~10 mm,胎肩垫胶内端点与胎体胶片端点的距离为5~10 mm,1[#]带束层包边胶宽度为24~28 mm,厚度为0.5~0.8 mm,胎体胶片宽度为100~110 mm,厚度为0.5~0.8 mm。本发明从轮胎结构设计角度提高轮胎沟底的抗撕裂性能,延长轮胎使用寿命。

(本刊编辑部 储 氏)