

Double-Decker Drum Composter

by **iPodGuy** on February 14, 2008

Table of Contents

intro: Double-Decker Drum Composter	2
step 1: Making the frame	2
step 2: Installing the frame	4
step 3: Installing the frame	4
step 4: The barrel poles	5
step 5: The barrels	5
step 6: Tha barrels	6
step 7: The barrels	7
step 8: Using the composter	7
step 9: Optional (but helpful) hint	8
step 10: Summary	8
step 11: User photo gallery	8
Related Instructables	9
Advertisements	10
Customized Instructable T-shirts	10
Comments	10

intro: Double-Decker Drum Composter

Composting is easy and fun. Kitchen scraps, leaves and lawn clippings are allowed to decompose naturally and they become a healthy, nutrient-rich and beneficial soil for the garden.

In this instructable, I will show how I made a spinning double drum composter to make soil for my garden.



step 1: Making the frame

I decided against documenting every step with building the frame, mainly because it's a simple enough design.

The frame consists of 3 pressure treated 4x4's and 1 pressure treated 1x4, all eight feet long. One 4x4 was cut exactly in half and the 1x4 was cut into quarters - they were to become the 2 beams and 4 stakes.

I drilled pilot holes through the posts and into the beam and held them together with galvanized lag bolts. Each of the corners where the beam meets the post got corner braces and the top got flat braces. The braces are meant for extra support, since the barrels may become heavy. The space between the top beam and bottom beam was 3 feet.

I used a 2 inch hole saw to cut holes into sides of the posts so they can hold the poles later on.

Then, I used some exterior screws to fasten the stakes to the bottom of the posts. The entire frame gets cemented into the ground later and the 4 stakes offer additional support to the frame.

At the bottom of the posts and stakes, I drilled some screws partially into the wood to hold them into the cement better.



step 2: Installing the frame

After the frame was complete and I decided where it was going to go, I dug two trenches for the posts and stakes to go into.



step 3: Installing the frame

After I dug the holes and set the frame into place, I filled the holes with fast setting cement. Each hole took 6 bags (12 total - 60 lbs. each).

Once the barrels are made and full, they could get very heavy with the compost so the frame and concrete anchors must be strong. I feel as though the stakes and concrete will prevent the frame from leaning or moving much.



step 4: The barrel poles

I used galvanized poles left over from another job and cut two 5 foot lengths. These go through the holes in the posts and are what holds the barrel.

Be careful when selecting poles, since they will need to be strong to support the weight of the barrels when they're full.



step 5: The barrels

Once the frame was ready, I began working on the barrels which are made from 55 gallon drums.

I decided to use blue since they get warm and will heat the compost inside. The barrels need to be a dark color since light colors will reflect the sun and heat is important when composting.

Using a 2 inch hole saw, I cut holes exactly in the center of the bottom and top of the barrels. This is what the pole will go through.

Then, using a rotary saw, I cut a rectangular door into each barrel. Take care that the door is big enough to allow comfortable access to the inside of the barrel.

After that, I used a drill to drill several hundred holes all over the barrels to allow for air to circulate inside the barrel. Air is also important when composting.





step 6: Tha barrels

To make the door, I had to get several pieces of hardware.

I needed 2 flat braces, 2 handles, 4 hinges, 8 barrel locks and enough screws/nuts/washers to hold everything on.

Each door got 4 barrel locks since they work together to hold the door closed while spinning and they help to keep the shape of the door, since they tend to lose their shape and flatten out.

Each barrel also got a flat brace installed inside. It sticks up slightly to prevent the door from falling inward.



step 7: The barrels

Now that the barrels were finished, I put the pole through the barrel and put them on the frame.

I checked everything and made sure that the barrels spun on the poles properly.

At this point, the project is complete.



step 8: Using the composter

Making compost in the barrels is easy. Simply throw all kitchen scraps, lawn clippings, leaves and other organic matter into it and it will decompose naturally and make healthy soil.

Once one barrel is full, the next one can be started on. Rotate the barrels every so often to mix and aerate the compost.

Take care not to put things like meat and animal feces into the the compost - only vegetables and plants. However, one exception to this would be eggshells. If unsure, do an internet search on composting to find lists of acceptable materials.



step 9: Optional (but helpful) hint

This step is purely optional, but I don't want to have to make a trip out to the composter every time I make something in the kitchen, so what I do is keep a little plastic bin in my freezer. I put everything in there and when it gets full, I dump it into the composter. It melts and decays right along with everything else and saves me a few trips.



step 10: Summary

I really had a good time making this project. It was easy enough and the design was quite simple. Now, by next spring, I should have some great compost for my garden so I can grow some healthy plants.

