



PUReSmart

**PolyUrethane Recycling Towards
a Smart Circular Economy**

Deliverable

D3.2 Procedure for successful split phase chemolysis process on 0.5 kg – 5 kg foam scale, and provision of upper phase samples for lab scale tests

WP3 – Smart Chemolysis

Project Information

Grant Agreement n°	814543
Dates	1st January 2019 – 31st December 2022

PROPRIETARY RIGHTS STATEMENT

This document contains information, which is proprietary to the PURESMT Consortium.
Neither this document nor the information contained herein shall be used, duplicated
or communicated by any means to any third party, in whole or in parts, except
with prior written consent of the PURESMT consortium.

This project has received funding from the European Union’s Horizon 2020 research and innovation program under grant agreement No 814543.
The PUReSmart project results presented reflect only the author's view. The Commission is not responsible for any use that may be made of the information it contains.
PUReSmart RESTRICTED - Under Consortium Agreement, Confidential until Oct 1st 2026.



Publishable Summary

This deliverable aims to scale the PU chemolysis procedure developed at 400 g scale in task 3.1 to intermediate scale (0.5 – 5 kg PU foam) and provide chemolysis product, both lab and pilot scale volumes, of the upper phase (recycled polyol), that will be used for PU foaming by REC in task 3.3, and bottom phase, that will be valorised at Covestro.

To address these aims a 2L and 20 L chemolysis reactors to treat about 0.5 and up to 5 kg of PU foam per batch, respectively, were used.

The lab scale reactions in the 2L reactor allowed to detect some drawbacks or difficulties such as the foam feeding and dissolution in the alcoholysis agent when working at high volume that were considered for the pilot plant redesign.

The results at pilot plant scale, reached an upper phase polyol content of 82% directly after the alcoholysis reaction and a content of 94% by further extraction. Besides, the polyol recovery is about 98%, target value of the deliverable. Thus, the lab scale process has been successfully scaled to intermediate level and the generated know-how is expected to be useful for the Covestro scaling of the process up to >5 to 700kg of foam

On the other hand, different samples of upper and bottom alcoholysis phases from lab and pilot plant scales (20 kg of total mass) were sent to Recticel and Covestro in order to complete the characterization for foaming of the upper phase and further lower phase valorisation. The provision of upper and lower phases can continue according to project necessities.