

# Polyester Polyol Synthesis From Waste PET Bottles And Its Use In Polyurethane Footwear Systems

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# Why PET Bottles?

- **1.1 million PET bottles** are consumed every minute worldwide
- Typical recycling processes often result in downcycling, ie in products that are less suitable for high-performance applications

**The main scope of the project** is depolymerization of PET bottle scraps by glycolysis and controlled synthesis of a hydroxyl terminated polymer (**PET ~20% w/w**) in one-pot. Obtained polyester polyol will be used in a thermoset polyurethane slipper system.



# Why Microcellular PU Slipper?



## Environmentally friendly

(Lower Carbon Emission and Circular Economy)



## Cost advantage



## Alternative feedstock

(Lesser consumption of Adipic Acid and MDI)

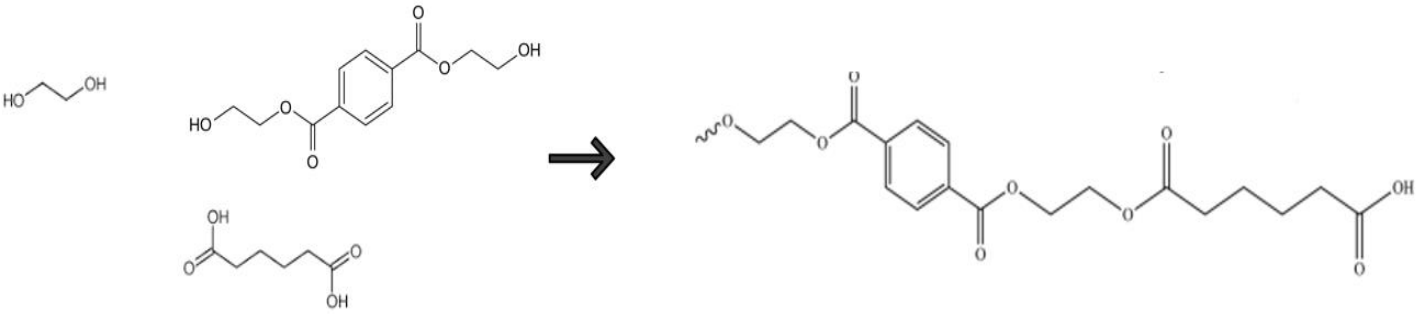
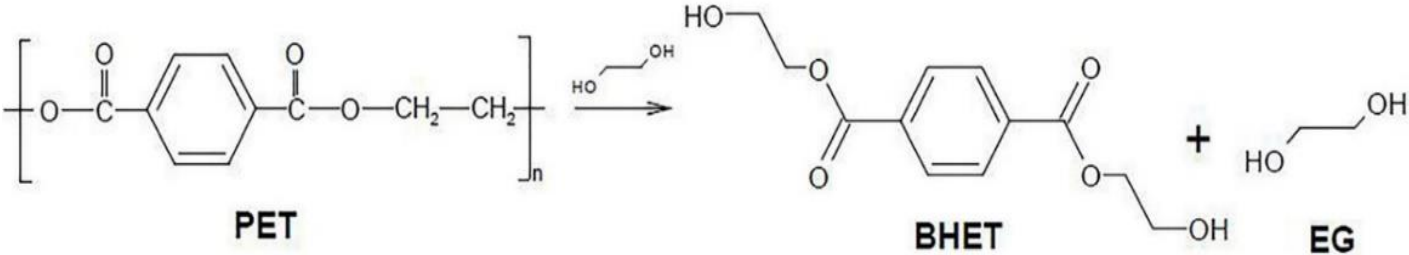


## Performance

(Surface Appearance, Hardness)

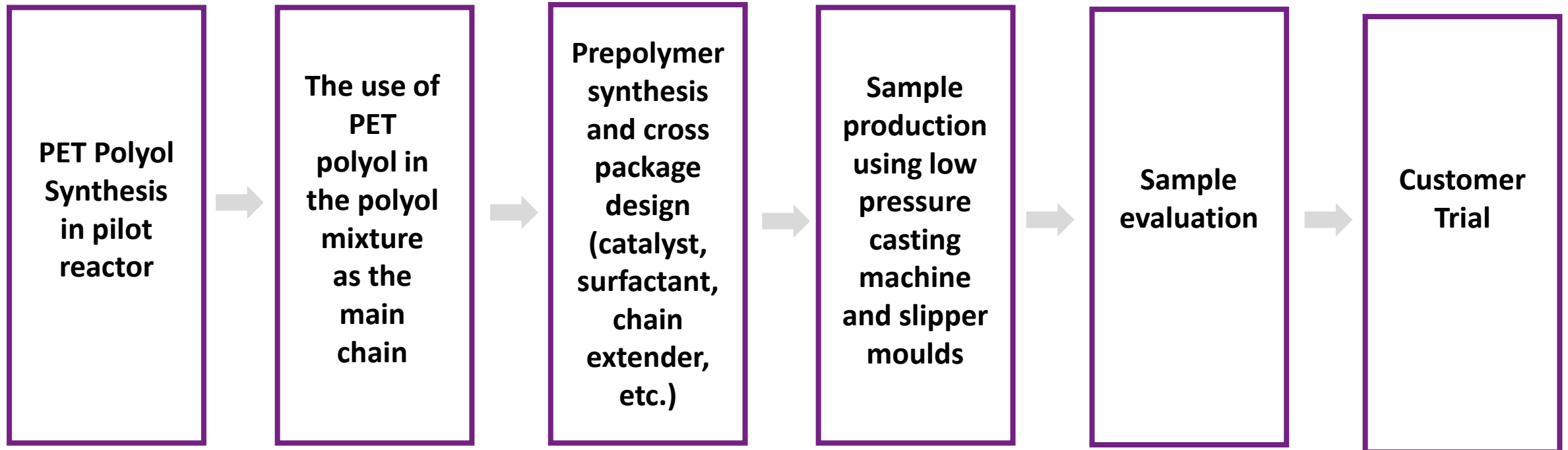
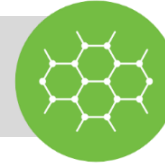


# Polyester Polyol Synthesis



# PU System Design

3 component system: Polyol Mixture (A), Prepolymer (B), Cross Package (C)



# Final Product



Test	Unit	Value	Method
Moulded Density	kg/m <sup>3</sup>	290	ISO 845
Hardness	ShA	60	DIN ISO 7619 -1

# Thank you for your attention!



For your questions: [inan.sahin@kimpur.com](mailto:inan.sahin@kimpur.com)



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