

- Natural Rubber/Styrene-Butadiene Rubber Blends[J]. Journal of Applied Polymer Science, 2004, 93(1): 437-443.
- [2] Li T R, Yang Z Y, Wang B D, et al. Synthesis, Characterization, Antioxidant Activity and DNA-binding Studies of Two Rare Earth(Ⅲ) Complexes with Naringenin-2-hydroxy Benzoyl Hydrazone Ligand[J]. European Journal of Medicinal Chemistry, 2008, 43(8): 1688-1695.
- [3] Liu Y C, Yang Z Y. Crystal Structure, Antioxidation and DNA Binding Properties of Eu(Ⅲ) Complexes with Schiff-base Ligands Derived from 8-Hydroxyquinoline-2-Carboxaldehyde and Three Aroylhydrazines[J]. Journal of Inorganic Biochemistry, 2009, 103(7): 1014-1022.
- [4] 谢婵, 贾志欣, 罗远方, 等. 2-巯基苯并咪唑钐配合物在天然橡胶中防老化作用的研究[J]. 高分子学报, 2011(3): 320-326.
- [5] 中本一雄. 无机和配位化合物的红外和拉曼光谱[M]. 黄德如, 汪仁庆, 译. 北京: 化学工业出版社, 1986: 254.
- [6] 中南矿冶学院分析化学教研室. 化学分析手册[M]. 北京: 科学出版社, 1982: 266.
- [7] Qiu G M, Zhou L X, Zhang M, et al. Preparation and Mechanical Performance of Rare Earth Containing Composite Elastomer[J]. Journal of Rare Earths, 2001, 19(4): 260-265.
- [8] 张明, 李幼荣, 邱关明, 等. 稀土复合弹性材料的抗热氧化作用[J]. 中国稀土学报, 2000, 18(4): 318-321.
- [9] 纪魏, 王鉴, 张学佳, 等. 受阻酚类抗氧剂的复配及发展方向[J]. 化学工业与工程技术, 2007, 28(2): 34-38.

收稿日期: 2013-06-05

Application of Rare Earth Type Hindered Phenolic Antioxidant in NR Compound

ZHANG Yong-peng^{1,2}, CHEN Jun², GUO Shao-hui¹, ZHAN Ya-li¹, QIAN Yu-ying²

(1. China University of Petroleum, Beijing 102249, China; 2. Guangdong Winner Functional Materials Co., Ltd, Foshan 528521, China)

Abstract: The hindered phenolic antioxidants with rare earth (lanthanum, cerium, praseodymium, neodymium, samarium and europium) were characterized by IR spectrometry and thermogravimetry analysis method, and the influence of the antioxidant type on the curing behavior, physical properties and aging resistance of the NR compound was investigated. The results showed that, NR compounds with the rare earth type hindered phenolic antioxidants had similar curing behavior, the physical properties and aging resistance of the vulcanizates were improved, and the lanthanum hindered phenolic antioxidant showed the best result.

Key words: rare earth; hindered phenol; antioxidant; NR

一种甲基乙烯基硅橡胶连续生产线

中图分类号: TQ330.4⁺2; 文献标志码: D

由佛山市金银河机械设备有限公司申请的专利(公开号 CN 102816329A, 公开日期 2012-12-12)“一种甲基乙烯基硅橡胶连续生产线”, 涉及的甲基乙烯基硅橡胶连续生产线包括主料预处理机构、辅料预处理机构、混合机、预热器、多段管式聚合器和主螺杆挤出机。其中主料预处理机构包括脱水釜、高位储槽、计量罐和计量泵, 脱水釜通过输送泵与高位储槽连接, 高位储槽的物料依次经过计量罐和计量泵后加入到混合机中; 辅料

预处理机构包括搅拌罐、计量罐和计量泵, 辅料在搅拌罐中搅拌后, 依次经过计量罐和计量泵后加入到混合机中; 混合机通过高压输送泵与预热器连接, 预热器与多段管式聚合器连接, 物料经过预热器的预热和多段管式聚合器的聚合后, 再通过侧喂料螺杆机加入到主螺杆挤出机中; 主螺杆挤出机设置有若干个抽真空孔, 抽真空孔与抽真空设备连接。与现有技术相比, 该生产线可以提高生胶的生产效率以及产品质量, 同时降低了生产成本。

(本刊编辑部 赵敏)