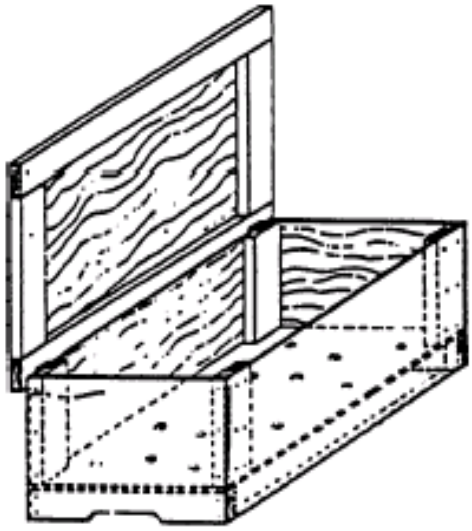
Missouri Department of Natural Resources

Worm Composting Bin

Solid Waste Management Program fact sheet 6/2006

Worms can compost garbage faster than any other type of composting method. Worms also are veryefficient in digesting kitchen food wastes. Each day a worm eats half its weight in food. The care and feeding of worms take far less effort than maintaining an outdoor compost pile. Some of the realized benefits of keeping a worm bin include recycling kitchen food waste, reducing waste disposal costs, producing soil amendments or fertilizer for house and garden plants and having a ready supply of fishing worms.



A worm bin is a self contained system. As with any system, several components are involved. This system is composed of a box to contain the worms (a description of how to build a worm bin follows on the next page); the worms themselves; a controlled environment; and regular maintenance procedures.

Red worms are the most satisfactory worms to use in a home vermicomposting (composting with worms) system The species of red worm best suited for a worm bin is Eise fet id a." Eisenia Foetida is known by several common names: red worm, brandling worm, red wiggler, manure worm and fish worm among others. Starter worms of this species for a worm bin may be found in old compost piles (ones that no longer generate any heat) or from local bait suppliers.

Once the worm bin is constructed, make bedding for the worms with shredded and moistened newspaper or cardboard. Maintain the system by burying food wastes throughout the bin on a rotational basis. Every three to six months, move the compost to one side of the bin and add new bedding to the empty half. The worms will soon move to the new bedding. Harvest the compost and add new bedding to the rest of the bin.

Measure and cut plywood as indicated on drawing A. To make base, cut the 14 foot 2" x 4" into five pieces: two 48" and three 20" long. The remaining 12" piece will be used in making the sides. Nail the 2" x 4"s together on edge with two 16d nails at each joint as illustrated in the diagram. Nail the plywood piece onto the 2"x 4" frame using the 4d nails.

To build the box, cut three 12" pieces from the 16 foot 2" x 4". Place a 12 inch 2" x 4" under the end of each side panel so that the 2" x 4" is flush with the top and side edges of the plywood,

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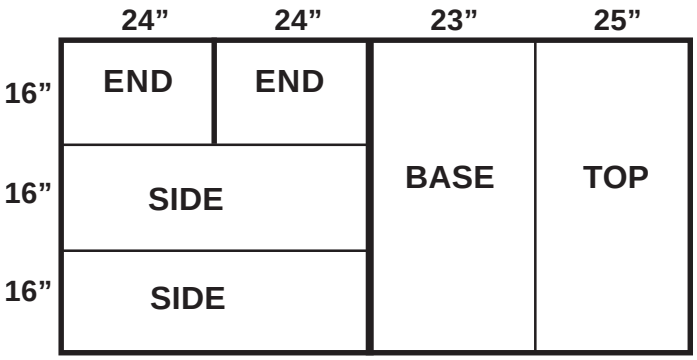
List of Materials		List of Tools
1	4 foot x 8 foot x 1/2” sheet exterior plywood	Tape Measure
1	14 foot construction grade 2”x4”	Skill saw or rip hand saw
1	16 foot construction grade 2”x4”	Hammer
1 lb.	4d galvanized nails	Saw horses
1/4 lb.	16d galvanized nails	Long straight edge or chalk snap line
2	3” door hinges	Screwdriver
Use Eye and Ear Protection!		Chisel
		Wood glue
		Drill with 1/2” nit

