

Static and dynamic comfort properties of polyurethane foams including a flexible amine crosslinker

최현준, 김정현[†]

서울시립대학교

(j hkimad@uos.ac.kr[†])

Flexible polyurethane (PU) foams are widely used in various automobile products for seat cushioning, sound absorbing, and heat insulating purposes. The PU foams were fabricated by applying hydroxyl and amine types of crosslinking agents in order to examine the comfort properties. The bis(hexamethylene)triamine (BHMTA) crosslinker produced the largest cell and pore sizes due to the highest drainage flow rate, but the diethylenetriamine (DETA) crosslinker led to the smallest sizes due to the increased reactivity and hydrogen bonding. The cell wall area ratio resulted in the highest with the DETA and the lowest with the BHMTA, and this cell wall area has a strong relation with the hysteresis loss (low with BHMTA vs. high with DETA). The sag factor was the highest with the BHMTA due to the lowest stress value at 25% strain. The vibration transmissibility was the lowest with the BHMTA crosslinker due to the lowest cell wall area ratio. Therefore, it is critical to choose a proper crosslinking agent in fabrications of the flexible PU foams for superior static and dynamic comfort properties.