

How To Make Superior Compost



With the
CompostTumbler[®]
by *Mantis*



SAFETY FIRST!



Position your CompostTumbler on smooth, level ground. Its placement is important in making sure the heavy tumbler will not tip and that when you turn your load it will distribute evenly.



Securely close and latch the door before turning the drum.



Keep your hands out of the way when the drum is turning.



When turning, do not release the handle if the load is out of balance. The handle may recoil and strike your hand or arm. Balance the load first, by moving the handle back and forth to reposition the material inside the drum.

TABLE OF CONTENTS

CARING FOR YOUR COMPOSTUMBLER	4
ASSEMBLING YOUR COMPOSTUMBLER	4
CAPACITY/DIMENSIONS	4
KEYS TO SUCCESSFUL COMPOSTING	5
WHAT IS COMPOSTING?	5
CHOOSE THE METHOD THAT'S RIGHT FOR YOU!	6
HIGHER NITROGEN SOURCES MEAN HOTTER COMPOST	7
MATERIALS FOR COMPOSTING	8
COMPOST ACTIVATOR – DO YOU NEED IT?	8
THE COMPOST ACTIVATOR IS EASY TO USE!	9
WHY TAKE THE TEMPERATURE?	10
14-DAY HOT COMPOSTING AND YOUR COMPOSTUMBLER	10
A. LOADING THE DRUM	10
B. PROCESSING THE LOAD	10
C. UNLOADING THE DRUM	13
HOW TO TAKE THE TEMPERATURE	11
FACTS YOU SHOULD KNOW ABOUT "HOT COMPOSTING"	12
SLOWER COMPOSTING AND YOUR COMPOSTUMBLER	14
FACTS YOU SHOULD KNOW ABOUT "SLOW COMPOSTING"	14
THE BOTTOMLESS REFUSE PAIL	15
THE FINISHED PRODUCT	17
RECIPES FOR YOUR FIRST BATCH OF COMPOST	16
WHEN IS YOUR COMPOST FINISHED?	16
NOT A MATHEMATICIAN?	18
THE CARBON/NITROGEN RATIO — HOW TO GET IT RIGHT	18
FIGURING YOUR CARBON/NITROGEN RATIO	19
FORMULA NOT QUITE RIGHT?	20
SOME "SURE-FIRE RECIPES" FOR SUPERIOR COMPOST	20
TROUBLESHOOTING WITH THE COMPOSTUMBLER	22

Congratulations!

By investing in a new ComposTumbler, you have taken a big step that will continue to pay dividends in your flower and vegetable gardens for years to come. With your new ComposTumbler, you can make a virtually endless supply of nutrient-rich, sweet-smelling, compost simply and economically. Each batch of compost you make will take only days—as little as 14 days for most materials, in fact—instead of the months (or even years) that most traditional methods require.

Not only will your compost be easier and faster to make—it will actually be superior to compost that takes months to produce. Because the faster the compost breaks down, the less time there is for valuable nutrients to dissipate or important elements to break down or be washed away.

With your ComposTumbler, you can say good-bye to the messy compost heap or bulky compost bin. And you can also say good-bye to the drudgery involved in other fast-composting methods that require a lot more of your time and attention. The ComposTumbler is the cleanest, easiest way we know to make the best possible compost in the shortest possible time—and we are sure that after you have used yours for just a little while you will agree!

There are probably as many ways to make compost as there are people who make it. And that is how it should be—gardening is a very personal and individual activity. There are numerous books, magazine articles, and manuals available on different composting techniques, and we certainly encourage you to look at any of them that come your way. You will discover that no matter which method you decide to use, the ComposTumbler will provide a perfect environment in which to work.

With just the few simple hints and instructions contained in this booklet, there is no reason you cannot get started right now on your own composting program. However, we do suggest that you read this booklet thoroughly before you try working with your ComposTumbler—it is designed to make your understanding of the process as easy as possible. Once you begin composting it will serve as a quick reference for every aspect of your compost making experience. Should you still have questions or need some assistance, please call our Customer Service representatives at **0800 988 4828** or contact your local supplier.

David Goss



ASSEMBLING YOUR COMPOSTUMBLER

You will find a complete Assembly Instructions booklet packed with your ComposTumbler. However, should you have questions about your ComposTumbler assembly, to call us on:

0800 988 4828

OR CONTACT YOUR LOCAL SUPPLIER

You may set your ComposTumbler anywhere in full sun, partial shade or full shade. It is the activity of the microorganisms that creates the heat; the sun only helps to insulate that heat. However, be sure to set the ComposTumbler on a smooth, level surface so that the base rests solidly on the ground.

CAPACITY/ DIMENSIONS:

Original ComposTumbler

Capacity:

Approx. 635 Litre (24 cu. ft.)

Dimensions:

68 inches high
40 inches deep
41 inches wide plus
9 inches for handle

Compact ComposTumbler

Capacity:

Approx. 315 Litre (12 cu. ft.)