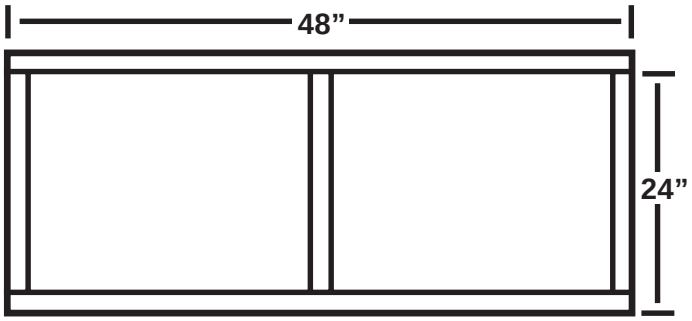
Construction Details

A



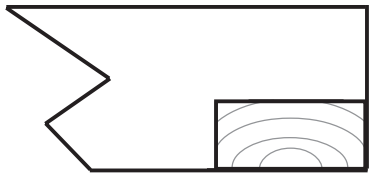
4’ x 8’ SHEET OF 1/2” PLYWOOD

B



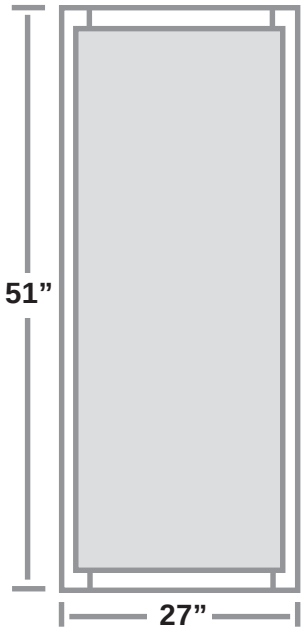
BASE FRAME 2x4s ON EDGE

C



END VIEW OF LAP JOINT

D



TOP LID 2x4 FRAME WITH PLYWOOD COVER

and nail the boards into place. Nail the side pieces onto the base frame. To complete the box, nail the ends onto the base and sides. To reinforce the box, place a nail at least every three inches wherever plywood and 2" x 4"s meet. Drill twelve 1/2" holes through the bottom of the box for drainage.

To build the lid as illustrated in diagram D, cut the remainder of the 16 foot 2" x 4" into two 51" lengths and two 27" pieces. Cut lap joints in the corners (see diagram C), then glue and nail the frame together. Center the plywood onto the 2" x 4" frame and nail with 4d nails. Lay top on the ground with plywood surface touching the ground. Attach hinges to the top and back. Position hinges so the screws go through plywood and 2" x 4"s.

Construction plans courtesy of the Washington State Energy Extension Office, Seattle, WA.

Frequently Asked Questions about Vermicomposting

What kind of worms should be used?
Red worms are the most satisfactory to use in home vermicomposting systems. They process large amounts of organic material in their natural habitats of manure, compost piles or decaying leaves. They reproduce quickly and in confinement.

What do worms eat?
Any vegetable waste generated during food preparation such as potato peelings, grapefruit and orange rinds, cantaloupe and watermelon rinds, outer leaves of cabbage and lettuce. Plate scrapings, spoiled food from the refrigerator, coffee grounds, tea leaves or egg shells are waste that you may want to feed your worms.

Burial of meat is not recommended because decaying meat can produce offensive odors. Mice and rats are more likely to be attracted to worm bins containing meat. Some other things that don't belong are plastic bags, bottle caps, rubber bands, sponges, aluminum foil and glass.

How much do worms eat?
It is recommended that the worm to garbage ratio be 2:1. Worms are usually sold in terms of "pounds" rather than number. Use one pound of worms (about 1,000) to 1/2 pound of daily garbage. An average family of four generates about seven pounds of compostable garbage per week.

To create an environment for the worms to "eat" this much garbage, the worm bin should be equal to one square foot of surface for each pound of garbage per week.

Do worms die in the box?
Worms will die in any home worm bin, but in a properly maintained worm bin, you will rarely see a dead worm.

How long does a worm live?
Most worms probably live and die within the same year. Yet, in culture, Eisenia foetida, the type of worms in this box have been kept as long as four and a half years.

Where can more information about worms be found?
A good general reference about keeping worms is identified below.
Appelhof, Mary. *Worms Eat My Garbage* Kalamazoo, MI: Flower Press; 1982

Earthworm Bibliography

Appelhof, Mary. *Worms Eat My Garbage*. Kalamazoo, MI: Flower Press. 1982. 100p
Goldstein, Jerome. *Recycling*. New York: Schocken Books. 1979. 238p
Henwood, Chris. *Keeping Minibeasts: Earthworms*. London:Franklin Watts. 1988. 29p
Jennings, Terry. *Junior Science: Earthworms*. New York: Gloucester Press. 1988. 24p
Martin, Deborah and Grace Gershuny. *The Rodale Book of Composting*. Emmaus, Pa: Rodale Press. 1992. 278p

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