



**PUReSmart**

**PolyUrethane Recycling Towards  
a Smart Circular Economy**

# Deliverable

**D4.2 First CAPU elastomer showing foamability *via* the scCO<sub>2</sub> technique**

**WP4 – Smart Design**

### Project Information

<b>Grant Agreement n°</b>	814543
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## Publishable Summary

The PReSmart consortium aims to develop a new reprocessing technology targeting to recycle polymer foams back to foams, ideally usable in the same type of applications. This deliverable report comprises the results of the re-foaming tests performed on various PU-based elastomers. The most remarkable results, allowing to reach a proof-of-concept for the refoaming and to fulfil this deliverable, were obtained with a preliminary triazolinedione (TAD)/Indole-based covalent adaptable polyurethane (CAPU) elastomer made at UGent.

Additionally, some experiments were also performed on more standard PU matrices in order to build some knowledge with the technique and to have reference samples. In each case, preliminary compatibility studies of the samples with the foaming technique were conducted, and characterisation of the PU samples before and after foaming was performed in order to identify any non-desired modification or degradation of the samples.

More experiments and investigation are still needed to determine the rules and conditions that allow the reprocessing of any type of CAPU material. However, it is important to mention that the foaming technique of interest was now demonstrated as a promising way for the refoaming of polyurethane-based polymers.