

How to get the **HOTBIN** hot

This document outlines how you can achieve optimum performance of the **HOTBIN**.

This guide will help you look at:

- The Core Principles of how the **HOTBIN** works
- Checking the **HOTBIN**'s settings
- Reviewing set up options
- Assessing the waste that is added to the **HOTBIN**
- Looking at the ongoing feeding needs of the **HOTBIN**

Don't worry, you do not need to understand all the science to get the best out of your **HOTBIN**. The **HOTBIN** is designed to help **maximise** what nature does and brings together the **right conditions** to make hot composting easy. All you need to do is check a few simple settings, add the minimum amount and good mix of waste and you should soon be hot composting. The common barrier to achieving the best performance of a **HOTBIN** is that the mix and volume of waste is not quite right. However, if your **HOTBIN** is hotter than ambient temperature it will still be working faster than a traditional compost bin.

Getting to know your **HOTBIN**

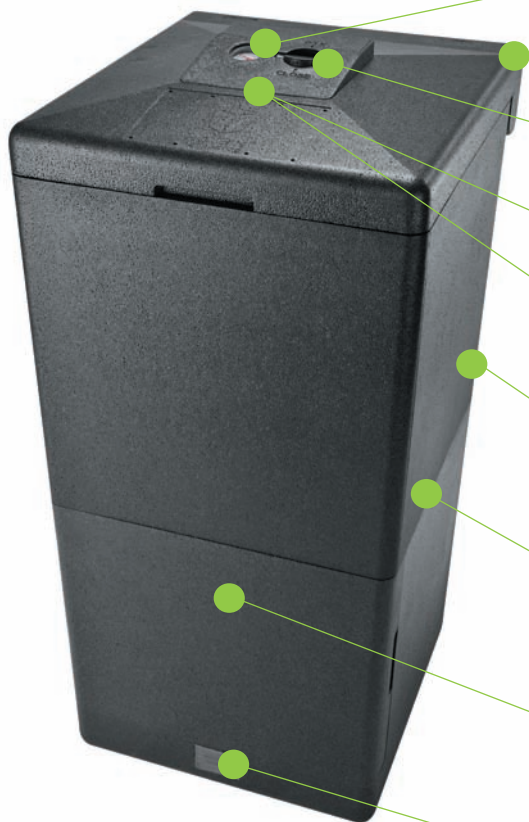


Fig 1 Thermometer to keep an eye on the temperature

Fig 2 Airtight lid to reduce smells and unwanted visitors

Fig 3 Rotating aeration valve (air outlet) to moderate temperature

Fig 4 Fixture plate

Fig 5 Biofilter unit to stop any unfriendly smells

Fig 6 Insulated walls to keep it hot to aid rapid composting

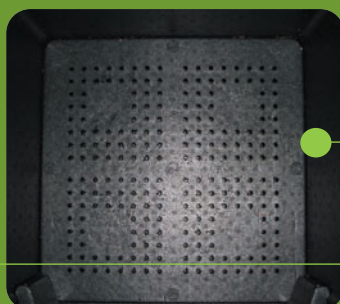
Fig 7 Manufacture seal

Fig 8 Easy to remove hatch door panel to take out mature compost

Fig 9 Aeration mesh plate (air inlet)

Fig 10 Internal base plate with holes in

Fig 4b Fixture plate close up with rotating aeration valve set to minimum



How the **HOTBIN** works – Core Principles

What happens inside the **HOTBIN** is composting – all composting obeys Nature's laws. Composting is dominated by bacteria – 'happy' bacteria deliver fast successful composting.

Bacteria need the four elements below and are happiest when they are in the green zone.

Food

Bacteria need waste to eat – no waste = no bacterial activity = no heat produced. They digest different wastes at different speeds. Lots of easy to digest food results in fast quick heat release, slow to digest waste results in slow heat release. See the waste table.

Amount (Volume)	Small	Little		Plenty	Lots
Ease Eating	Woody	Cellulose/Fats	Carbs/Proteins	Sugars	
Size/Pieces	Chunks	Chopped	Pieces	Powders	
Carbon/Nitrogen	200:1		30:1	10:1	

Water

Bacteria need water to both grow and to help with digestion. If there is too little water the bacteria are unable to grow; if there is too much water, the waste becomes soggy and it blocks the air flow restricting the oxygen the bacteria need.

