

Hygiene.

Food waste that has passed through the Ridan and then matured for a few weeks in a maturation box will become clean compost which is safe and pleasant to handle. The presence of worms is a good indicator of this.

However any spilt food waste left lying around will quickly attract rodents, birds, flies, wasps and others. So keep the Ridan and the composting area clean, the same goes for any buckets, caddies, shovels and barrows being used.

The Ridan is rodent proof, but please don't leave buckets or barrows under the outlet or tools against the side as they could be used as a handy ladder!

Operator.

The key to successful composting is having a single dedicated and keen operator.

It is important that the process is overseen and monitored by one person regularly, as any variations in the mix or the operation will have an effect on the output and temperature, after a while this becomes intuitive.

Composting food waste is not a clean, catering spec process, so it is usually handled best by gardeners and groundsmen who appreciate the high quality compost produced, rather than catering staff who need to keep very clean.

Care and Maintenance.

The Ridan has been built to last and as such will give years of reliable service if looked after. So keep the outside clean and don't use excessive force when turning the handle, don't try to compost inappropriate items such as paper plates or cups as these can cause blockages. If the handle becomes difficult to turn, the Ridan may be too full or jammed by a solid object, so remove some of the contents and investigate. Don't force the handle as the mechanism will break.



How to use the Ridan food waste Composting System

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Hints

Heat!

Composting produces heat and the Ridan controls this using airflow and insulation, it needs to be hot to work well, so your aim is to see steam rising when you open the lid. It can take a few days to heat up, but it will when the conditions are right.

Pausing the Ridan.

If the waste supply or turning stops for a few days or weeks during holidays etc, the Ridan will cool down, but don't worry, the micro-organisms will still be there ready for the next feed when they will get to work once again and heat up very quickly.

Paper and Cardboard

Paper, tissue and card can be composted, however most contain some synthetic materials which won't compost and may even harm the bacteria. So the best way to do this is to shred and then layer them into the maturation box where they will break down, use only in moderation and monitor the results.

Not Hot?

If the mix remains cold after a week or two, check the following.

1/ The mix should be airy and moist like a fruit cake mix, if it is heavy wet and solid like cold porridge then you need to add more wood pellets to absorb moisture and aerate the mix. The paddles within the Ridan should pass through the mix, aerating it, not turning it as a solid soggy lump.

2/ If the mix looks good airy and crumbly but cold, add some fresh greens such as uncooked fruit or vegetable waste, grass clippings, or weeds from the garden.

3/ Ensure that there is always a clear air gap over the mix and around the inlet, overfilling will block this preventing airflow meaning that the Ridan will cool down and become hard to turn.

4/ Check that the wood additive is fresh and dry.

Smelly?

There will be some smell, but it should not be unpleasant or excessive, it will be similar to a fermenting or brewing smell.

However if it stinks then the food waste is rotting simply because insufficient wood or air is being added, just add more wood pellets and turn the handle.

Old wet wood additive doesn't work well so check that it is fresh and dry.

Pests.

Keeping everything clean means that flies, rodents and birds are not attracted.

Don't let plants grow over the Ridan as they can provide easy access for pests to climb up.

