


## Preparation of Hyperbranched Interface Agent and Its Effect on the Adhesion Properties of Flame Retardant PVC Conveyor Belt

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**Abstract:** The hyperbranched polyamide ester with large amount of hydroxyl end groups was prepared and then modified with silane coupling agent KH560. The product was a hyperbranched interface agent and applied in the treatment of polyester-cotton canvas of flame retardant PVC conveyor belt. The test results showed that the adhesion strength between cover rubber and polyester-cotton canvas was improved by using the interface agent. Typically, the 3rd generation hyperbranched polyamide ester was prepared by using  $AB_2$  monomer and trimethylolpropane as the core, at the molar ratio of 21 : 1. Correspondingly, the 3rd generation interface agent was obtained by using the 3rd generation hyperbranched polyamide ester and KH560 at the molar ratio of 24 : 1. It was found that when the concentration of the 3rd generation interface agent in the treatment was  $0.003 \text{ mol} \cdot \text{L}^{-1}$ , the maximum adhesion strength between cover rubber and polyester-cotton canvas was achieved. The high temperature performance of the belt with the hyperbranched interface agent was excellent and the adhesion strength at  $100^\circ\text{C}$  was still able to keep more than 75%. The cost of the hyperbranched interface agent was lower than the silane coupling agent, and the recommended concentration was 2% ~ 2.5%.

**Keywords:** hyperbranched interface agent; flame retardant PVC conveyor belt; polyester-cotton canvas; adhesion strength



### 信息·资讯

## 兰州石化大力开发橡胶新产品

中国石油兰州石化公司合成橡胶厂大力开发橡胶新产品，2013年共开发生产新、特、优、专产品20多种，其中耐热、耐寒、阻燃、高抗冲橡胶等新产品受到市场欢迎。

该厂立足现有丁苯橡胶和丁腈橡胶生产装置，凭借在特殊牌号橡胶产品方面的研发优势，加大新、特、优、专产品的研发和生产力度。通过改变凝聚温度、洗涤槽搅拌速度和洗涤水流量等工艺参数，生产多种硬度丁腈橡胶（NBR1704，NBR2707和NBR3604等），

满足了国防军工的需要。开发了环保型丁腈橡胶（NBR3305E），并实现工业化生产。新投建的液体橡胶生产装置为国家航天事业发展作出了贡献。此外，定制生产环保型充油丁苯橡胶（SBR1778E）等新产品，不仅满足了用户要求，也成为企业新的效益增长点。

2013年，兰州石化公司合成橡胶厂的专用橡胶产量为14300 t，占其橡胶总产量的8.62%，创历史最好水平。

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