WATER	Too wet			Too dry
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Oxygen

Aerobic bacteria need oxygen. If there is not enough oxygen, their anaerobic cousins take over and create a stink and release methane (X25 Green House Gas potency!).

OXYGEN %	0%	6%	10%	12%	21%
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Warmth

Bacteria digest waste 32 times faster at 60°C than at 10°C. As a rough rule of thumb, using 30 days in a month, is if it takes 18 months in a 'cold' heap at 10°C, it will take 18 days in the **HOTBIN** running at 60°C.

WARMTH (°C)	0	10	20	30	40	50	60	70	80	90	100	110
SPEED (x times)	0	1	2	4	8	16	32	64	0	0	0	0

 Sad – stopped working	 OK – Working but not at full speed	 Happy – Working well and producing heat to hot compost
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WASTE TABLE

Some waste is digested faster than others. The size of the pieces of waste also has an effect on the temperatures achieved by your **HOTBIN**.

N.B. When you have got your **HOTBIN** working efficiently at temperatures between 40 – 60°C there is no reason why you can't add things like chicken carcasses and bones into the **HOTBIN**.

A way to look at waste is how easy it is for the bacteria to decompose it.

Digestibility

EASY

to digest and will generate heat more quickly

Chicken pellets/poop
Grass
Blood/bone meal
Dried seaweed
All food waste including:
plate scrapings, all meat & fish
waste, pasta, rice, mouldy bread
and cakes

MEDIUM

to digest and will generate heat more slowly

Kitchen peelings
Straw
Manures
Office paper
Cardboard

HARD

to digest and will generate heat slowly

Sawdust & shavings
Wood chip
Twigs
Branches

Generating Warmth

Heat is released as bacteria decompose waste which is their food source. Little or no waste, equals little or no heat, which will not achieve hot composting.

Some wastes are easier to digest than others (see waste table above).

Bacteria are tiny and they digest waste at the cell wall touching the food surface. The smaller the waste, the higher the surface area for bacteria to attack.

No matter how much waste you have, bacteria are inactive when frozen cold and will not generate any heat.

Implications of Use

You need a minimum amount of waste to get going. The **HOTBIN** requires around 80 litres of waste to get started, which is about 40cm deep and should reach above the hatch door panel.

You need some easy to digest waste in your **HOTBIN** for the bacteria to generate heat.

We advise chopping up waste as it helps to speed up composting. It also results in the removal of less large non composted pieces from the final compost.

But don't worry the beauty is that you can get the **HOTBIN** working quickly in winter which means compost in spring! All you have to do to start the **HOTBIN** in winter (<10°C), is to add some heat; we have provided you with the winter 'kick- start' heater. It's a hot water bottle and keeps the bacteria cosy for 1-3 hours allowing them to become active again. This works in the **HOTBIN** due to its great insulation properties. Simply place the water bottle in the top of the waste and lay fresh waste over it.

Retaining Warmth

The **HOTBIN** ensures that less heat generated from the active bacteria is lost to the cooler surrounding atmosphere.

The thick insulated walls of the **HOTBIN** reduce conductive heat loss.

The **HOTBIN**'s aeration valve **Fig3** restricts convective heat loss.

Implications of Use

In a **HOTBIN** you can control the rate of this heat loss.

Ensure there is no damage to the walls e.g. gaps or holes that will allow heat out.

Ensure the valve is set to a minimum (but not closed flat) and always keep the lid tightly closed.

Oxygen

The **HOTBIN** relies on buoyancy airflow i.e. the chimney effect of hot air rising to the top towards the aeration valve and pulling cold air in at the base through the aeration mesh plate.

Air will not flow well through a 'solid' mushy layer of food or grass waste. Poor airflow results in a putrid/sour odour which is a common issue when adding food waste to most composting bins.

Implications of Use

The **HOTBIN** has an air inlet and an air outlet. If either is blocked, there will be no airflow. It is essential for a compost bin to have effective aeration.

