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SUPERIOR TACKIFYING RESIN

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Tackifiers or tackifying resins are used in the rubber compounds to provide tack during the building process of green tyres until they are vulcanized. Phenolic novolak resins based on *P-tertoctylphenol* (PTOP) and *P-tertbutylphenol* (PTBP) are predominantly used by the tyre industry due to their prolonged retention of tackiness. In the construction of radial and bias/belted passenger tyres, blends of styrene butadiene (SBR) and polybutadiene (BR) rubbers are generally used in the tread cap, under tread and side wall compounds. Due to relatively poor tack properties associated with BR and SBR compounds, high performance phenolic tackifiers are needed in the formulations of these rubbers. In addition, rubber compounds near the belt area of radial tyres should have high building tack even though they are predominantly natural rubber based compounds.

Super tackifier resin, called Koresin® (BASF Germany) is an alkylphenolic resin which provides prolonged tackiness in compounds containing synthetic rubbers. Koresin® is made from the reaction of PTBP with acetylene. Now, a new version of Koresin® was synthesized from the reaction of PTBP with acetaldehyde. This modified PTBP – acetaldehyde resin is called Technic KR-140. A comparison of performance and properties of Koresin® with Technic KR-140 in rubber compounds are presented in this paper.

Keywords: Building application, Koresin®, *p-tert*-butylphenol, Technic KR-140

INTRODUCTION

Modern radial and bias/belted passenger car, truck and bus tyres are designed to provide good crack and abrasion resistance, low hysteresis, low rolling resistance, and good mileage and service life. In order to achieve the above properties, tyre industries employ blends of natural rubber and synthetic rubbers, such as styrene butadiene (SBR) and polybutadiene (BR) rubbers in the rubber formulations, particularly in tread cap and under tread compounds. Natural rubber has sufficient inherent tack for most building applications so that tackifying agents may not be necessary. Styrene butadiene (SBR) and polybutadiene (BR) rubbers are nonpalar compared to other synthetic rubbers. Unlike natural rubber, SBR and BR do not develop surface peroxidal activity upon mastication. Therefore, SBR and BR rubber compounds have relatively poor inherent or processed tack properties.

Tyres are typically constructed by building layers of rubber-coated fabric one over another, followed by a breaker strip, cushion, and tread rubber compounds. These layers must possess sufficient surface tack to

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