Dimensions:

43 inches high
33 inches deep
33 inches wide plus
9 inches for handle

(2) AERATOR / DRAINAGE UNITS

(4) AXLE ROD CARRIERS

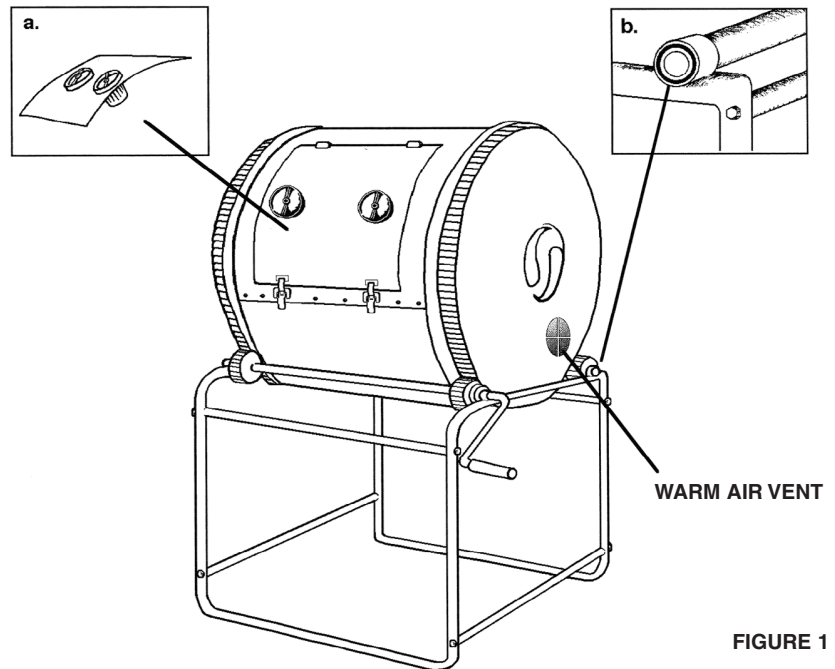


FIGURE 1

CARING FOR YOUR ComposTumbler

Before using your ComposTumbler, here are a few tips to help you keep it working for years:

- 1) Place your ComposTumbler on level ground to evenly distribute the weight of the compost and to make turning the load much easier.
- 2) Periodically lubricate the two axle rods where they nest inside the four axle rod carriers on the **Original ComposTumbler** with WD-40 or lightweight oil (see figure 1).
- 3) Each day, check to see that the aeration/drainage units and warm air screens do not become clogged (see figure 1).
- 4) *Always* rinse the inside of the drum out thoroughly with a garden hose between loads.
- 5) Do not store compost or other materials in the drum. This could cause the drum to rust.
- 6) Do not use any chemicals or chemically based products in the ComposTumbler. Chemicals are corrosive to the galvanised steel drum.

KEYS TO SUCCESSFUL COMPOSTING

There are six keys to successful composting: your climate, the carbon to nitrogen ratio, aeration, moisture, material size and volume. All are vital to the composting process. Let's take a closer look at each one:

CLIMATE

You can have finished compost within 14 days when your outside temperature (day and night) is at least 16°C. You can compost between 5°C and 16°C, but it will take a little longer. The composting process stops when the temperature consistently dips below 5°C. This signals the end of your composting season. It is sometimes possible to extend your composting season by covering the unit at night or by moving it into a protected area.

CARBON/NITROGEN RATIO

Any compost heap, whether using a fast method or a longer, slower process, must begin with a good balance of materials. The basic makeup of the material you start with will determine both the effectiveness and speed of the decaying process. These materials also establish the nutrient content of the finished compost.

You shouldn't try to make compost with just one ingredient. The decomposition process requires a proper mix of carbon and nitrogen – the C/N ratio – and that ratio is rarely, if ever, found in one material alone. Microorganisms, which are the decomposers, need carbon for energy and nitrogen for growth. Materials high in carbon are generally brown and dry, while materials high in nitrogen are usually fresh and green.

If there isn't enough nitrogen, your load could sit for years without even starting to decompose. On the other hand, too much nitrogen can result in the production of ammonia gas that leaks out and disappears into the air – easily detected by its smell.

The Carbon/Nitrogen Ratio...How to Get It Right, on page 18, will help you understand how to get this ratio right – without a degree in chemistry! *If you are composting with only vegetation*, a 4:1 ratio –

continued on page 6

WHAT IS COMPOSTING?

Composting is the natural reduction of organic wastes into humus. All organic matter will eventually break down into its basic humus form, or in other words, it will rot. Decomposition is the decaying process aided by millions of bacteria found in organic materials. The CompostTumbler simply provides a way of controlling the process, and therefore speeds it up.

The CompostTumbler will allow you to make compost in as little as 14 days, or you can compost more slowly over a longer period of time, adding materials as you get them.

*The CompostTumbler
will allow you to
make compost in as
little as 14 days...*

The choice is yours – once you understand the basic principles of all composting you will be able to compost successfully in many different ways.

Soon you will see the many benefits of composting. It is nature's magical way of improving soil, controlling pH and enhancing plant growth. It is your opportunity to recycle a large portion of your household waste, spare our nearly full landfills – and save yourself money.

CHOOSE THE METHOD THAT'S RIGHT FOR YOU!

There are many different ways to compost, and you can do any of them in your ComposTumbler with a lot less work. If you have fresh green and dead brown materials that will combine to give you a Carbon/Nitrogen ratio between 25:1 and 35:1, if you have enough of them, and if you are willing to spend three to ten minutes each day monitoring your load, then you can easily compost in 14 days.

You can do all of them in your ComposTumbler!

But, if you would rather build your load more slowly, use smaller amounts of materials, add them each day or couple of days as you get them; if you would rather tumble it every couple of days and you really do not want to bother with taking the temperature or using activator, then you can compost more slowly over a longer period of time.

