The influence of the particle size of silicon rubber particles in the meltfiltartion of Polyethylen

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In the modern society there are a lot of applications for a combiantion of a themoplastic material and silicon rubber. The good processabilty of themoplastic materials and the good sealing properties of silicon rubber are one reason for this material combiantion. One of the biggest sources for silicon rubber contaminated themoplastics are pipe lines, with with a pressue valve. This matirial source has approximatly a pollution grade under 1% of silicon rubber. To determine the pollution grade and the influnce on the properties of the themoplast and the influence of melt filtration the folloeing work was carried out. The aim of the work was, to investigate the influnece of the partikel size and the amount of the pollution on the mechanical properties, the influence of meltfiltration on the themal stabiltity of the thermoplast and the influence of the partikel size on the melt filtration behaviour. Therefore 3 model compounds with a silcon rubber shore 50 are produced with 0,1 ,0,5 , 1% polloution with a polyethylen matrix. This compounds were meltfiltrated with a 14/30/150 mesh. The pressue infront of the sieve and behind the sieve where mesured. The melt filtartion where carried out 20 min or til 90 bar are reached infont of the sieve, because of the limits of the filtration setup. The mechanical properties where determined with the compounds and the filterd materials. As a measuremnt method for the pollution the m-tga where choosen, because the matrix can be burned of and around 50% of the silicon rubber stays back. Therefore the m-tga was used to compare the coumpound with the filtrated materials.
The experiments have shown, that the pressure infront of the sieve is higher with bigger particels and if the particels are to big the sieve closes and the process hat to be stopped. The pressure equilibrium with 0,2 and 0,5 mm particels lets assume that a part of the silicon rubber partikels are pushed throuth the sieve.

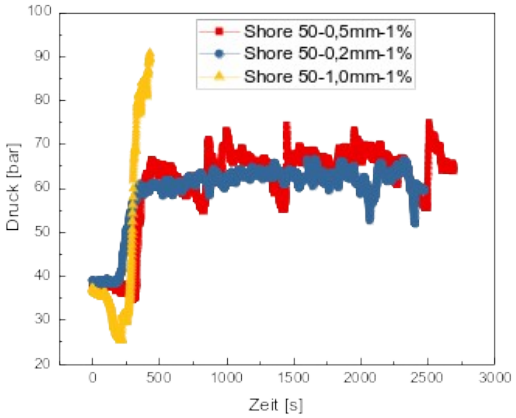

Figure 1: Comparison of the pressure infront of the sieve with 3 diffrnet particel sizes over the processtime

Keywords: recycling, extrusion,rubber

Acknowledgments

The research is carried out within the project Resilient (Rückgewinnung und Recycling von Silikonen und Thermoplasten aus Mehrkomponentenprodukten und -abfällen mit verbesserten neuen Technologien), subsidised by the province of Upper Austria (FTI – upperVISION2030) under the Grant no. Wi-2023-255271.