

Tilth Alliance Off-the-Shelf Worm Bin



Follow these instructions to make an easy to use indoor worm bin, perfect for 1-2 people!

Assembling the Worm Bin

Install Vents and Drainage Holes

1. Use bin #2 – refer to illustration on page 4.
2. Before drilling holes, make an indentation with the point of the 1" drill bit to help guide the drill.
3. Turn the bin upside down and drill twenty $\frac{1}{4}$ " holes in the bottom of the bin for drainage. Be sure to drill in the areas of the bottom that are lowest when it's upright. Using the drill, remove any plastic residue from the holes so they are clean and free of plastic curls.
4. Turn the bin on its side and drill five 1" holes for the louvered vents along the upper edge. Locate the holes $1\frac{1}{4}$ " from the top edge, spacing each hole about 3" apart.
5. *Note: When drilling holes for the louvers, drill straight through the bin one time only. Pushing the drill through multiple times will make the holes too large and the vents will not be secure.*
6. Repeat the process on the opposite side of the bin.
7. Finish by inserting the 1" louvered vents into the holes from the outside of the bin.
8. Make sure the vents are flush with the outside wall.

Materials

Purchase these items at a lumber yard:

- Ten 1" metal screened louvered vents
- Two 2" metal screened louvered vents

Purchase these items at a hardware or garden store:

- 2 solid color Rubbermaid type bins at least 14" deep
- 1 - O-ring hose washer (shaped like a doughnut)
- 1 - $\frac{3}{4}$ " x $\frac{1}{2}$ " metal male hose adapter
- 1 - metal hose shut-off valve, straight as per drawing, not the bent-spigot type
- Teflon plumbers tape

Note: A bin approximately 1 foot wide by $1\frac{1}{2}$ feet long will process $1\frac{1}{2}$ lbs. of food per week.

Install A Straight Shut Off Valve on Bin #1:

Note: Bent spigots will be too long.

1. Drill a 1" hole at the center of one end sidewall, $\frac{1}{2}$ " from the bottom. To prevent leaks, make sure the shut-off valve hole is located on the flat surface of the sidewall, not on the curved area.
2. Stretch and push the O-ring onto the threaded end of the male hose adapter.
3. Make sure the O-ring is in the groove all the way to the end of the male hose adapter.
4. Wrap the threaded end of the male hose adapter with Teflon plumber's tape to prevent leakage. Protect the shut-off valve from being hit or damaged to prevent leakage.
5. From the inside of the bin, place the male hose adapter through the 1" center hole.

Tools

- Drill motor
- $\frac{1}{4}$ " drill bit (regular)
- 1" drill bit (flat blade type or hole saw)
- 2" drill bit (hole saw)
- Measuring tape

- From the outside of the bin, screw the shut-off valve onto the male hose adapter tightly. Hand tightening is sufficient to prevent leaks when an O-ring is used. The valve control knob should be on the top side of the shut-off valve for easy use. Always keep the valve in the closed position.

Lid #2: Install Screened Louvered Vents

- Take the lid from bin #2 and place on top of bin #2.
- Mark two locations on the lid for the 2" louvered vents.
- Carefully drill the 2" hole using the 2" hole saw bit.
- Clean off any plastic residue or curls.
- Insert the 2" louvers from outside the lid through the holes.
- Assemble the bin according to the illustration, stacking bin #2 inside bin #1.

Lid #1: Drip Tray

Use lid #1 upside down as a drip tray under the bins, carefully positioning the lid under the shut-off valve.

Off-the-Shelf Worm Bin Tips

Prepare bedding in another container and transfer to the bin.

This can be done in a 5-gallon bucket in small batches. Mix the bedding outdoors or in your shower since it can be messy. To moisten paper, rip into pieces, dunk into water and shake out excess water before placing in the bin. Wood shavings should be soaked overnight first to insure that they take up the water.

Lid #2: The Bin Cover

Place bin #2 inside bin #1.

