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Rheological properties, oxidative and thermal stability, and potential application of biopolyols prepared via two-step process from crude glycerol

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1 **Rheological properties, oxidative and thermal stability, and potential application of**
2 **biopolyols prepared via two-step process from crude glycerol**

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15 **Abstract**

16 In this work, previously synthesized biopolyols were analyzed in terms of their rheological
17 and thermal properties, very important from the technological point of view. For better
18 evaluation of performed synthesis, the influence of its time and temperature on the properties
19 of biopolyols was determined. In the end, obtained materials were used to prepare rigid
20 polyurethane-polyisocyanurate (PUR-PIR) foams, to evaluate their potential application in
21 polymer technology. Presented results fully justified conducting of synthesis in two steps.
22 Biopolyols obtained after second step of synthesis were characterized by two times lower
23 viscosity than polyglycerols resulting from first step. Moreover, their thermal and oxidative
24 stability was noticeably higher and enabled their effective incorporation into manufacturing of
25 PUR-PIR foams. Spectroscopic and microscopic analysis confirmed that foams were

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