You can also combine the two processes: build a load more slowly and when you have enough volume loaded, boost it with an activator or blood meal and "hot" compost it over the next two weeks.

You can do all of this in your ComposTumbler. Choose what is right for you.

AN EASY WAY TO CHECK FOR MOISTURE...

TOO WET



TOO DRY



JUST RIGHT



four fresh green to one dead brown – is a *good rule of thumb* and an easy starting place. You will be able to make adjustments in the first few days as you monitor your load.

AERATION

Since decomposition is a burning process, a good supply of oxygen is necessary to keep it going. Turning the material in a compost heap to make sure enough air gets to the burning core is an important part of the process.

The source of heat in an active compost heap is greatest at its centre; each time you turn the mixture it exposes more particles to the heat, therefore creating faster decomposition.

The ventilation and aeration of the compost when made in the ComposTumbler give you the greatest advantage over other methods. Instead of the time-consuming, heavy labour involved in turning a compost heap with a pitchfork, just a few turns of the drum will mix and aerate the entire compost batch. What takes months or even years in a completely natural setting can take only days in your controlled environment.

MOISTURE CONTENT

A compost heap should contain about 50% moisture in the overall mix—too much or too little moisture will slow down the decomposition process. One way to gauge the moisture level is to squeeze a handful of the material in your fist. If it does not stick together to form a ball, there is not enough moisture. If liquid squeezes out, there is too much. Check your load regularly for moisture content.

If the load is too dry, sprinkle it with a garden hose to restore the moisture content. If there are signs of too much moisture (especially foul odours), add dry materials such as sawdust or shredded dead leaves to absorb the excess.

MATERIAL SIZE

Breaking up or shredding the materials you plan to use in your compost has two effects. It increases the surface area of the materials and it bruises the skin of the plant material.

This allows decomposers a place to enter and results in a much faster breakdown – the smaller the pieces, the faster they will decompose.

14-Day Hot Composting requires the shredding or breaking up of coarse materials. A shredder is useful, although in most cases the materials you will be using will break up well without special equipment. A lawn mower works very well for shredding leaves and other soft organic material.

VOLUME

The amount of material you have readily available to load *at one time* will determine how quickly your compost can be made. To compost in 14 days, you must be able to fill the Original ComposTumbler at least 2/3 full (that's about 420 litre and the Compact ComposTumbler completely full *all at one time*). If you do not have enough mass you will not be able to sustain the heat for the required four to seven days.

If this is not possible, *do not worry* – you can still compost quite successfully by filling the Tumbler more gradually. The composting will take a little longer, but it will produce excellent compost. This method is covered under the section "Slower Composting."

HIGHER NITROGEN SOURCES MEAN HOTTER COMPOST

If you are one of the fortunate folks who have a ready access to fresh farm manure, there are many ways in which you can use it in your composting process. You can use it as an actual source of nitrogen and therefore as a large portion of your recipe, as in Recipe #5 on page 21. You can also use it as a booster in just about any other recipe, adding a few shovelfuls

Poultry manure contains the highest percentage of nitrogen; sheep, goat, steer and horse manure are all about the same and very good...

or buckets to the load to help increase the heating (when you first load or sometime in the first few days). Poultry manure contains the highest percentage of nitrogen; sheep, goat, steer and horse manure are all about the same and very good; and cattle manure is the lowest in nitrogen of the group. Composted manure has already been composted and is not good to use. Dehydrated manure that you buy from a store contains approximately five times the nitrogen that fresh manure contains.





COMPOST ACTIVATOR ± DO YOU NEED IT?

There may be times when your load is progressing more slowly than it should. It may be because the nitrogen level of your fresh materials is low. Late summer grass is rarely, if ever, as high in nitrogen as spring grass; weeds, plants and kitchen waste can all vary in nitrogen content from one week to the next.

Compost Activator is the result of decades of biological research.

You usually will not be able to tell until you try to compost with it. So, unless you have a supply of farm manure readily available, you will probably need to boost some of your compost batches with an activator.

Compost Activator is the result of decades of biological research. This scientifically developed formula gives you high concentrations of active organisms that contribute to higher heating.

MATERIALS FOR COMPOSTING

Any organic material – anything that was once alive – will decompose. Of course some things are better than others for making compost, especially if you are composting rapidly.

You will find a wealth of materials around your home and garden that are ideal for composting. Below is a sampling of just a few of the sources of nitrogen and carbon that are probably readily available to you.

NITROGEN

- fresh grass clippings (cut within 24 hours)
- green yard & garden waste*
- coffee grounds & tea bags
- egg shells (rinsed & crushed)
- uncooked fruit & vegetable waste*
- farm manure
- hair trimmings

CARBON

- dead leaves*
- sawdust & wood shavings
- straw or hay*
- wood ash
- black & white newsprint (shredded, premeasured & soaked in water)
- dead garden waste*

* Remember to chop or shred these materials before loading if you are using the 14-day hot composting method.

Do not use branches, twigs, pine needles, redwood, cedar, walnut or treated wood. **Do not use** any cooked foods, dairy products, meat or bones. **Do not use** pet waste or untreated human waste. **Do not use** anything you know or suspect to be poisonous or diseased.

