

Editorial 3

RFP News 6

What is happening on the street? – Rubber Street at K 2007 15

Rubber Expo & International Rubber Conference 2007 16

T. C. POHL, M. MEINERT

Roller head lines for the production technical rubber sheets 18



Roller head lines have been used for many years for the production of sheets for technical rubber articles. Typical products include sheet goods, tank linings, conveyor belts, V-belts, printing sheets, wear protection panels, preliminary pressing products, shoe soles, pneumatic springs and many more. Standard systems can rarely be used for these production processes; the roller head lines must be specially designed and tailor-made to the relevant customer requirements.

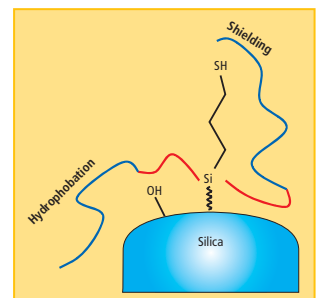
LSR India Roadshow 22

A. HASSE, O. KLOCKMANN

Application of the new rubber silane VP Si 363 in silica filled tread compounds 23

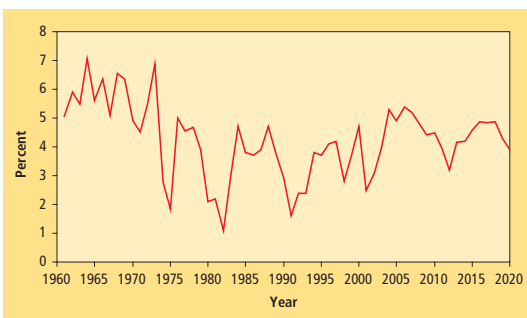
Up to now the great majority of silanes for the application in silica filled tread compounds for car tyres are poly- or disulfidic silanes like bis(triethoxy-silylpropyl) tetra- or disulfide [1, 2, 3]. The increasing demand for cars with lower fuel consumption leads to the requirement for the tyre manufacturers to reduce the rolling resistance of tyres. Additionally new approaching legal restrictions concerning the emission of volatile organic compounds during the mixing process or during tyre lifetime create interest in silanes with decreased emission of ethanol. The new silane VP Si 363 combines a significant increase in tyre performance by reducing rolling resistance by more than 10 % with the solution for the new ecological needs by cutting the ethanol emission by 80 %.

Due to its special chemical structure the application of this silane differs from the one of the standard polysulfide silanes. In this paper, important differences concerning silane and sulphur concentration, change of accelerator system or mixing process are discussed and recommendations are given.



H. P. SMIT

A global perspective for the rubber industry 28



The share of NR in total rubber consumption is largely determined by technology, while (relative) prices may play a role as well. The world NR share may first decline slightly and then recover when additional planting becomes productive in a few years. An important factor is the price of oil.

This article reviews the recently updated prospects for the rubber industry up to 2020.

World average economic growth is predicted at levels of around 4–4.5 %. Important may be the world-wide recessions predicted to occur around 2012 and 2021.

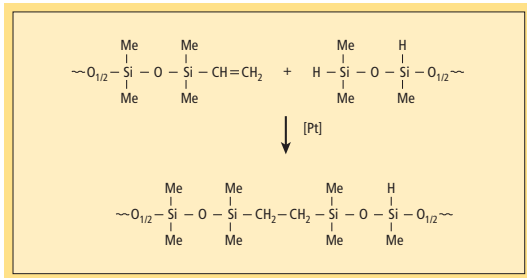
World production of passenger car tyres and production of commercial vehicle tyres are expected to reach 1.52 and 0.67 billion units respectively by 2020.

Total rubber consumption, without separating natural rubber (NR) and synthetic rubber (SR), will reach 31.3 million tons by 2020, of which 18.9 million tons for the tyre sector.

The combination of new planting, replanting, total area, yield and technical progress will lead to what we call projections of 'normal production' of NR. At high prices, actual production may be higher because of more (intensive) tapping, and vice versa. Projections of normal production by country are also based on assumptions on such factors as new planting and replanting. World normal production is expected to reach 13.1 million tons by 2020.

