

REQUEST FOR REFERENCES
U.S. PATENT APP. NO. 13/043,876:
BUILD MATERIALS AND APPLICATIONS THEREOF

I. BASIC APPLICATION DATA:

- a. **App Number:** 12/043,876
- b. **Assignee:** 3D Systems
- c. **Prior Art Cutoff Date:** 3/9/2011
- d. **Availability for Challenge:** Open Until At Least 3/13/2013

II. APPLICATION OVERVIEW:

This application claims the use of a chemically-curable build material for use in fused deposition modeling (FDM) 3D printing. The material is extruded and cooled like in regular FDM, but is then cured to further solidify the printed object. This curing may occur layer-by-layer, after the whole object has been printed, or in some combination thereof. While this application claims all types of chemical curing, the specification only describes curing initiated via ultraviolet light. Additionally, the specification only mentions olefin-bearing oligomers (more specifically acrylates) as the main structural ingredient of the claimed build material.

III. WHY IT MATTERS:

Rigidity of final objects is important for FDM 3D printing. This application reflects a method of achieving rigidity that can readily be implemented by the hobbyist community and the chemistry claimed in the application has been known to the materials science community for decades. Given that post-mold curing of acrylic plastics has been performed before, it is obvious to translate that process to 3D printing.

IV. INDEPENDENT CLAIMS & REFERENCES NEEDED:

a. **Claim 1:**

A build material for use in a three-dimensional printing system comprising:

an oligomeric curable material;

a reactive component that is solid at about 25°C; and

at least one diluent,

wherein the reactive component comprises at least one chemical moiety that is polymerizable with a chemical moiety contained in the oligomeric curable material and/or the at least one diluent.

This claim, which references the build material itself, is *extremely* broad and will likely be narrowed in prosecution to better reflect the specification's lack of any curing techniques not involving UV light. **Accordingly, references that describe the use of UV-light to cure plastic objects in the solid state (i.e. not as a liquid or gel) would be the most helpful here. That said, references showing other types of chemical curing (e.g. air-oxidation, non-melting heat, etc.) would also be helpful in making sure the claim's scope is limited to UV light only. The best prior art would include every element of the claim, used in the context of 3D printing.**

b. Claim 35:

A composition comprising: a three-dimensionally printed article comprising a build material, the build material comprising

an oligomeric curable material,

a reactive component that is solid at 25°C, and

at least one diluent,

wherein the reactive component comprises at least one chemical moiety that is polymerizable with a chemical moiety contained in the oligomeric curable material and/or the at least one diluent.

This claim is directed towards the *final objects* obtained using the build material outlined in Claim 1. Because this claim is of similar scope to Claim 1, the same types of references needed there would be appropriate for Claim 35.