If you don't find enough material right at hand, there are probably endless sources of good materials being thrown away in your local area. The following are just a few suggestions of businesses and the sort of materials you might be able to get from them for little or no cost:

BUSINESSES

Woodworking shops
Vo-Tech schools
Lumber companies

Grocery stores
Produce stands

Farms
Riding stables

Barber shops
Hair salons

MATERIALS

sawdust & wood shavings

old produce and leftovers

fresh animal manure

hair cuttings

As long as you maintain the proper C/N ratio, you can have great flexibility in how you select and mix materials for your compost.

As you become comfortable with your ComposTumbler and experiment with the materials available to you, you will find the mixtures and combinations most suited to your needs. Common sense and experience will help you produce superior compost quickly and easily.

CAUTION: Do not add soil or sand to the mixture in your ComposTumbler. It will add unnecessary weight that will pack down other materials and make the drum harder to turn, which can damage the drum.



COMPOST ACTIVATOR IS EASY TO USE!

- 1) Add 1lb of activator to most Original Compos-Tumbler batches and add 1/2 lb to most Compact ComposTumbler batches. Simply sprinkle it onto the materials after any necessary moisture adjustments have been made and tumble well to mix in.
- 2) Sometimes it might be necessary to add more, although that would be unusual for the average load. For example, plug grasses are exceptionally low in nitrogen and will probably require more activator.
- 3) Proper storage of the Compost Activator is important. Keep it in a dry, shaded location. Direct sunlight will kill the active organisms and moisture will cause the organisms to come alive prematurely. Temperature, however, does not affect its two-year shelf life.



WHY TAKE THE TEMPERATURE?

The Compost Thermometer may be the most important tool in helping you complete your compost in 14 days, for the temperature of the composting materials will tell you if everything is working properly. Remember, if it is not, you will be able to make adjustments in the first few days.

Always take the temperature before you tumble the drum.

The chart on page 12 graphs the temperature taken from a typical batch of 14-day compost. Individual batches will vary depending upon the materials used, the C/N ratio, and other factors. However, this example shows the heating and cooling that takes place during the decay process. Note that the temperature is the highest in the first few days, with gradual cooling during the rest of the cycle.

14-DAY HOT COMPOSTING AND YOUR ComposTumbler

The ComposTumbler's design speeds the breakdown process by giving you an easy way to manage your compost pile. By following the simple and successful steps outlined below, you can have compost in as little as 14 days.

A. LOADING THE DRUM

1. Remove the door completely.
2. Establish your ratio of fresh nitrogen and carbon materials using either a 4:1 ratio for vegetation (four parts of fresh green materials to one part of a dead brown material), one of the sample recipes on page 21, or by figuring out your own ratio using the formula on page 19.
3. Choose something to be your "measuring spoon" – a bucket, a basket or a shovel. Using your ratio, begin loading your tumbler. For example, if you are using a 4:1 ratio of fresh grass and kitchen waste to dead, shredded leaves and wood shavings, you should put in four measures of grass and kitchen waste (in any combination) and then one measure of leaves and shavings (again, in any combination). Repeat this process until you are finished. Several times during the loading process you should stop, put the door on, and tumble the materials. This will give you a really good "mix" from the very beginning.

Remember, you need to fill the Original ComposTumbler at least 2/3 full and the Compact ComposTumbler completely full all at one time to do the 14-day composting. After the drum is filled, keep the door closed and securely latched except when inspecting or unloading.

B. PROCESSING THE LOAD

1. **Once each day** go out to your tumbler, slowly rotate the drum so that the door is facing you and remove the door.
2. **Once each day** take the **temperature** of the materials by inserting the thermometer in *several different places*. You are looking for the hottest spot—the heat core. Be sure to remove your thermometer before tumbling. See the shaded panel to the right for more information on using the compost thermometer and the chart on page 12 for the average heating and cooling process during a 14-day cycle.

ADJUSTMENTS

Both moisture and the nitrogen content of your materials will greatly affect the heating of your load. If your compost is slow to heat or the temperature is not significantly higher than your outside temperature the day after loading (above 49°C in the summer) and the materials are moist, you should add an activator, blood meal or farm manure as a booster. If you determine that the materials are too dry during the moisture test, you might want to wait one more day before adding a booster. The addition of water might be all that you will need to raise the temperature.

3. **Once each day** check the **moisture** of your compost by taking a handful and squeezing it. It should stick together but break apart easily and feel like a wrung-out sponge. Liquid should not squeeze out. Be sure that the handful you took is representative of all the materials – sometimes portions will be dry while others are moist. *You must make sure that all the materials are evenly moist.* The aeration/drainage units in the door of the drum allow excess moisture to drip out. Do not be concerned; in fact, you can collect the drips, dilute them with water 10:1, and use as a liquid fertiliser. This is "compost tea."

ADJUSTMENTS

If your materials are drier than they should be, add some water. Be gentle when you add water to the materials; it is possible to drown the microorganisms. Lightly spray, and if some areas are drier than others, try to spray only those general areas. Add water during the tumbling process—lightly spray the materials, attach the door and tumble one revolution. Repeat this process until you attain the correct moisture.

If your materials are too wet, add some dry absorbent carbon material like sawdust, wood shavings or shredded dry leaves. Add small portions until the moisture *seems* correct. It takes about 24 hours for the new materials to actually absorb the moisture.

