

INTISARI

Stereolithography adalah bentuk teknologi pencetakan 3D yang digunakan untuk membuat model, prototipe, pola, dan bagian produksi lapis demi lapis menggunakan metode fotokimia. Proses di mana cahaya menyebabkan monomer dan oligomer kimia saling berikatan membentuk polimer. Dalam penelitian ini, penulis membahas tentang proses manufaktur dan karakteristik kekuatan tarik dan kekerasan dari 18 spesimen yang dibuat dengan 3D *print stereolithography* (SLA) dengan penguat *glass powder*. Terdapat dua buah desain yang akan diteliti masing – masing desain memiliki sembilan spesimen. Dari sembilan spesimen tersebut, setiap spesimen memiliki kadar *glass powder* yang berbeda mulai dari 0%, 1%, 2%, 3%, 4%, 5%, 10%, 15%, dan 25%, proses pencampuran resin dengan *glass powder* menggunakan *magnetic stir*. Spesimen yang telah dibuat dari masing-masing desain kemudian dibandingkan dengan melakukan pengujian tarik dan kekerasan. Hasil penelitian menunjukkan bahwa proses pencampuran resin dengan *glass powder* pada setiap desain dengan persentase yang semakin tinggi yaitu 25% *glass powder* meningkatkan kekuatan tarik dan kekerasan. Penambahan *glass powder* membuat material menjadi getas.

Kata kunci: *Stereolithography, 3D printing, Resin, Glass powder, Tensile strength, Hardness test.*

ABSTRACT

Stereolithography is a form of 3D printing technology used to create models, prototypes, patterns and production parts layer by layer using photochemical methods. Process in which light causes monomers and oligomers to chemically bond together to form polymers. In this study, the authors discuss the manufacturing process and the tensile strength and hardness characteristics of 18 specimens made by 3D print stereolithography (SLA) with glass powder reinforcement. There were two designs studied, each design having nine specimens. Of the nine specimens, each specimen has a different glass powder content starting from 0%, 1%, 2%, 3%, 4%, 5%, 10%, 15%, and 25%, the process of mixing the resin with glass powder uses magnetic stir. Specimens that have been made from each design are then compared by carrying out tensile and hardness tests. The results showed that the process of mixing resin with glass powder in each design with a higher proportion of 25% glass powder increased the tensile strength and hardness. The addition of glass powder makes material becomes brittle.

Keywords: *Stereolithography, 3D printing, Resin, Glass powder, Tensile strength, Hardness test.*