Influence of particle size and quantity in mechanical recycling of silicone rubber

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Silicone rubber is a widely used elastomer, with a broad range of applications across many industries. Injection mouldable liquid silicone rubbers (LSR) are a type of silicone with high production quantities, and hence production waste generated. Although there are chemical recycling approaches for silicones, mechanical recycling is virtually ignored in research. In our study we investigated a mechanical recycling approach of LSRs by introducing ground particles as filler into matrix LSR material (**Figure 1**). We examined the influence of Shore A hardness, degree of shredding, and amount of filler used. Our results reveal good mechanical properties, close to those of the original materials. Even if there are still obstacles to overcome in industrial processes, our study could encourage to consider mechanical recycling of production scraps also for silicones as contribution to waste reduction.

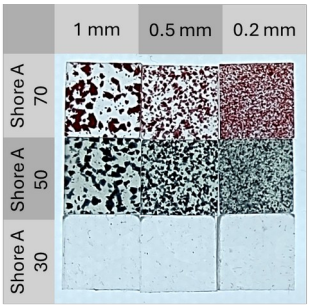

Figure 1: Silicone rubbers of three different Shore A hardnesses filled with 10 wt.% of milled silicone particles.

Keywords: mechanical recycling, liquid silicone rubber, silicone grinding

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