When attempting to compost food waste such as meat, fish, cooked food, you must add a bulking agent. We have provided you with a bag to get you started but you can easily make your own.

Water

Bacteria need water to grow and to help with digestion reactions. Composting produces water.

If there is too much water the waste becomes soggy and air flow ceases.

If there is too little water the bacteria are unable to grow.

Implications of Use

The **HOTBIN** drives off any excess water as steam through the aeration valve. As the right amount of excess water leaves the **HOTBIN** it is actually quite difficult to create an anaerobic mess. And if by chance it does happen, it is easy to correct.

Watch out for any sour odours and be prepared to add more bulking agent and 'dry energy' such as pieces of chopped up cardboard.

It is very rare that you need to add water to the **HOTBIN**, in most cases just mix any dry waste with the existing top layer of waste or new waste you are adding.

SETUP options

There is no right or wrong way, the method you choose may depend on the season, what waste you have to hand, whether you have an existing compost heap and quite frankly your natural disposition to risk!
We have illustrated below the two possible ways to get your **HOTBIN** going.

FAST Set-Up (2 -7 days)

Profile:

Willing to 'go for it'.
Happy to add food waste from day one.

Availability of waste:

Lots of waste

The minimum amount is 40cm deep but more than half full is better. It must reach above the hatch panel.

Right mix of waste

Availability of easy to digest waste which act as accelerators such as grass, soft pruning, food waste, comfrey, blood/bone meal and chicken pellets/poop.

Small pieces of waste

Your waste should be chopped up reasonably small < 4cm – Use grass as a cheat!

How:

Add loads of waste.
Add easy to digest items.
Add a good mix of food waste and bulking agent.
Shut the lid and leave for 48 hours.

PATIENT Set-Up (2-6 weeks)

Profile:

Prepared to be patient.
Wish to test, check and experiment before adding food waste.

Availability of waste:

Shortage of waste

Struggling to find enough waste to get to 40cm, perhaps no old compost heap to use.

Right mix of waste

Low availability of easy to digest waste (e.g. grass).

Small pieces of waste

Your waste should be chopped up reasonably small < 4cm.

How:

Build up the base layer over a period of time with traditional composting material. Let the temperature of the base layer build up slowly to 20-25°C before adding in food waste with bulking agent. Remember you can add in kitchen peelings at any time.

SETTING UP your HOTBIN

Checklist

Check the **aeration valve Fig 3** is installed in its hole in the lid.

Check the **aeration valve Fig 3** is set to the minimum position.

Check the **aeration valve Fig 3** has not been forced shut so that it is flat/horizontal with the lid panel?

Check the **lid of your HOTBIN Fig 2** is fully closed.

Check that your **fixture plate Fig 4 and 4b** is not loose or dislodged.

This fixture plate holds the temperature gauge and rotating aeration valve it should be pushed flush into the main body of the lid creating a snug fit. If you place your hands on the plate and gently push the plate 'side to side', backwards and forwards it should not move.

Check the **hatch door panel Fig 8** fits snugly in place.

There will always be a few mm gap and some movement due to the tolerance – otherwise the panel is too hard to remove, but it should not be loose i.e. it shouldn't fall off. Please avoid opening the hatch door panel until you are ready to harvest your first batch of compost.

Effect / Solution

If the aeration valve is not in position or missing the **HOTBIN** is unlikely to get above 30°C.

If the aeration valve is open too much the **HOTBIN** is unlikely to get above 30°C. However, please do not push the plate shut so it is flat/horizontal with the lid.

The aeration valve is usually closed for delivery. The hole has a lip which creates a minimum gap, please ensure that the valve is not forced fully closed. A completely shut valve will make the **HOTBIN** go anaerobic and the temperature will fall.

If the lid is not shutting properly the **HOTBIN** will remain at an ambient temperature.

There should be no more than a 1 mm gap between the walls and lid. Please check there are no loose twigs or waste that are keeping the lid 'propped' ajar – even a few mm's will prevent your **HOTBIN** from reaching 60°C.