I can't wait for spring to come on full-force!



step 11: User photo gallery

Big thanks to everybody who made their own double-decker drum composter and submitting their pictures!

They look fantastic and I'm thrilled that you took the time to share!



Related Instructables



Composter (Drum Style) by jdlink



Make an all purpose organic pesticide from vegetables by iPodGuy



Mini Wooden Portable Compost Bin by Brennn10



Dirt Garden by trebuchet03



Grow organic food without spending \$ by gowithflo



Convenient composter by ecogeeko



Hints for a Complete GOURMET GARDEN, on the cheap! by lucianoabcd



5 dollar, 1/2 hour Worm Composting Bin(s) by Marcos



Comments

50 comments [Add Comment](#)

[view all 127 comments](#)



runinman says:

Sep 13, 2008. 7:38 AM [REPLY](#)

I've finally found some barrels at a car wash supply business. A question for all: Have you had problems with the plastic breaking down over time? Are these UV rated or should I paint them for protection? I live in the Mojave where sun and heat are a factor year round. Thanks for any input!

Cheers.



iPodGuy says:

Aug 21, 2008. 5:31 AM [REPLY](#)

Update:

I noticed my barrels really weren't heating up well enough and getting really buggy. I painted them flat black with that new spraypaint that bonds to the plastic. It's getting a little warmer in there, but not hot enough to burn my hand like the compost I get from the recycling center. I need to get more stuff in there to hold the heat in, but I can only eat so many vegetables!



thermoelectric says:

Sep 6, 2008. 10:18 PM [REPLY](#)

Who says u have to EAT them?



michelelynn says:

Sep 5, 2008. 12:29 AM [REPLY](#)

the heat generated by the compost has more to do with what is inside then the color of the barrel, I think- here is why- I currently have an outdoor pile (built w/pallets, 3 sided) the pile will steam even in the winter if I build it correctly, its important to make sure that the pile is moist (not wet- to wet and it drowns the bugs), has plenty of oxygen (if I turn my pile every few days it will continue to steam until its is black gold), and you can also try to balance what you put in- I think green + brown (green- lawn clippings, home refuse and brown being dried things like hay, dried grass, dead weeds, leaves) with the correct balance the heat generated will kill any weed seeds making it OK to use weeds. Good Luck



bigwhitebob says:

Jul 12, 2008. 8:27 PM [REPLY](#)

I was planning on posting an instructable on this, Great minds think alike. Mine is very similar, I don't have the rails like yours has (I am hoping they wont warp) but I will add them if they do. I also used conduit for my pole isead of a heavy pipe because I had it lying around, but I did reinforce that area of the barrel to add stability. so far its working great except the temperature isn't getting high enough, I am thinking I need to fill it more so it has more bio mass. I also plan on changing the doors, I loose a little compost with every tumble (the best grass in the yard is under my bins) but that adds up. I am thinking about cutting two doors from another barrel and doing a sliding door with wooden runners on the top and bottom of the door. Thanks for posting this.





AubreeMarie says:

Aug 6, 2008. 2:58 PM [REPLY](#)

Krylon spray paint has a new line of FUSION for bonding with plastic and they work great for these barrels. With these it really does come down to color for the heat, I had blue ones that needed to get warmer so I sprayed 'em black with the Krylon and they've been melting that stuff down since.



iPodGuy says:

Aug 21, 2008. 5:32 AM [REPLY](#)

Yes, I decided to go with this paint as well.



bigwhitebob says:

Aug 10, 2008. 4:32 PM [REPLY](#)

Thanks for the tip, I am familiar with the Fusion. The last batch worked but it took almost three months so there is allot of room for improvement. I will post some new picks when I get the painting done.



Christopher93 says:

Aug 5, 2008. 2:35 PM [REPLY](#)

the temperature isn't getting high enough, I am thinking I need to fill it more so it has more bio mass.

I think the problem is the colour of your barrels more than anything else. If you could paint or stain them black (or just re-do the project with black barrels) that would probably fix your problem.



erictdonaldson says:

Jun 3, 2008. 1:52 PM [REPLY](#)

Thanks for posting! I made a similar design last winter using somewhat smaller 8-gallon barrels. I found them used at Urban Ore in Berkeley, CA along with all the hardware and lumber I needed for about 25 bucks. It was clear to me that the barrels had last been used to biodiesel production.

My barrels roll on 4 casters each (like some store bought items). They don't spin as well as I would like, but they are modular so I can take them off the frame and carry them around the garden to fill them up which is actually works well given their size. Also, I located my doors on the end of the barrel, which works well for occasionally "chopping" the compost with a spade.

