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# SUSTAINABLE POLYURETHANES: REACTIVITY STUDY AND CHALLENGES OF CYCLIC CARBONATES

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**Polyurethane is currently one of the most commonly used polymers worldwide for various applications such as rigid and flexible foams, coatings, elastomers, adhesives and sealants. However, isocyanate precursors are very harmful at each stages of the life cycle of the polymers. Hence, in recent years, intensive research and development were carried out for the design of isocyanate free polyurethanes from reaction between five-membered cyclic carbonates and amines which yields polyhydroxyurethanes (PHU). Nevertheless, this reaction presents a drawback: the low reactivity of cyclic carbonate aminolysis. Firstly, our works intended to propose comprehensive reactivity studies, in order to determine the influence of the structure of reactants. Secondly, we proposed innovative solutions to allow room temperature elaboration of a range of PHU materials, foams and hybrid PHU-epoxy with increased adhesion properties to meet thermo-mechanical properties required by potential applications.**

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