4. **For the first seven days** **smell** your composting materials. It is not uncommon to smell a light odour of ammonia, especially in the first week of composting. During the second week your compost should begin to smell "earthy." There should never be any foul or rotten odours from your ComposTumbler.

continued on page 12

HOW TO TAKE THE TEMPERATURE

- 1) Turn the drum so that the door is facing you. Remove the door.
- 2) Insert the thermometer into the compost. Your first reading should be at the centre of the load, for that is where the "inner core," or heat core, is generally located. However, since you had to turn the drum to get the door up, this inner core may *not* be in the centre any longer.
- 3) Watch the dial to see if it starts to move up—it will do this very quickly if you are near or at the heat core. If it does, simply wait until it stops moving; if it doesn't, move the thermometer to another location and check the temperature there.
- 4) Take the temperature in several different locations, looking for the "hottest spot." The highest temperature you find is the one you should actually use in your records.
- 5) Remove the thermometer before tumbling and wipe it clean. Store your thermometer in a convenient location where it will not be damaged by accident or weather.

FACTS YOU SHOULD KNOW ABOUT "HOT COMPOSTING"

TEMPERATURE

Monitoring the temperature of your materials will tell you a lot about how your compost is progressing. In a way, the temperature measures bacterial activity and decomposition, for as decay organisms feed on the organic material they make the temperature of your compost rise.

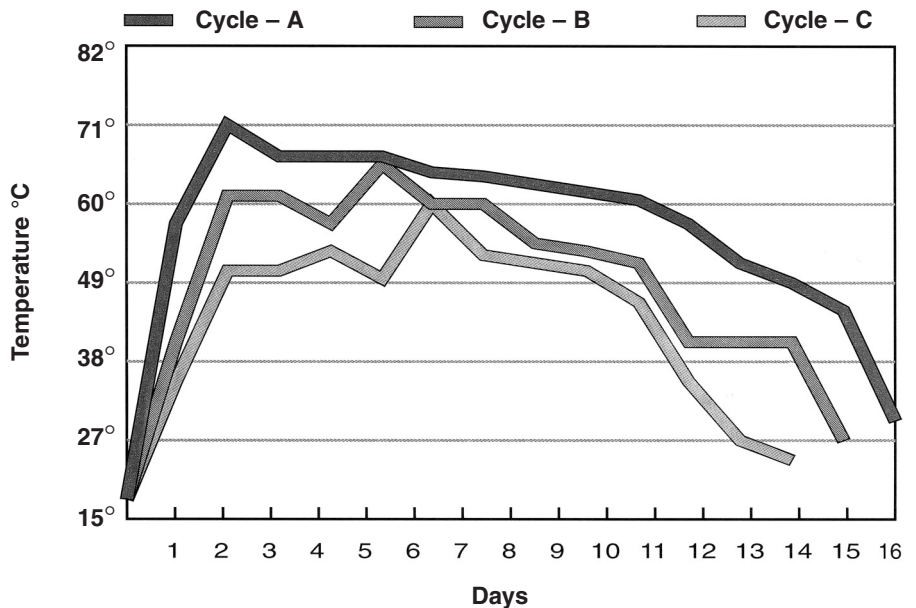
Monitoring the temperature of your materials will tell you a lot about how your compost is progressing.

As you tumble the materials, it introduces new food and air into the "activity centre," which is the heat core of the load.

A temperature of 65-70°C over a two to three day period will kill the majority of weed seeds. After several days, the microorganisms have devoured most of the food and the temperature will slowly and steadily begin to drop.

Example of 14-Day Composting Cycles

See "Why take the temperature?" on page 10 for additional information.



ADJUSTMENTS

If the smell of ammonia is very strong, add a small amount of shredded dead material. Foul odours indicate that the process has become anaerobic (not enough oxygen is getting to the materials), usually because it is too wet. Add some wood chips to help aerate the materials during the tumbling; add a fairly large amount of absorbent carbon material until the moisture is correct.

5. **Once each day** check your compost for **appearance** and to see if balls are forming. "Balling up" is just what the term implies: as a result of the tumbling and circular turning of the materials in the drum, some of them form into tight little balls, ranging in size from about one to three inches in diameter. This problem occurs almost exclusively with fresh grass clippings.

A little balling up is not a major concern, but if it is excessive the material in the centre of each ball is insulated from the heat and bacterial action and may not decompose properly.

ADJUSTMENTS

Each day pull apart what balls you can see; this will only take a few minutes but will make quite a difference in the finished product.

The addition of some wood chips will also help to eliminate some of the balling, but don't expect the wood chips to decompose—they will still be present in your finished compost. It is important to understand that although compost made primarily with grass and yard vegetation is rather clumpy, it will provide the nutrients and improve the soil structure just as effectively as the compost that you can buy.

6. **Once each day** rotate the drum five complete revolutions throughout the 14-day cycle. The design of the ComposTumbler takes the hard work out of composting, and five revolutions are sufficient for thorough mixing and aerating. Do not turn the load more than once each day.
7. When you are finished rotating the drum, position the door face down. This step places the aeration/drainage units at the bottom of the drum and the warm air screens at the top.
8. About the sixth or seventh day fine material may begin to build up around the aeration/drainage units on the door. Remove the door and wither hose or scrape this build-up away.

C. UNLOADING THE DRUM

To unload the processed compost from your Original ComposTumbler, just place a wheelbarrow or garden cart under the drum. Place a tarp or low container under the drum of the Compact ComposTumbler. Remove the door and rotate the drum until the dark, rich, superior compost pours out...ready for use wherever you want it!