I have no holes along the outside of my barrels, only on the end. I think I will add some after reading this instructable. And build a collector for excess moisture.

So far I have made a handful of batches "it is great having two barrels! They take about 2-3 months to get to a reasonable state but produce a relatively small amount of soil that we spread on our veggie beds. I don't get a lot of heat, stuff pretty much just rots, I think because I don't have enough carbon. I'm trying to resolve this problem currently.

I'll try to post some pictures; it's pretty funky, but was EASY to make!



sonaps says:

Aug 13, 2008. 10:44 AM [REPLY](#)

The lack of heat may be from the microorganisms not getting enough oxygen, so adding holes should help a good deal, but I've seen the pictures you put up and I agree that it's quite the interesting design.



iPodGuy says:

Jun 3, 2008. 6:16 PM [REPLY](#)

Yes, please share the photos!



erictdonaldson says:

Jun 3, 2008. 9:05 PM [REPLY](#)

Here you go.

Since these were taken, I have replaced the flimsy latching mechanism I originally build out of some plexi I had lying around to aluminum plate, and I think that new hinges will be in order before the year is out.

There is some lateral cross bracing on the rear side of the stand. Enjoy.





iPodGuy says:
That's an interesting design. Thanks for sharing!

Jun 4, 2008. 12:19 PM [REPLY](#)



erictdonaldson says:
I was second guessing myself about the volume of my barrels and upon further examination, they look to be about 15 gal each, not 8 gal. Don't know where that came from.

Jun 4, 2008. 8:19 AM [REPLY](#)



tcnola says:
Some of you may want to try adding beer to the composting mix. I found a study online which supports the idea that beer speeds up the composting process during warm months.

Aug 7, 2008. 4:21 AM [REPLY](#)

[Link to beer compost experiment](#)



STF says:
Do you think a steel drum would work good for this? I was thinking that it would allow it to get hotter than the plastic especially if it is black

Jul 25, 2008. 12:09 PM [REPLY](#)



iPodGuy says:
It might rust....

Jul 27, 2008. 5:04 AM [REPLY](#)



copycat42 says:
great instructable! what's that nasty looking crap inside the barrel? looks like some sort of food garbage, yuck!
(just kidding)

Jun 7, 2008. 8:30 AM [REPLY](#)



stewl says:
Looks great - Question: the high priced commercial product "ComposTumbler" found in many magazines claims to make finished compost in 14 days. You are talking about 8 months & more. How do they accomplish that rapid decomposition? Their gear looks essential the same as yours?
Thanks for sharing your ideas & experiences!

Jun 5, 2008. 8:59 AM [REPLY](#)



iPodGuy says:
Perhaps it is because I fill mine slowly with kitchen scraps and yard clippings. I think if I filled it full and painted it flat black mine would decompose more rapidly as well.

Jun 5, 2008. 5:54 PM [REPLY](#)

Can you link me to that composter so I can take a look at it?



iPodGuy says:
Nevermind. I found it.

Jun 5, 2008. 5:56 PM [REPLY](#)

<http://www.compostumbler.com/StoreFront/IAFDispatcher?iafAction=showMain>



projectman says:
Thanks for posting this great idea.

Jun 2, 2008. 6:42 AM [REPLY](#)

I made a different stand, but its based upon your concept. All the parts were free except for the handle and hinges. I saved a lot of money. Total cost about \$10.

Thanks Again.



projectman says:
I didn't upload the photo correctly last time. I made a single. Thanks ipodguy.

Jun 3, 2008. 8:00 PM [REPLY](#)





iPodGuy says:
Great and thanks for the photo!

Jun 4, 2008. 12:23 PM [REPLY](#)

I added it to the gallery on step 11.



docwiltbank says:

Jun 3, 2008. 12:01 PM [REPLY](#)

I am attaching a couple of pictures of my completed composters. (It was a hot day here in AZ so my boy was not real excited about helping Dad in the garden.) The top barrel is busy composting. I am using the bottom barrel to make Mel's Mix. (From his book Square Foot Gardening compost, peat moss, and vermiculite in equal amounts) It then goes into my grow boxes. Much easier way to mix it. I hung some planters on the sides with tomatoes coming out the bottom of the planter and basil planted in the top of the planter. Hope it works. Thanks for the great instructible.



iPodGuy says:

Jun 3, 2008. 6:07 PM [REPLY](#)

Oh, that is nice! I also like how your trap door opens downward. I'm going to try that!

That looks just fantastic and I'm thrilled that you shared!

