

# Hybrid Materials Based on Rubber Blend Nanocomposites

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In this applicative work, two types of silica filler were used to increase the adhesion strength between steel and elastomeric hybrid materials based on chlorosulfonated polyethylene rubber (CSM) and polychloroprene rubber (CR) as network precursors. Precipitated silica (PS) with the average size of primary particles 15 nm and diatomaceous earth (DE) with the average size of primary particles 28  $\mu\text{m}$  were used to ascertain differences in metal-elastomer compounds adhesion strength caused by different particle size. The ratio of network precursors in CSM/CR rubber blends was 50:50 (w/w). The filler loading was in the range of 0–35 phr. Characteristics of the obtained composites were examined by combining the cure kinetics, adhesion strength and the dynamic mechanical properties. The viscoelasticity of obtained hybrid materials was assessed by the mechanical spectrometer (in a single cantilever bending mode) in the temperature range from  $-50\text{ }^{\circ}\text{C}$  to  $150\text{ }^{\circ}\text{C}$  using multifrequency mode. POLYM. COMPOS., 40:3056–3064, 2019. © 2018 Society of Plastics Engineers

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