Note: A sifter screen is available as an optional accessory. When the compost is finished you can use the sifter screen in place of the door, so that as you tumble the materials the smaller pieces fall through first. If you have further questions or if you would like to purchase a sifter screen, please call one of our Customer Service representatives at **0800 988 4828** or call your local supplier.



FACTS YOU SHOULD KNOW ABOUT "HOT COMPOSTING"

CYCLE TIME

The normal "hot" composting cycle is 4 to 7 days of high heating followed by 7 to 10 days of very gradual cooling. If you are composting in cooler temperatures, the heat core temperatures of your compost will be lower than 50°C and the cycle will take longer. As you can see, your climate will greatly affect your composting time.

Your climate will greatly affect your composting time.

DECOMPOSITION

Rapid composting does not allow enough time for the skeletons of all the materials to decompose. The smaller the particles you begin with, the greater the decomposition. As long as the materials have gone through the heating and cooling process successfully, it is usable and valuable to your soil. Any skeletons still present will decompose naturally when the compost is in the soil.

FACTS YOU SHOULD KNOW ABOUT "SLOW COMPOSTING"

HEAT

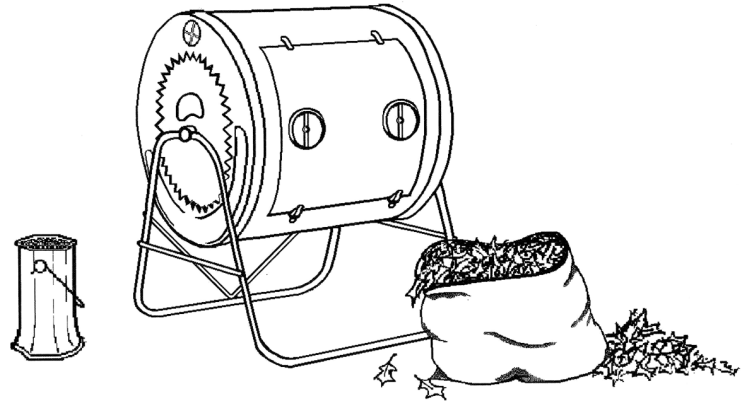
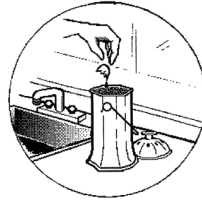
You probably will get some heating each time you add fresh materials. Do not be frustrated if the heat does not last very long; this is common when the volume is small. The ratio of fresh material to dead material that you use will also affect the heat – a 4:1 ratio will generally create more heat than a 3:1, a 3:1 more than a 2:1, and a 2:1 more than a 1:1.

The addition of activator will create some heat...

ADDING ACTIVATOR

The addition of activator will create some heat, but whether the heat will last more than a day is dependent upon your materials and the composting stage you are in. A small volume of materials will generally cool back down pretty quickly.

The best time to add activator or booster is when you are through adding materials and are ready to "finish" your load. Often, because the volume is greater, it will sustain the heat for a longer time, and therefore will make some difference in your "finish" time. But a large load is not necessary as long as you do not mind waiting a little longer.



SLOWER COMPOSTING AND YOUR CompostTumbler

Use the following guidelines, along with the general composting information in this booklet, and you will have compost within several weeks to several months. This process allows you to gradually fill your Tumbler, add materials on a continual basis, or simply speed up the slow, passive composting process – without the use of activator or a thermometer.

1. The ratio of materials you use will affect the amount of time it will take your materials to compost. You must *always* use a combination of fresh green and dead brown materials, and the volume of green should be equal to or greater than the brown.
2. Use grass within two to three days of cutting or it will not have enough nitrogen left to be useful as a fresh green source. If you use dead grass as a source of carbon, try to also include another dead material along with it. Dead grass is very low in carbon and may not be sufficient by itself.
3. All materials should be shredded or chopped up; however, *if you choose not to chop up your materials*, except them to take a much longer time to compost and decompose.

4. As you accumulate materials put them into the Tumbler. It is especially important that the fresh green materials go in right away, so that you are taking advantage of all the nitrogen that they contain. Balance the fresh (nitrogen) materials and dead (carbon) as you load, or at least within a few days. So if you have a bucket of kitchen waste, throw it in – but sometime within the next few days add some dead straw too. If you rake up some leaves, throw them in—but sometime within the next few days add some fresh grass or fresh plants that you've pulled from the garden.

When you run out of space inside your Tumbler or are eager to finish this load and begin another, you *must stop adding materials*. Your finish time will depend upon the C/N ratio you have been using, the size and consistency of the materials, and how moist they have been kept. If you have enough volume in the Tumbler, you can often add activator or blood meal and "boost" your load into hot composting cycle. This will help it to finish in about two weeks.

5. **At least four times** each week go out to your ComposTumbler, check the **moisture** and **smell** the materials. Make any needed adjustments (see Adjustments for these two categories under 14-Day Hot Composting) and then rotate the drum five full revolutions. Rotating the drum *every day* will speed up your process even more.

6. If balls are forming, it helps to break them apart, but *if you choose not to*, expect your composting time to be much longer.



THE BOTTOMLESS REFUSE PAIL

After using the ComposTumbler or several months, a publisher at Organic Gardening Magazine said to us, "You guys have got it all wrong. You should call your ComposTumbler the bottomless refuse pail."

