

过程有促进作用,对 WSR 的硬度基本无影响,可提高拉伸强度、拉断伸长率和撕裂强度。当 CM-PA 质量占吸水树脂质量的 5% 时,WSR 的  $R_w$  为 367%,且综合物理性能较好。

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## Preparation of Amphoteric Macromonomer and Its Application in Water-swellaable Rubber

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**Abstract:** The synthesis of amphoteric macromonomer CMPA and its application in water-swellaable rubber (WSR) were studied. The results showed that the water-absorbable resin, which was prepared by inverse emulsion polymerization and modified by CMPA, had uniform particle size, average particle diameter of 0.5  $\mu\text{m}$  and good thermal stability. The dispersion and compatibility of CMPA modified water-absorbable resin in WSR were improved. When the modified water-absorbable resin was added, the vulcanization process of WSR was accelerated, the hardness of the vulcanizates was unchanged, and the tensile strength, elongation at break and tear strength were improved. When the mass percentage of CMPA in water-absorbable resin was 5%, the rate of water absorption of WSR reached 367%, and the comprehensive physical properties were good.

**Key words:** amphoteric macromonomer; modification; water-absorbable resin; water-swellaable rubber

### 西橡胶管服役“辽宁号”

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2013年4月18日,中国首艘航母“辽宁号”亮相青岛港。航母上色泽鲜艳的红色高压蒸汽橡胶软管和绿色排污橡胶软管等10余种不同用途的输送管线全部由延长石油西北橡胶公司(以下简称西橡公司)生产。

据了解,此次为航母保障系统配套研制的高压蒸汽管、冷媒管及清洗用蒸汽管10余种输送管线主要应用于航母靠泊码头上的保障设备与辽宁舰之间的高压蒸汽管路、油料补给管路以及生活用水输送管路等的联接与贯通,是“辽宁号”综合

保障系统的重要组成部分。由于使用场所特殊,对产品的强度、韧性、耐撕裂性、耐候性、耐机械划伤与酸碱腐蚀性等都提出了更加严格甚至苛刻的要求。此前,这些产品多从国外进口。

西橡公司承接输送管线研制任务后,经过反复试验,成功破解了国内同类胶管产品承压能力低、使用寿命短、耐高温性能差及对蒸汽有污染等难题,研制出10余种输送管线。样品一次性通过近乎苛刻的各项性能检测,并在随后上百项训练和试验中取得了100%合格率的优异表现,西橡公司也成为航母保障系统胶管唯一供应商。

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