

黄糊精/秸秆纤维增强复合材料的吸湿性能分析 Moisture Absorption Properties of the Yellow Dextrin/Straw Fibers Composites

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关键词: 秸秆 黄糊精 复合材料 吸湿性能

摘要: 试验分析了黄糊精/秸秆纤维复合材料在不同相对湿度下的吸湿率, 并对复合材料的吸湿率数据进行一元非线性回归拟合 $w=a+bt^c$ , 吸湿速率 $v=dw/dt=bc t^{c-1}$ , 建立了吸湿率和吸湿速率的数学模型, 分析了每种秸秆纤维复合材料在相同的相对湿度下的吸湿率曲线。在100 g秸秆纤维、40 g水、20 g黄糊精、热压温度为170℃、热压压力为4.2 MPa、热压时间为30 min和100 g秸秆纤维、40 g水、10 g黄糊精、热压温度为170℃、热压压力为9.8 MPa、热压时间为20 min两种条件下制备了两种黄糊精/秸秆纤维复合材料, 试验得出上述两种复合材料吸湿率较小, 表明两种秸秆纤维复合材料耐水性好。在黄糊精/秸秆纤维复合材料制备中, 应重点注意热压温度因素, 它对复合材料的耐水性影响较大。The hygroscopicity of the yellow dextrin/straw fiber composites at different relative humidity conditions was researched. The model of hygroscopicity and its variational rate was set up. The favorable water resisting property for the composites was obtained, on the two following groups conditions: the straw fibers of 100 g, the water of 40 g, the yellow dextrin of 20 g, the hot pressing temperature of 170℃, the hot pressing pressure of 4.2 MPa, the hot pressing time of 30 min; and the straw fibers of 100 g, the water of 40g, the yellow dextrin of 10 g, the hot pressing temperature of 170℃, the hot pressing pressure of 9.8 MPa, the hot pressing time of 20 min respectively. The hot-pressing temperatures of two groups were both higher than in common. So the preparation process should focus attention on hot-pressing temperature factors. The research can provide reference for applying of the moisture absorption properties of the yellow dextrin/ straw fibers composites.

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