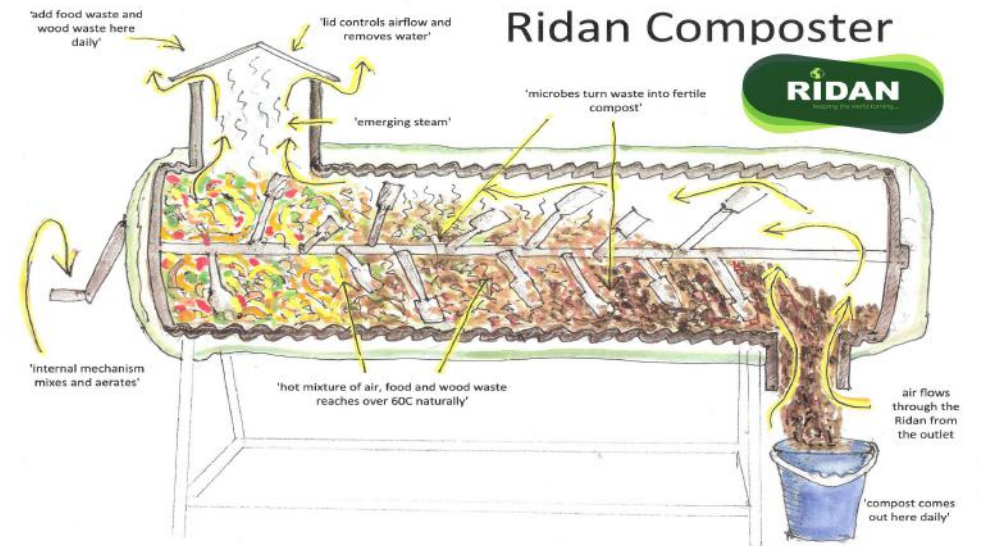
Covering the mixture in the maturation boxes with wood pellets will discourage flies.



Every kitchen with a garden needs a Ridan!

How it works

Nature has been composting beautifully for millions of years, the Ridan is merely a way of accelerating this natural process in a practical, easy, way. It creates ideal conditions for composting to happen naturally, so that food waste and other organic matter such as garden waste can be turned into compost simply and swiftly. Composting is an 'aerobic' process, meaning 'with air', a carbon neutral process which is good for the environment and simply the best way to recycle food waste. Compost enriches soils returning valuable nutrients.



The two stages of Ridan composting

Stage One, Happens inside the Ridan which accelerates the first stage of composting, this is performed by composting bacteria which multiply within the Ridan. It's this exponential growth of bacterial colonies that create the heat. The heat also has the effect of 'sanitising' any pathogens and removing excess water. What comes out is thoroughly mixed, aerated, dried and fully populated with composting microbes ready to work.

Stage Two, Happens in the Maturation Box, where the beautifully prepared mixture composts, initially hot, gradually cooling to a stage where worms and other organisms move in to complete the process.

Getting Started

Wood chip, sawdust, wood shavings or wood pellets must be added to your Ridan system in order to make it work. The wood adds carbon to balance the nitrogen rich food waste as well as creating structure and air pockets.

Without wood the food waste will putrify, rot, stink and be very unpleasant, so always add wood and don't run out.

Which wood?



Wood pellets are easy to handle and produce great compost so they are usually the best option.

The proportions are easy to get right very quickly, you simply need a quarter as much wood pellets as food waste by volume. So for every four buckets of food waste add one bucket of wood pellets.

Sold as a fuel wood pellets are relatively cheap to buy, running cost for a Medium Ridan will be about £2 per week. It is best to buy in bulk one tonne at a time and have the pellets bagged and delivered.



Wood-chip, sawdust or wood shavings if fresh and dry will work equally well but you will need to add more. In fact you will need equal by volume to food waste, so if you put in one bucket of food waste you must also add one bucket of woodchip, it's that simple!

Often available free of charge as a waste product from carpenters, joiners or tree surgeons, you will need a regular supply. Large chips take a long time to break down so the compost can be chunky initially.



Health and safety

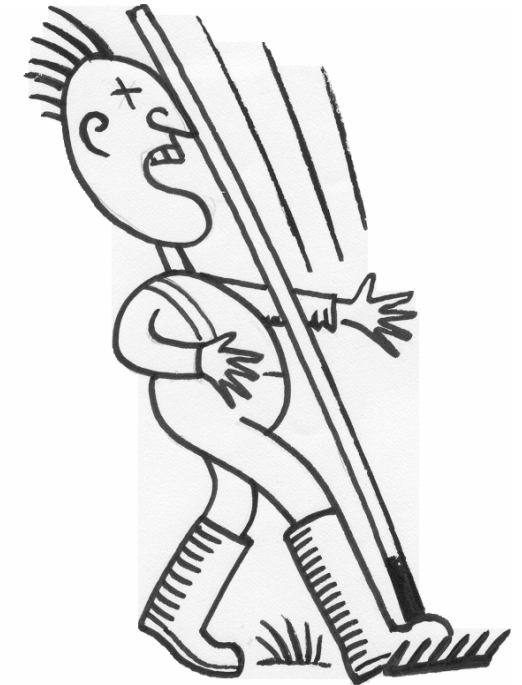
Composting is a very safe natural process that humans have been doing for thousands of years, likewise food waste is safe to handle even after it has been rejected by the kitchen or diner.

