



DI Tool Time

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Using Corrugated

Corrugated is the correct term to use for the material typically used by most DI teams. Corrugated is the material that appliance boxes are constructed with. Most teams use the term cardboard for this material. Cardboard is what your cereal box is made of. I make this distinction because many years ago we contacted a company that makes boxes and asked if they could donate a few sheets of large cardboard for our team to use. They pointed out that they do not make cardboard but would be more than happy to donate some corrugated to us. Since they seemed sensitive to this we have been very careful to use their preferred name when we have called them again.

General hints about using corrugated.

- Corrugated gets its strength from the wavy piece of cardboard that is sandwiched in the middle of the sheet. When this is crushed the corrugated loses its strength. If you wish for the corrugated to maintain its strength is very important that you avoid crushing this "corrugated" center piece while working with the corrugated. Knees are probably the worst offender. Putting a knee into the corrugated will crush the material and weaken it at that point. When working with large sheets of corrugated it is very difficult to keep from having to get onto the corrugated. We always have several large pieces of 1/2" or 3/4" plywood laying around and would use it to work in the middle of a piece of corrugated. 2' x 2' pieces seem to be adequate to distribute the load. Larger pieces will also work but are more difficult to maneuver. Dropping the corner of a piece of plywood into the corrugated will tear the outer covering and weaken the corrugated even more. Place the plywood on the corrugated and team members can sit or kneel on the plywood while they are working in the middle of the sheet of corrugated.
- Another thing you should do to protect the corrugated when working with corrugated in your driveway or garage is to sweep the floor before laying it out. Little pieces of rock, screws or other items can poke into the corrugated thus reducing its strength.
- Wood glue works well for gluing sheets of corrugated together. You can mix wood glue at a ratio of 2 parts glue to one part water and get a mixture that is easier to spread with a brush. You must work quickly to keep it from drying out. The paper covering or corrugated absorbs the moisture from the glue and can dry it out before you place your pieces together. When you glue corrugated you need to cover the entire area with a piece of wood and add weight to it until it has time to dry. This may take as long as 30 minutes. You can use paint cans, tool boxes or wood for the weight. Keeping it weighted serves two purposes. It helps the glue to bond but also helps control the tendency of the corrugated to warp as the glue dries. Since I have always done the structure challenge I use the weights for testing our structure to weight down the wood covering the corrugated.



- If you need corrugated that is extra strong you can glue two pieces of corrugated together. Glue the two pieces of corrugated together with the center ribs perpendicular to each other. Make sure you get a good coat of glue over the entire surface you are gluing and that you completely cover the pieces with plywood and weight it down.

Cutting Corrugated

- There are several ways that you can cut corrugated. You should be extra careful when using any type of exposed blade tool to cut corrugated because it is very easy to cut your hand or fingers with the exposed blade. Team Managers whose teams have a need to cut a lot of corrugated may want to invest in a

Using a utility knife to cut corrugated

- Using a utility knife (see hand tools section) is one of the quickest ways to cut corrugated. However, it can also be one of the most dangerous if you are not careful because you are using a very sharp blade. Your team manager may tell you that you cannot cut corrugated with a utility knife if they do not think you can do so carefully.
- It is also helpful if you can work on top of a piece of hardboard or something similar. Having hardboard is a must if you are working in your house. Otherwise as you cut the corrugated you will also be cutting up the floor underneath. You can skip the hardboard when you are working on your driveway but your utility knife blade will dull quicker as the point digs into concrete while you are cutting. Mark your cut lines on the corrugated and remember to protect the corrugated from your knees if you are working on the ground.
- Team Managers may also want to invest in a Woodworkers Safety Glove for teams to use when they are working with a Utility Knife. These gloves do not provide 100% protection for hands but they can keep the occasional slip for cutting into a Team Members hand.



Using a serrated bread knife

- A serrated bread knife works well for cutting corrugated. Use it in a sawing motion with the corrugated laying over the edge of a table or other work surface. This is a slightly safer method than using a utility knife but the cut line is not as clean and team members can still cut their hands if they are not careful.

Using a Jig Saw

- You can find blades for jig saws that have extremely fine tooth patterns. A blade with a fine tooth works great for cutting corrugated. I have personally never used a jigsaw for cutting corrugated but several years ago my sister used it when she was making a piece of furniture out of corrugated ([see Wiggle Chair](#)). She had to cut multiple pieces the same shape and stacked up the corrugated and used a jigsaw to cut through many layers at once.

Folding and shaping corrugated

- When constructing things you may find that you need to fold corrugated. Folding corrugated can be a little tricky but if done correctly you can keep most of the strength of the corrugated. When possible, try to make the fold line follow the "corrugated" cells of the corrugated. It will fold much easier. Mark the line where you wish to fold. Then very carefully cut a small "vee" along this line making sure that you do not cut through the paper on the other side. Remember to avoid crushing the cells of the corrugated when working on it. The vee doesn't need to be much more than 1/8" to 3/16" wide on the top moving to the vee point at the bottom surface. The cut line should be on the inside of the fold. The uncut outer layer helps hold the integrity of the construction. If that is too tedious for you you can accomplish almost the same thing by scoring a line down the cut line and just folding on the score. It will not fold as neatly but it may suffice for what you

are trying to accomplish. *(Check back later for a video demonstrating how to do this.)*

Painting Corrugated

- Painting corrugated can be tricky. When you paint corrugated the paper on the top tends to shrink which makes the corrugated warp. If you intend to mount the corrugated to a frame (such as for a backdrop) you should wait until you have attached the corrugated to the frame before painting. This will help control the warping. If you are not attaching the corrugated to a frame then you should place weights on the outside edges of the corrugated and leave the weights in place until the paint is dry. You can use pieces of wood, vegetable cans (with the vegetables still in them), paint cans and the like. On large pieces you may need to add several weights into the middle of the corrugated. You can put it on top of the painted surface. You may have to touch up the paint later but this is an improvement on trying to straighten out a severely warped piece of corrugated.

Attaching corrugated to wood (as for a backdrop)

- I have almost exclusively used corrugated attached to wooden frames for my team's backdrops. There are some issues you have to address when trying to attach corrugated to a wooden frame.
- The quickest method is to use a staple gun to staple the corrugated to the wood. However there are issues with this attachment method. Staples tend to pull through the corrugated and you end up with your corrugated no longer attached and the staple stuck into the wood. You can solve this problem by taping a 1 to 2 in width of duct tape all the way around the edge of the corrugated before stapling. The duct tape keeps the staple from pulling through. If you use black duct tape it actually helps the appearance of your backdrop by "framing" your picture in black which helps (IMO) its visibility.
- I also prefer to glue the corrugated to the wood but this is not necessary.
- Another method is to just use tape and tape the corrugated to the wooden frame by taping over the edge of the corrugated to the side edge of the wooden frame. This is quicker but not as secure as stapling. Duct tape tends to release from wood at the worst possible times.
- In certain cases I have used short screws inserted through small washers to attach corrugated to a backdrop. This allows for easier removal of the corrugated should it be necessary. It helps to use the duct tape edge banding if you try this method. You also want to adjust the torque setting on your drill so that (hopefully) your drill stops before you completely crush the corrugated with the washer and screw.

