

10½” Granite puzzle cube



Part 1. INTRODUCTION

1a. Disclaimer

These plans will outline the construction process I used to build my 10.5" granite inlaid cube. These instructions were compiled after the completion of the project, so the images shown in this manual are not of the actual building process, but rather they were reproduced later for illustrative purposes. Please note that I am taking no credit for the design or workings of this puzzle.

These plans are sold "as is" with no guarantee of success. **This is a difficult project that is intended for intermediate to experienced builders with the proper tools** (see Part 1b. Tools). I go into enough detail to allow an intermediate to experienced woodworker to accomplish this project. I assume the builder has a good understanding of woodworking and can interpret the plans without complete step-by-step instructions. Detailed text and photographs are provided for clarity of the key steps.

As with any woodworking project, there is a chance of bodily harm from working with dangerous equipment. All the methods described in this manual are for informational purposes only and I assume no responsibility for bodily harm as the result of following any of the suggested techniques. **Woodworking is inherently dangerous and it is always up to the builder to ensure that their equipment is functioning properly, and they feel comfortable performing the outlined tasks. Safety equipment should always be worn, and all necessary precautions should always be taken.**

1b. Tools

Below are the tools that I used while building my cube. Although there are many ways of performing the same task, I will only describe the methods and techniques that I used. It is assumed that if you are attempting this project you have some sort of a woodworking shop equipped with basics such as clamps and squares, so I'm not including those on this list.

- Table saw with an **8" stack dado blade set** (This is essential for this project. Avoid a cheap wobble dado and get a stack dado set you can use afterwards.)
- Miter saw (or a finely tuned radial arm saw)
- Band saw (or hand held jig saw)
- Router with the following bits
 - flush trim bit with guide bearing
 - 1/4" radius round over
- Tile **wet** saw (should be easy to rent)
- lathe (not required, but helpful. I did not have one...)
- Drill press and drill bits
 - 1 1/4" and 2" are the only two that you may not already have.
- Planer (this tool is not needed if you can get 3/4" lumber, i.e. many hardware stores sell pre dimensioned lumber)

Note: If you choose to not use granite inlay, the project time decreases dramatically, and the tile saw is not required. An easier alternative would be to simply paint the cube the appropriate colors. This saves a lot of time, and should be considered by the less experienced builder.

1c. Materials

This is when you get to choose what your cube will look like. My cube was constructed out of hard maple; however a darker wood (such as walnut or even ebony) would be beautiful as well. If you decide to go with a more expensive wood, be sure to practice some of the steps before you start!

ITEM.....Quantity

- 1) **Hardwood of your choice.....7 board feet (maybe get 9-10 to be safe)**
 - 4/4 lumber will need to be planed to $\frac{3}{4}$ "
 - If you plan to paint the cube I would recommend poplar for cost and workability.
- 2) **$\frac{3}{4}$ " high grade plywood.....1-2x4' sheet to start**
 - Use high quality "cabinet grade" plywood. **Do not use pine plywood** (such as that used for house sheathing) as this will make a mess! You will not need a full 4x8 sheet. Many home improvement stores (Lowe's, Home Depot) will sell smaller 2x4 sheets. If you would prefer, you can substitute $\frac{3}{4}$ " hardwood for the plywood. I chose to use plywood for cost and ease since it will not be visible.
- 3) **$\frac{1}{2}$ " Dowel rod.....25" at bare minimum**
 - It is imperative that the rod be as straight as possible. To check for straightness roll the rod on a flat surface at time of purchase. **NOTE: $\frac{1}{2}$ " dowel rods do not have an exact $\frac{1}{2}$ " diameter.**
- 4) **Small bar magnets (I used $\frac{1}{4}$ "x $\frac{1}{4}$ "x $\frac{3}{4}$ ").....24**
- 5) **$\frac{1}{2}$ " Flange washers.....6**
- 6) **Springs (I used $\frac{1}{2}$ " long, $\frac{1}{4}$ " diameter).....3**
 - should be pretty strong, I'd say to hold about 20 lbs.
 - see part 3b. Item #3
- 7) **Glue.....1 each**
 - Wood glue (I prefer Titebond original)
 - 5-minute epoxy
 - Super glue (cyanoacrylate) with activator spray
- 8) **Granite (or other) Tiles.....6 + spares**
 - Most suppliers only want to sell you tiles in packs of 10. Many online tile companies allow you to purchase single tiles from them as samples. **Make sure the samples are for 12"x12" tiles or else you will not have enough!**
 - I would wait to try to get your tiles until you have a working cube.** If the project turns out to be too much of a pain, you will have saved yourself a bunch of time. The good news is that the materials are very cheap, and if you decide to quit the project, you will not be out much more than the time you invested in it.
 - Here are the colors I used. I don't remember which suppliers I got them from.**
 - Tropical green, Imperial red, Blue pearl, imperial white, Cashmere gold, Golden yellow
 - (Blue Bahia is beautiful if you can get it!)