However there are a few things to bear in mind. Dry musty compost can contain harmful fungal spores so always dampen down dry compost and leave rather than turn it.

Turning releases millions of invisible bioaerosols, which are fine for nearly all of us but if you are asthmatic or have any breathing difficulties its best to leave that job to someone else.

Always wash your hands after handling compost and cover up any cuts and scratches before handling compost.

Creating a safe working environment is vital in every working environment. If you cannot site your Ridan on hardstanding then the ground could get wet and slippery especially in the winter. Laying down a thick layer of woodchip could be the answer for you. Don't leave stuff lying around the area. Put things away so they don't become trip hazards.



When is compost—compost?



Experts in the field have stated, 'if it looks like compost, feels like compost and smells like compost, then its probably compost!'

Hold a handful of freshly sieved compost and you will know when its ready. You can almost smell it in this picture too!

Sieving your compost is not necessary, especially if you are using it as a mulch. People worry unduly about 'nitrogen robbery' thinking any woodchip or sawdust will somehow suck the fertility away from growing plants. This cannot happen in a no-dig system where compost and other mulches are added onto of the soil and our other most useful worm friends the aforementioned Lumbricus Terrestris will come out at night and take the compost into the soil a bit at a time.



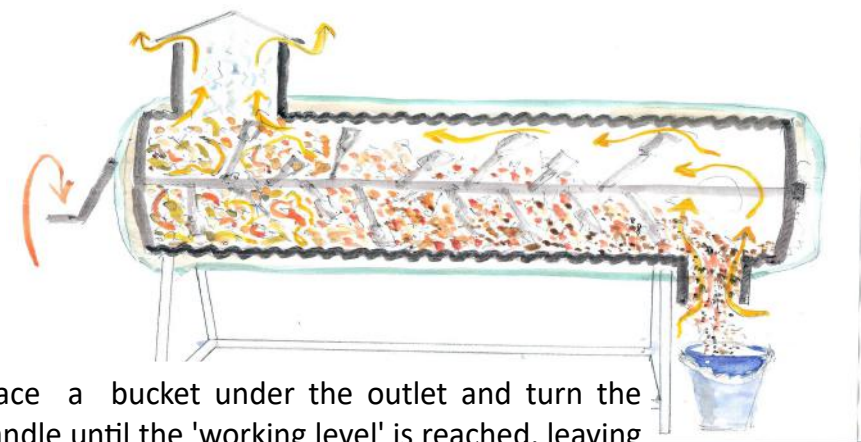
A simple way to sieve with a length of chicken wire

Starting off with your new Ridan



Take off the lid and tip in your food waste - all food waste can be composted, cut up any large chunks, a mixture including fresh prep, veg, fruit etc works best, avoid excessive fluid.

Add an equal volume of wood chip or sawdust or 1/4 of the volume of wood pellets - these must be either fresh or dry stored, not old wet or rotten.



Place a bucket under the outlet and turn the handle until the 'working level' is reached, leaving an air gap over the mixture so the Ridan can 'breathe' replace the lid. Note the yellow arrows, indicating airflow passing right through the Ridan.

As mixture emerges from the outlet, place it into the first maturation box. After a few weeks, when the first box is full, move on to the next one, and so on.



Observe the temperature and mixture consistency within the Ridan and boxes, to ensure it stays damp and warm and doesn't smell foul. Any issues, just add more wood.



If the mixture in the boxes becomes very dry and dusty, add water.



Leave to mature for as long as possible, longer is always better, worms and other mini beasts will appear when it is ready, then empty and use your lovely compost.



How long does it take?



In-vessel machines like the Ridan are designed to speed up the composting process.

