Vibratory superpolishing of a ti alloy aerospace material with thermally treated recycled glass media

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This paper reports on the outcomes of an investigation concerned with the machining performance of thermally treated recycled glass in the vibratory mass finishing process. The surface finish generated with the glass is compared to that achieved using conventional polyester bonded media under different lubrication conditions. To help understand the wear behavior of the glass, measurements of the surface topography were obtained at intervals throughout the tool life, using a replication method. A further series of tests were undertaken to establish self-attrition rates. It has been demonstrated that the machining performance of recycled glass media is comparable to that of conventional media in respect of surface finish (Ra), brightness cycle time, self-attrition rate and tool life. This innovative work provides strong promise for the introduction of this new media into the abrasives marketplace for polishing, superpolishing and superfinishing of engineering materials.

Keywords: Superpolishing, Abrasives, Glass, Recycling, vibratory mass finishing

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