

## **Effect of foaming temperature on morphology and compressive properties of Ethylene propylene diene monomer rubber (EPDM) foam**

### **Abstract**

The morphology and compressive properties of EPDM foam were investigated against foaming temperatures (i.e 140, 150 and 160 o C). The blowing agent used in this study was sodium bicarbonate. The rubber compositions were expanded and cured using conventional compression moulding technique via heat transfer foaming process. The morphology of EPDM foam was characterized with respect to the cell size, relative foam density and crosslink density. Meanwhile the compressive properties were characterized using compression load-deflection and compression set testing. Increase in foaming temperature resulted in larger cell size. The crosslink densities in EPDM foam were determined using Flory-Rhener equation and results indicated that the crosslink density has slightly decreased with increasing foaming temperature. The relative foam density also showed decreasing when the foaming temperature was increased. For mechanical properties, the highest foam density has resulted in the highest compressive stress. Compression stress at 50 % strain decreased with increasing foaming temperature. It was also found that the compression set decreased with increasing foaming temperature. The results showed that the morphology and compressive properties of the EPDM foam can be controlled closely by the foaming temperature.