THANKS!



sawdust13 says:

May 27, 2008. 6:46 AM [REPLY](#)

Thanks for all the ideas. My intention sometime this summer is to make a composter so I am in sponge mode for tips. I like to have as many ideas as possible before starting a project. My concern is how difficult this will be to turn once it is half full. I am thinking on the lines of rollers like most of the bought ones have. The disadvantage is I don't think I can do a double decker as easily and it will require more lumber - but I can probably get away with 2x4 material. Also I plan some strips of board on the inside to tumble the scraps better. The fastening ideas for the door have been a big help as well.



iPodGuy says:

Jun 1, 2008. 7:52 AM [REPLY](#)

Well if you plan to use wood as a tumbler, remember that it will decompose as well. If you're using treated wood you could accidentally introduce the chemicals it is treated with into the compost. Might not be safe if you plan on eating veggies you grow.

As for the weight of it being half-full, it's not that bad. If the pole holes are in the center, then it rotates easily. The drums I used have raised lips which act as a good area to grip on when spinning. Also, if the weight is too great, extra handles can easily be installed to offer a better gripping surface.

I'm getting along well without anything as tumblers, but another idea I had was to drive 6 inch aluminum spikes into the barrel through the holes. They would assist in mixing the compost. I just use the momentum of the turning barrel to mix everything inside and it works well.

Whatever you do, be sure to incorporate some type of catcher for the liquid that drips out of the composter. I use rectangular plant pots to catch mine and it does wonders for my garden.



sawdust13 says:

Jun 1, 2008. 12:11 PM [REPLY](#)

I was planning to stay away from PT lumber. If I went natural then possibly cedar to be rot resistant. Otherwise, I was thinking along the lines of this composite plastic/wood decking lumber, or all plastic of some kind. On my next trip to HD or Lowes, I will have to see what they have in the plastic or composite line that might work. Maybe even one of those square white plastic posts. If I took a section and ripped it up the middle I would have 4 pieces of L shape to bolt on the inside. I might have to double two pieces of L to make it strong enough. Thanks for the comments it got the synapses firing on new methods. Maybe a trip to the scrap yard for some Aluminum angle iron.



kshea19 says:

Apr 26, 2008. 8:15 PM [REPLY](#)

I have made the same model. Modified it a little bit but still in debt to your work. I believe one of your commentors mentioned using a drip pan for the compost tea. Excellent idea? Also the ideal temperature for healthy aerobic digestion is approximately 135 degrees to close to 160 degrees. I believe this range provides the best environment for the good guys. Above that, you are likely going to kill all micro-organisms good or bad.

One suggestion on the hatch opening hardware. I believe the slide latch is not an effective option. Plastic is flexible, and slide latches tend to slip when spinning. One idea is to get the 1/4 turn latches. I did the slide latch and spun it once and found some of it on me. The second barrel will be getting some sweet latches.

Thanks again. I will be watching you.



iPodGuy says:
AWESOME! AWESOME! Thanks so much for sharing!
And yes, catch that tea! Rectangular planters is what I've been using.

Jun 1, 2008. 8:02 AM [REPLY](#)



docwiltbank says:
I just made the frame per your instructions this morning. I am anxious to get my composter up and running. Do you have much compost falling out the vent holes when you rotate your drums? Or are the holes too small for most of the stuff to fall through?

May 12, 2008. 11:14 AM [REPLY](#)



iPodGuy says:
No, not much falls out. Use small holes. Be sure to catch the fluid that leaks out, since it is very beneficial in the garden.
I am very excited that you used my instructable to make your own! Thanks so much, and I'd LOVE to see some photos!

Jun 1, 2008. 8:00 AM [REPLY](#)



runinman says:
great concept and design! I've been looking a bit for barrels like these and haven't had any luck yet. where did you find your barrels?

May 24, 2008. 12:50 PM [REPLY](#)



iPodGuy says:
I get them from work after we're finished with them.
Perhaps try craigslist or freecycle. Check buildings in your area such as schools also. Those drums is what we get our chemicals in and we always have extra empties.

Jun 1, 2008. 7:57 AM [REPLY](#)



Spokehedz says:
To speed up the process, you can add worms to the mix. At least my dad always added a handful of worms to his.

Apr 22, 2008. 12:35 PM [REPLY](#)



iPodGuy says:
You know, I thought about doing this. I've got plans to make a vermicomposter later on and I considered adding worms to this.
Do you think they'll get killed when I'm tumbling all the stuff?

Apr 22, 2008. 4:34 PM [REPLY](#)



merdi55 says:
Heat is definitely a problem for worms when they have no where to escape to.