When we asked "why," he said that each day as he leaves for the office his wife hands him their kitchen scraps in a brown paper bag. As he passes the ComposTumbler on the way to

The ComposTumbler just never gets full.

his car he throws the refuse, bag and all, into the Tumbler and gives it a quick spin. He also adds occasional garden waste. He said, "The ComposTumbler just never gets full. It is a bottomless refuse pail."

So, here is another way to use your ComposTumbler. Turn it into a bottomless refuse pail. Just throw your household refuse into the ComposTumbler, add a little carbon (remember his brown paper bag?), and give it a few spins. When you need some compost, stop adding to it, let it cook off for a couple of weeks, and you will have black gold to add to your soil.



WHEN IS YOUR COMPOST FINISHED?

If you are using a hot composting method you will need to monitor the daily temperature readings so that you can make sure the materials have gone through a period of high heating (four to seven days) and a period of gradual cool-down (seven to ten days). The time it takes to complete this process

It is done when its internal core temperature is back down to the outside temperature during a cool part of the day.

is not necessarily 14 days; your compost is done when its internal core temperature is back down to the outside temperature during a cool part of the day.

Other signs of being finished are major loss of volume (at least 50%), a dark brown or black colour and an earthy, wet-mulch smell. When you are using one of the slower composting methods these will be your signals that your compost is ready.

RECIPES FOR YOUR FIRST BATCH OF COMPOST

Although this booklet includes additional recipes, we strongly recommend that you use one of the following recipes for your first batch. These recipes are very simple and include materials that naturally heat well.

Experiencing one typical hot composting cycle is a valuable learning tool for later batches, when you may want to experiment with different ingredients. It will also give you your first load of nutrient-rich, healthy compost for your garden. Choose the trial batch that best fits the current season.

SPRING AND SUMMER – FIRST TRIAL BATCH

Original ComposTumbler

420 litre of fresh grass clippings and/or kitchen waste
105 litre of sawdust and/or wood shavings and/or shredded dead leaves

Compact ComposTumbler

260 litre of fresh grass clippings and/or kitchen waste
50 litre of sawdust and/or wood shavings and/or shredded dead leaves

Note: Both of the spring and summer recipes are based upon a 4:1 ratio of fresh material to dead material. *When using only vegetation this ratio is a good rule of thumb.*

See "14-Day Hot Composting" on page 10 for step by step instructions on how to process your trial batch.

AUTUMN – FIRST TRIAL BATCH

These autumn recipes will help you compost your leaves when grass and other high-nitrogen sources are no longer readily available.

Original ComposTumbler

520 – 635 litre of dead shredded leaves
2 - 3 kg.* of blood meal or alfalfa meal

Compact ComposTumbler

315 litres of dead shredded leaves
1- 1¹/₂ kg.* of blood meal or alfalfa meal

*** Remember, as you monitor your load daily, you will be able**

to make adjustments.

Moisten the shredded leaves *before* loading so that you do not "wash out" the blood or alfalfa meal. Layer the leaves with the meal, tumbling occasionally to be sure they are well-mixed. If the materials still seem too dry, *lightly* sprinkle them with additional water.

See "14-Day Hot Composting" on page 10 for step by step instructions on how to process your trial batch.

Additional "Sure-Fire Recipes" are found on pages 20-21.



THE FINISHED PRODUCT

Compost is nature's magic. There are so many different uses for compost that you will soon find there is never enough—even with 14-day com-post from the ComposTumbler.

Your finished compost will be moist, dark in colour and have an earthy, wet-mulch smell. Most experts agree that finished compost is generally neutral. If you feel that you need to sweeten your compost, you can add some lime to it, but do this to the finished compost, not the composting materials.

Using the compost from your ComposTumbler will enrich the soil by allowing air, water, and nutrients to reach the root zone and encourage deeper rooting, an important factor in reducing drought stress and the amount of water needed to maintain healthy plants.

But there is another benefit your ComposTumbler provides:

COMPOST TEA

Compost tea is the liquid that drains from the ComposTumbler's aeration units during the decomposition process. By placing a bucket or container under the aeration and drainage units you will be able to capture this natural fertiliser. When diluted 10:1 (10 parts of water to 1 part of compost tea), it makes an excellent fertiliser for use on all of your plants.

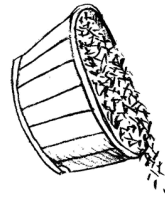
NOT A MATHEMATICIAN?

Not everyone wants to figure out their own C/N ratio—that is why we have included some sample recipes in this booklet, and that is why we keep telling you about the standard 4:1 ratio. Using four parts of fresh green materials to every one part of dead brown material is a great recipe for most vegetation. That is what we compost with in our demonstration yard. Sometimes

Using four parts of fresh green material to every one part of dead brown material is a great recipe for most vegetation.

we add a bucket or several shovels of fresh horse manure to boost the load, sometimes we add activator, and sometimes we do not need to add anything at all. So, unless you want to compost with mostly animal manure, human hair or one of the infamous "meals" (blood, bone, alfalfa, and cottonseed), you can probably start with a 4:1 ratio of fresh to dead materials and make great compost!

Whatever you do, don't panic. This C/N formula information is for those folks who *like* to figure everything out for themselves.