Assocomplast's Framework Programme supports European research projects 33

O. FRANSEN, ST. BOSSHAMMER, G. RILEY, M. TOUB

Fully fluorinated LSR – a new product family..... 34

Silicone heat cured, high consistency elastomers (HCE) have traditionally been used in the fabrication of rubber components exposed to a wide temperature range for both static and dynamic applications. For performance in chemically harsh environments, trifluoropropyl silicone polymer (fluorosilicone) is typically used to impart added fuel, oil, and solvent resistance for applications such as automotive and aerospace o-rings, membranes, seals, and gaskets. These specialty products are available commercially and are referred to as fluorosilicone HCEs (FVMQ).

Momentive Performance Materials (formerly GE Silicones) introduced standard, non-fluorinated liquid silicone rubber (LSR) in the late 1970s. Over the last several years, the trend in the market for moulded silicone rubber parts has been towards the increased use of LSR due to its ease of processability, design versatility, excellent quality, and productivity gains. In the late 1980s poly-co-(fluoroalkylmethyl-

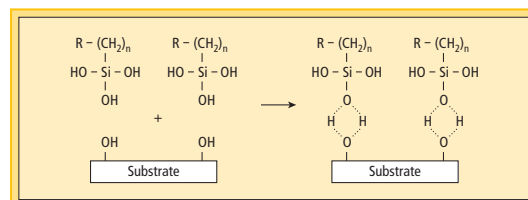
dimethyl)-siloxane polymers for LSRs were introduced as partly fluorinated LSRs (FSLs) which offered improved diesel, oil, and solvent resistance. However, in very harsh environments such as gasoline, blow-by-gas or jet fuels, FVMQ HCE has remained the material of choice due to its higher fluorine content and better solvent resistance.

Momentive Performance Materials has now introduced a fluorinated LSR that possesses comparable fluorine content to fluorosilicone HCE. This article will compare this new highly or fully fluorinated silicone LSR (FFSL) with fluorosilicone HCE with respect to processability, physical properties, and fuel and solvent resistance. Emphasis will be on requirements for automotive and aerospace applications.

M. B. SANDS, V. SUBRAMANIAN, G. MAO

Thermal characterisation of the interaction of silanes with a dihydroxy vulcanised fluoroelastomer 41

The reactivity of aminosilane and vinylsilane with a dihydroxy (Bisphenol AF) crosslinkable fluoroelastomer containing only vinylidene fluoride (VF₂) and hexafluoropropylene (HFP) was monitored using Differential Scanning Calorimetry (DSC) and X-ray Photoelectron Spectroscopy (XPS). The DSC results showed that the introduction of an aminosilane, or a combination of aminosilane and vinylsilane solutions, to the cure system of the fluoroelastomer resulted in a peak shift. This shift indicates that crosslinking in fluoroelastomer-silane system occurs at a lower temperature when aminosilane is present. Results also confirm that the organofunctional group on the silane reacts with the elastomer. XPS analysis of the silane-coated fluoroelastomer heated at 120 °C, 160 °C and 200 °C reveals that dehydrofluorination of the polymer is one of the steps in the reaction. It is our hypothesis that the amine group on the aminosilane is a contributor to the dehydrofluorination of the fluoroelastomer.



M. SCHILLER, B. PELZL, W. FISCHER, E. LATTACHER

Austrox – A durable calcium oxide-containing onepack for the rubber industry 49

Calcium and magnesium oxides are used as water and acid scavengers in rubber and plastic industry. Their high reactivity with water and carbon dioxide from the air can limit the shelf life. Later-on problems during conversion and a reduced reactivity cannot be excluded. The recent paper focuses on a new, dust-free delivery form of such oxides which compensates these disadvantages. The combination with other additives offers the opportunity of "tailor made" solutions for each customer. These new products are also interesting for other applications like wood plastic additives.

Natural rubber prices set to climb 51**Reviews..... 52****People in the news 53****Events 54****Suppliers list..... 55****Publication information & contacts 58**