What happens in the Ridan, is that given these ideal conditions, with sufficient water and air, bacterial colonies can double every hour or even less. This means that a single colony doubling over 24 hours can grow to over 8 million or more. This exponential growth is what generates the heat. The insulation around the Ridan stops much of this heat from escaping and maintains good composting conditions.

Although the stuff coming out of the Ridan is not compost at this stage, it has gone through the first, and most active stage of composting. The maturation stage is slower and can take several months to a year. Having large maturation bins of around a cubic metre helps to maintain the temperature above ambient. You need to check the moisture levels as the heat generated in the Ridan can dry out the compost so that by the time it exits it will need water adding to maintain the balance optimum for all the life in the heap. Without sufficient moisture the materials will just sit there not composting. If possible wet the maturation bin with rainwater and, because you have added lots of woody material the water will drain through easily, so don't worry about adding too much.

You should build up a colony of compost worms too. They generally find compost heaps all on their own, but there is no harm in introducing some from another heap to start off.



Tiger worms—*Eisenia Fetida* looking very happy in a moist cooling compost. You can see a cocoon, like a grape pip. These worms are found in leaf litter, under plant pots and other stuff you leave lying around on the ground, they are not the deep burrowing *lumbricus terrestris* earthworms that Charles Darwin studied.

Top Tips

Sometimes it takes a while to get going. So here are a few tips to kick start a sluggish compost.

- Add some half finished compost from an active compost heap. This will bring in trillions of micro-organisms which will multiply in your compost.
- Add lots of fresh greens, grass cuttings, the tops of common plants like nettles, docks, comfrey. Make sure to add the same volume of chippings and mix well together in the Ridan.
- Never let kitchen waste fester in the bucket—add it as soon as possible.
- Cooked food on its own has had all the bacteria killed off and will be more difficult to compost without mixing with plenty of fresh veg tops and tails and peelings etc.
- If your woodchip is wet and partially composted it will not behave in the same way as fresh dry chip or pelletised sawdust. You can still use it but you might want to add a whole lot more!
- This is a biological process and you need to be receptive and responsive to what's going on. Be confident to experiment but always remember the golden principle of Nitrogen and Carbon.
- Until the Ridan heats up, emerging mixture can be recycled back through.
- Always replace the lid as it regulates airflow.
- Remember to clean up around the composting area and don't leave anything leaning up against the Ridan or maturation bins. Messy composters attract vermin.



Second Stage—Maturation.

Maturation boxes are usually used in two's or three's so that one can be maturing whilst the other is being filled and so on.

During maturation the mixture will remain hot for several weeks so check periodically to ensure that the compost remains moist and add water if it appears dry or dusty.

After at least 3 months (longer is always better) of maturation you will have lovely rich compost, a good indicator is the presence of worms, and other mini beasts who are keen to populate good compost. They will find their way into maturation boxes where they will mix and aerate the contents to produce a fine friable compost. At this point simply open the box and harvest the compost.

What can be Composted?

All food waste, raw and cooked, meat, dairy and fish, plus garden weeds, pruning's and grass clippings and shredded cardboard. Small chunks compost more easily, so cut up macerate or shred whole fruit, vegetables, large bones, shells or big lumps before loading and they will break down more quickly.

Avoid too much liquid such as gravy, custard, soup etc, also don't try to compost paper or plastic plates and cups as they won't compost and can cause blockages.

Paper, cardboard and compostable bags and tableware should be layered into the maturation boxes where they will eventually break down. If using compostable food waste bags empty the contents into the Ridan before placing the bag into the maturation box.

Raw fruit and vegetable matter such as peelings, skins, cores, tops, tails and leaves are an important ingredient in the mix and should form roughly one third of the mix by volume in order to make the Ridan work properly. If such ingredients are in short supply from the kitchen, then green garden waste such as grass clippings, weeds and green pruning's can be added to obtain the correct ratio.