A loose or dislodged plate acts like an 'open valve' and it is unlikely the **HOTBIN** contents will rise above 30°C. If it dislodged, lift out the plate, smear the inner groove with Vaseline (or something similar like silicon grease), then push the plate back in place.

The plates are checked for snug fit by our QA team before leaving, however if you find you have a very loose fitting plate, please email a photo of the gap and we will arrange a replacement plate.

If the hatch door panel is loose or not securely fitted back into place, the **HOTBIN** performance is affected. Also if the height of the waste is below the door panel height, hot air will exit through the gap in the wall and the temperature will not increase. When the **HOTBIN** is filled above the door panel height, only cold air is drawn in via any gap. Please note when you first set up the **HOTBIN** there is a tendency for the loose waste in the base to push the door open. This is normal, but check it is not so far out that you can see waste through the gap. If you can see waste, we recommend that you use a prop (e.g. a flagstone) just for a few weeks to keep in the heat in. The waste will soon settle and stop pushing on the door. After a month of settling, if the door still opens so you can see waste, please contact us and we will replace the door.

Checklist

Check the **aeration mesh plate Fig 9** is not blocked with soil or snow.

Check the **walls of the HOTBIN Fig 6** are free from any accidental puncture holes that penetrate all the way through.

Check there is no damage to the **manufacture seal Fig 7**.

During the start up phase the long stem thermometer will provide the most accurate temperature of the waste in the **HOTBIN**. To do this it should only be in the top 5cm of waste.

Effect / Solution

If the air inlet is blocked, the **HOTBIN** will go anaerobic and temperature will not increase.

If the walls have been punctured they act as an additional 'open' valve and the **HOTBIN** is unlikely to get above 30°C. Please contact us for help on how to patch them up to create a sealed unit.

About halfway down the **HOTBIN** there is a joint where the upper and lower half of the unit has been sealed during manufacture. In extreme situations, the joint can break and the two halves separate. Example: the **HOTBIN** is dropped from a height on an angle. Please contact us if the **HOTBIN** is separating apart.

During the start up phase the lid thermometer will only show the temperature of hot gases rising not the actual temperature of the waste. It will not show an accurate temperature until the **HOTBIN** gets hot.

The **WASTE** and the **CONTENTS** of your **HOTBIN**

Amount and Volume of Waste

Make sure you have **added enough waste** to get your **HOTBIN** started?

Effect / Solution

To generate the heat needed for hot composting you need at least 40 cm deep. It should reach above the height of the hatch door panel. We advise that the base layer is built from traditional 'cold' composting material. Once the temperature of your **HOTBIN** reaches above 20-25°C you can start adding food waste.

If you do not have enough waste and/or the type of waste that generates the higher temperatures please be patient – the **HOTBIN** will work; it will just be slower at the reduced temperature. Also in winter you will not necessarily have as much waste to hand and it might take you longer to build up a good base layer.

If you really want to give the **HOTBIN** a quick start you can try adding partly decomposed waste from the top layer of your existing compost heap (it should contain lots of live bacteria) or grass cuttings (which has a great surface area and is easy for the bacteria to eat) as part of the base layer. When getting started and building up your base layer, make sure there is sufficient content in the **HOTBIN** to weigh it down in the wind. If not, we suggest you rest the black bag of bulking agent inside the **HOTBIN** for a few weeks until the base layer builds up.

Type and Mix of Waste

Is there enough 'easy to digest waste' in the **HOTBIN**?

Effect / Solution

As well as the minimum amount of waste to form a substantial base layer, you also need at least 10Kgs of easy to digest waste in the base layer to keep the bacteria happy. (e.g. grass, kitchen peelings or soft pruning).

Think of it a bit like a diet – The **HOTBIN** needs easy to digest food which will generate more heat. So things like vegetable peelings, moldy cake, bread and cooked pizza, pasta or rice can be digested relatively easily, wood and cardboard digest less quickly. Although hard to do in winter, at all other times of the year, the 'guaranteed' quick start method is to add grass cuttings.

Is it **cold outside**? Has the ambient temperature dropped below 10°C?

