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(71) Applicant: **SIMULA, INC.** [US/US]; 2625 South Plaza Drive, Suite 100, Tempe, AZ 85282 (US).

(72) Inventor: **SLAGEL, Edwin, C.**; 10920 Sieno Place, Avondale, AZ 85323 (US).

(74) Agents: **GOTTS, Lawrence, J.** et al.; Shaw Pittman LLP, 1650 Tysons Boulevard, McLean, VA 22102-4859 (US).

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(54) Title: IMPACT RESISTANT POLYURETHANE AND METHOD OF MANUFACTURE THEREOF

(57) Abstract: The present invention is an optically clear, high hardness, impact resistant polyurethane comprising the reaction product of: (a) a polyurethane prepolymer prepared by reaction of an aliphatic or cycloaliphatic diisocyanate with (i) at least one OH-containing intermediate having a molecular weight of 400 to 2000 selected from polyester glycols, polycaprolactone glycols, polyether glycols, polycarbonate glycols, and mixtures thereof, and (ii) a triol, in an equivalent ratio of 2.5 to 4.0 NCO/1.0 OH; and (b) at least one aromatic diamine curing agent selected from 2,4-diamino-3,5-diethyl-toluene, 2,6-diamino-3,5-diethyl-toluene, and mixtures thereof in an equivalent ratio of about 0.85 to 1.02 NH<sub>2</sub>/1.0 NCO. The polyurethane provides exceptionally high heat distortion temperatures and excellent chemical resistance. The invention is particularly useful for transparency applications that require excellent impact resistance coupled with high heat distortion temperatures, such as architectural glazings, vehicles, glazings, riot shields, aircraft canopies, face masks, visors, ophthalmic and sun lenses, protective eyewear, and transparent armor.



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