Siting the Ridan and maturation boxes

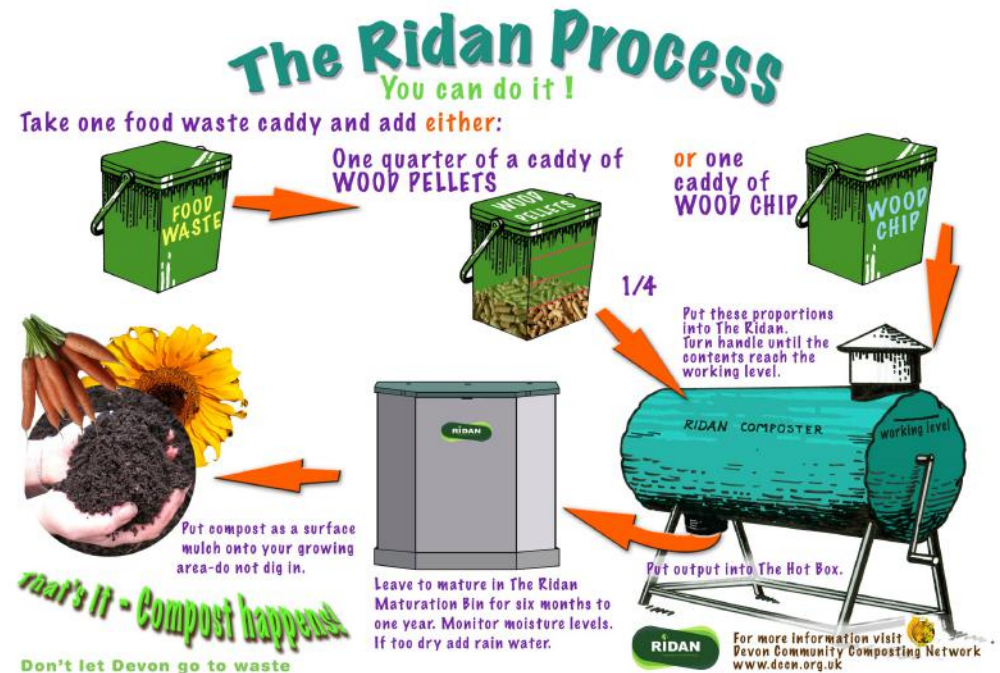


- The Ridan can be installed anywhere, inside or outside, no power, plumbing or services are needed.
- A firm surface is best, bearing in mind that when full it can weigh up to half a ton. For reasons of hygiene a hard, level, easy to clean surface is preferable as any dropped food which cannot be cleaned up will attract vermin. Keep the Ridan clean.
- If installation on a lawn is unavoidable use slabs under the legs to spread the weight ensuring that the Ridan is level, and use extra slabs where operators will stand in order to avoid muddy patches.
- Ridan Maturation boxes must be sited on a flat level surface.
- The area required for each system is as follows, 9 square meters for the Large system, 8 square meters for the Medium and 6 square meters for the Small
- A clear open space is best, avoid putting it right up against fences or hedges. A clear space all around is much better.
- Same with the maturation bins, they must be set up on a flat level site. Not right up against a hedge but so you can walk around the back as well.
- Site the composting area within easy reach of the kitchen or garden. There will be normal composting odours which should not be unpleasant. If they are then you are not adding enough woody material and/or you are blocking the airflow through the Ridan.
- **Always have a good supply of woodchip or wood pellets.**

Compost takes time

The food waste which is nitrogen rich is mixed with the wood which is carbon rich as well as air and water enabling composting microbes to respire. These naturally occurring microbes create heat which in turn accelerates the process and removing excess moisture by drawing fresh air through the mixture. Composting is an aerobic process which doesn't produce methane.

So after a few days the mixture will heat up, check it with your thermometer, when it reaches 40 degrees centigrade everything will happen more quickly. The heat is good, it can get as hot as 70



Golden Rules

1. Always add plenty of wood— With plenty of wood in the mix composting will happen beautifully. Wood will also rectify any problems such as smells, flies, low temperature, so be generous with the wood
2. Keep the level inside below the 'working level' mark – this enables sufficient airflow through the Ridan for it to breathe, as well as keeping it easy to turn. If the Ridan is allowed to become too full it can jamb and break.