Bacteria grow slowly below 10°C and not at all below 0°C. The heat generated will be quickly lost, so the temperature could stall. Either be patient; allow 4-6 weeks for bacteria population to grow enough to raise the temperature to 60°C, or, fast track through the temperature lag using the 'hot water bottle' known as the Winter Kick-Start heater. This will add heat to keep bacteria cosy long enough to become active.

Please note: The water heater will only work if you have enough fresh and easy to digest waste for the bacteria to eat. And remember you are losing heat if you keep lifting the lid to check the temperature!

Have you added a handful of **old compost and/or soil**?

The initial waste content you have added to your **HOTBIN** could lack a starter population of bacteria. Add a handful of soil, decomposed waste from the top layer of your old compost heap or bulking agent to inoculate the waste.

Have you added **large pieces of waste (>4cm)**?

Large pieces of waste will compost more slowly and so release heat more slowly.

We advise you chop and shred waste into < 4cm pieces to increase the temperature of your **HOTBIN**.

Type and Mix of Waste

Have you added at least 10 litres (5Kgs – which equates to two small caddies) of **new waste within the last 7 days**?

Effect / Solution

If you are not adding new waste regularly the heat generated will be enough to keep the **HOTBIN** above ambient, but not enough to reach 60°C.

If you have not added new waste within the last 7 days you need to add more new waste more regularly.

You lose heat when the lid is opened, so keep the lid shut unless adding new waste, close it quickly, and maybe think about adding one full caddy rather than two half-full caddies a week

Water Content

Effect / Solution

Is the waste **too wet**?

Too much wet waste restricts airflow resulting in less activity and a lower temperature which in turn reduces airflow and water removal. This mixture in your **HOTBIN** will turn anaerobic and water logged.

Remember – when adding food waste you need to mix in the bulking agent to retain airflow.

The waste in the top of the HOTBIN operating normally will be hot, damp and steamy – so it tends to look wet. Also please ignore condensation and a lot of dripping water from the underside of the lid when it is opened – it will always collect under the lid in winter.

Can you smell a **putrid odour**?

The most obvious sign that your waste is too wet is the development of a sour/putrid odour. **Immediate action is required.** Correct by adding 4-5 hands full of corrugated cardboard pieces (2x2cm) and 4-5 hands full of bulking agent otherwise you may have to start again.

Is the waste **too dry**?

Bacteria do need water to grow. Your **HOTBIN** is unlikely to be too dry if adding food waste, but check when adding exceptionally dry wastes such as straw or dry brown autumn leaves.

The waste should be visibly damp or moist. Stir the top of waste/compost; look for dry patches of waste. Pour one mug of boiling water onto dry waste.

Are you **adding too much liquid** into the **HOTBIN**?

You may need to drain some of the liquids from food before adding them to your caddy, e.g. squeeze whole oranges, remove gravy/liquids in plate scrapings, and squeeze out wet tea bags.

Is there **water dripping** out from around the hatch panel and/or the air inlet mesh?

This is rare in summer, but more likely in winter. It is another sign that the waste is starting to get water logged. Firstly check the water is not condensation running down from the lid. Otherwise correct by adding 4-5 hands full of corrugated cardboard pieces (2x2cm) and 4-5 hands full of bulking agent.

Airflow	Effect / Solution
Have you added materials that will form a thick impervious layer ?	Sheets of newspaper, cardboard and even autumn leaves can restrict airflow when they form into layers. This results in slower heat generation and a lower temperature. Make sure you shred cardboard into small pieces, scrunch paper into a ball and mix large amounts of leaves into waste using rake.
Have you added any compostable 'plastic' bags ?	Bags can restrict airflow, which results in slower heat generation and lower temperature. Try shredding bags into small pieces or remove waste and scrunch bags into a ball.
Have you added a large volume (e.g. >10 litres) of brown autumn leaves ?	Autumn leaves are high in carbon content and you need to balance the carbon/nitrogen ratio by adding a nitrogen rich 'green' material such as grass, nettles, chicken pellets or dried blood/bone meal.

MORE HELP

Remember we have an extensive online 'frequently asked questions' and help section. However if you cannot find what you need or have a delivery or manufacturing fault to report please drop us a line or contact our customer service team.

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