May 4, 2008. 9:12 AM [REPLY](#)



tinkertime says:
Several years ago I read an article about non-native earthworms causing damage to forest undergrowth. Most of the worms we use came from Europe with the first colonists. Evidently they're more efficient at consuming forest leaf mold than the native worms. They've slowly but surely crowded out the native worms. The loss of leaf mold then kills off native plants.

Apr 26, 2008. 8:25 AM [REPLY](#)

I should note that I found one article on the subject and haven't been able to find any further information. I've chosen to err on the side of caution. I raise red wigglers but I'm careful to keep them in bins.



ScottSEA says:
One thing to watch out for with worms and compost is heat. If your compost takes off it will generate a considerable amount of heat, which will cook your worms. Yes, I know this from experience.

Apr 22, 2008. 10:59 PM [REPLY](#)



Spokehedz says:
Unless your putting rocks and other heavy things in there... I don't think too many worms would die. Plus, it's not like they aren't capable of forming new body segments. Simple nervous system and all.

Apr 22, 2008. 6:40 PM [REPLY](#)

The heat is another thing. I don't think they can stand temperatures too hot. Like I said, My dad used to add them--I noticed that it took longer to compost when he didn't add the worms. Who knows if they were helping by eating, or from dying inside the compost. But the heat in compost is what kills all the bad bugs and cysts.

Ours was in a box though--and I can remember them when he bought them. Bright red, and squirmy like crazy. Weirdest thing ever. He's just unceremoniously dump them under a big clump of compost and they'd wriggle around like mad. We had to sift them out when we wanted compost though--but that helped to remove the big sticks and other uncomposted stuff as well.



bcomplex says:

Apr 24, 2008. 4:31 AM [REPLY](#)

Great project, IP guy. I'm adding a link to it at compostgardening.com. Now that you've had your double barrels working a while, how are they doing?



iPodGuy says:

Apr 24, 2008. 1:59 PM [REPLY](#)

Neat! Link me to it, OK?

I'm still filling up the bottom barrel, but everything seems to be working. No complaints here.



ScottSEA says:

Apr 22, 2008. 11:00 PM [REPLY](#)

I'll be curious to know how well your drum holds up where the pipe goes through once the drum gets heavier. Too much weight might be a problem there without some reinforcement, it seems to me.



ghostguard7 says:

Apr 20, 2008. 9:40 PM [REPLY](#)

Great idea! I've been meaning to make something new that would conceal my ugly "box" made of wood and lower door. I love how this doesn't require the use of welding, and using tools most of us probably have in our garages.

Any advise on procuring an inexpensive 55 gallon drum?



iPodGuy says:

Apr 22, 2008. 4:32 PM [REPLY](#)

I get plenty for free often. I work at a school where our chemicals come in them. So, check around institutions like schools (especially during the summer) and see if they are getting rid of any. They usually have either floor wax, sealer or stripper or some other kind of bulk solution.

Sometimes people who have boats ask me for them. I don't know why.

Or you could try craigslist or something for barrels.



ghostguard7 says:

Apr 22, 2008. 7:06 PM [REPLY](#)

Thanks! I'll try my local tech schools or maybe office-building cleaning companies.



Mike SF says:

Apr 11, 2008. 2:39 PM [REPLY](#)

Nice project!

You were smart to build a double system so you have no downtime between batches.

I am about 8 months into my first batch of compost using this product: [Envirocycle Composter](#)

We live in an apartment and have a patio not a yard so most of the contents are kitchen scraps and shredded newspaper (soy based inks and no shiny inserts) to boost the carbon. I chose our particular model because of the basin on the bottom that collects the drippings or compost tea. This tea has been invaluable in my garden and was available for use almost immediately. I use an in line syphon attachment for liquid fertilizer attached to my hose to dispense it.

I'm wondering how your system handles this tea. I imagine the upper bin will drip onto the frame and lower barrel and the lower barrel will simply drip on the ground? Have you experienced this?

I also have found it useful to tarp my bin so that I can control the moisture content rather than have the weather do it for me. Have you considered adding a roof?

I would love to see how this project progresses and any modifications you make....keep us posted.

BTW....this book has been very helpful: [The Rodale Book of Composting](#)



iPodGuy says:

Apr 22, 2008. 4:39 PM [REPLY](#)

OK, so I used two long plastic planters to catch some of the juice that drips out of the bottom barrel. It was green since I added several pounds of lettuce.

I used it to water some sugar snap peas and the difference it made in just one day was impressive! I don't think I'll be able to catch it from the top barrel, but now I'm catching all the juice that drips out of the bottom!

[view all 127 comments](#)