Cover the bins with lid #2 which has the vents. Do not snap the lid shut! Lay it loosely on top of the bin so the worms don't run out of air.

Using leaves will introduce more crawling critters into your bin. This is ideal since they are decomposers and can help speed up the creation of compost. Using paper and wood shavings will mean fewer crawling critters in your bin.

Do not block the louvered vents with bedding. Your worms need air!

Add food scraps by burying your food in the bedding. Do not overload your bin. Use this formula to figure the quantity of food your bin can handle: $\text{Width}' \times \text{length}' = \text{sq. ft. of bin} = \text{lbs. of food per week}$. For example, a bin that measures 1 ft. wide by 1½ feet long will handle about 1½ lbs. food per week.

Every 4-6 times you bury food, choose a different location. Avoid disturbing all the bedding when burying food. If all the bedding is mixed or stirred it might overheat the worms.

Drain compost tea liquid often. Pick up both bins and move side-to-side. A sloshing sound means you need to drain the liquid. Check it daily after adding new bedding, then less often later. To drain, tip the bins toward the valve, open valve and drain liquid into a container or bucket. Use the compost liquid for your houseplants or outdoor plants. If the liquid smells foul, like very rotten food, it is not healthy for your plants, so flush the liquid

down the toilet.

Add fresh bedding to your bin as materials decompose. You need to be able to bury food scraps under fresh bedding, so add more fresh bedding on top as the existing bedding decomposes.

Harvesting

Harvest the compost when the bin material looks brown and crumbly (like coffee grounds) and smells like the forest floor. To harvest compost, your Tilth Alliance Off-the-Shelf Worm Bin will need to be emptied and re-bedded.

First, drain any liquid. Lift the interior bin #2 out of the exterior bin #1. Rinse out bin #1, flush valve with water and set bin #1 aside. Next, remove visible food scraps from bin #2 and set food aside. Lay down plastic sheeting and dump out the contents of bin #2 in a pile on the plastic. Then separate the worms from the bedding. The worms will avoid light and burrow down into the compost. You can remove the 3" top layer of compost without getting worms. Repeat the process, removing a 3" compost layer every 5–10 minutes. You will have a little compost and a pile of worms. Finally, re-bed bin #2. Add worm/compost pile to bin #2 and reassemble bins. Add the food scraps that you put aside. You may want to put the finished compost into another container to age for a month or so before using it in your houseplants or outdoor containers.

Problem Solving

Fruit flies can be prevented by laying a piece of cardboard over the top of the bedding, inside the bin. This breaks their life cycle, since they don't like to lay their eggs on the smooth surface. Be sure that food scraps are buried beneath the bedding. Existing fruit flies can be sucked up with a vacuum cleaner. Also be sure to wash your food scrap collection bucket and your kitchen counter often with soap and water.

Fungus gnats can be attracted to moist organic matter found in worm bins. They don't respond to the same fruit fly techniques listed above, but they can be trapped with a sticky trap made for gnats. Attach sticky trap tape to a piece of cardboard and place on top of the bedding, inside the bin. If fungus gnats get into houseplants, you can let the soil dry out before watering and scratch the soil surface to disturb their life cycle.

Worm death could be the result of these conditions:

- Bedding is too dry—no moisture for the worms. It should be moist like a wrung out sponge.
- Too much water—they drown. Use the valve to drain the liquid often. A layer of coconut coir or coarse wood shavings at the bottom of the bedding in bin #2 can help absorb excess moisture.
- Too little air—they suffocate. Keep the bedding fluffy, air vents clear and the lid unsnapped and loose.
- Too much acid is toxic and burns worm's delicate skin, so avoid adding too many citrus foods.
- Digging in the bin too much will cause the food and bedding to heat up and might kill the worms.
- Remember to continue to add fresh bedding to the top of your bin, as the existing bedding begins to decompose so the worms have a cool layer to escape heat.
- Harvest the compost when it is ready, as the worm's castings are toxic to the worms.