12 parts
Fresh Grass Clippings

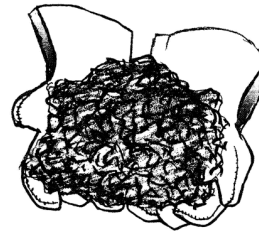
Carbon 72
Nitrogen 4.80

+



3 parts
Sawdust

Carbon 102
Nitrogen 0.24



= 34.5 C/N Ratio

THE CARBON/NITROGEN RATIO – How to Get it Right

Achieving a proper C/N ratio may sound difficult, but it is really a lot simpler than it first looks. The important thing is to have a good idea of the carbon and nitrogen content of the materials you are working with.

That knowledge, combined with a bit of simple math, will enable you to easily determine how to mix the material in the right amounts. All organic material will eventually rot, but using the ComposTumbler and having a proper C/N ratio will allow you to make compost in much less time than those backbreaking heaps. And the more you use your ComposTumbler, the more comfortable you will feel with it. In no time you will know the proper mixtures almost by instinct.

The table at the **right** gives you the Carbon and Nitrogen Values of a variety of organic materials you might use in your compost, things that you probably have easy access to. "Value" simply means how many grams of each substance are found in 100 grams of the material.

These values are all averages for the type of material listed, not exact figures. For example, different varieties of grass vary in nitrogen content – the figure

listed is just an estimate of a typical variety. But these figures should be enough to get you started on creating your own compost mixtures, and remember, **as you monitor your load daily, you will be able to make adjustments.**

FIGURING YOUR CARBON/NITROGEN RATIO

Measure the materials you are using and how many "parts" or common measurements of each you are starting with. If you have two bushels of grass clippings and one bushel of sawdust, then you have two "parts" of grass and one "part" of sawdust. (So would the person who had two *gallons* of grass and one *gallon* of sawdust.)

Now, figure the Total Carbon Value of your mix by multiplying the carbon value of each ingredient by the number of parts, then add the totals of all materials. For example:

$$\begin{aligned} 420 \text{ litre of fresh grass clippings} \times 6 \text{ Carbon (see table)} &= 2520 \\ 105 \text{ litre of sawdust} \times 34 \text{ Carbon (see table)} &= 3570 \end{aligned}$$

$$\text{Total Carbon Value} = 6090$$

Now, figure the Total Nitrogen Value in the same manner:

$$\begin{aligned} 420 \text{ litre of fresh grass clippings} \times .40 \text{ Nitrogen (see table)} &= 168 \\ 105 \text{ litre of sawdust} \times .08 \text{ Nitrogen (see table)} &= 8.4 \end{aligned}$$

$$\text{Total Nitrogen Value} = 176.4$$

Divide the Total Carbon Value by the Total Nitrogen Value to get the Carbon/Nitrogen Ratio:

$$\frac{\text{Carbon } 6090}{\text{Nitrogen } 176.4} = 34.5 \text{ C/N Ratio}$$

The Target Ratio for hot composting is between 25 and 35.



LIST OF VALUES

All materials contain both Nitrogen and Carbon. Materials high in Nitrogen will also contain some Carbon; materials high in Carbon will also contain some Nitrogen. When you calculate your C/N ratio, use both the Nitrogen and the Carbon values for each material. If no value is listed then it is not a significant amount and will not be part of your calculations.

Material	Carbon Value per 100 grams	Nitrogen Value per 100 grams
Fresh grass clippings	6	0.4
Fresh weeds	6	0.3
Dead leaves	24	0.4
Newspaper	36	0.2
Fruit waste	8	0.2
Kitchen waste	8	0.5
Sawdust	34	0.08
Chicken litter	25	2.5
Straw	36	0.4
Cattle manure (fresh)	0	0.4
Blood meal	0	16
Horse manure (fresh)	0	0.7



SOME "SURE-FIRE RECIPES" FOR SUPERIOR COMPOST

There are endless combinations of materials you can use when you compost. To make it easier for you we have included some common recipes that we have successfully tested.

Each recipe is described in "parts" so that you can use it in either the Original ComposTumbler or the Compact ComposTumbler. You simply substitute the "parts" for bushels, buckets, shovelfuls – for whatever your "measuring spoon" is.

Each recipe is described in "parts" so that you can use it in either the Original or Compact ComposTumbler.

Remember, for 14-day Hot Composting you must fill the Original ComposTumbler at least 2/3 full and the Compact ComposTumbler completely full. If you do not have enough materials to do that, turn to the section on "Slower Composting" for instructions, and use these ratios to fill your Tumbler more gradually.

Now relax, choose a recipe and method that is right for you, and enjoy your composting experience.

FORMULA NOT QUITE RIGHT?

If you use the formula to get a C/N ratio and the ratio falls outside of the target area, it is easy to fix your recipe:

If your C/N ratio is **lower** than 25:1, your recipe is too low in carbon. Add additional "parts" of a material high in carbon to your formula until your C/N ratio is between 25:1 and 35:1.

If your C/N ratio is **higher** than 35:1, your recipe is too low in nitrogen. Add additional "parts" of a material high in nitrogen to your formula until your C/N ratio is between 25:1 and 35:1.

For example:

70 litre of leaves x 24 Carbon (see table) = 1680
35 litre of sawdust x 34 Carbon (see table) = 1190

Total Carbon Value = 2870

And the same two materials contain:

70 litre of leaves x .40 Nitrogen (see table) = 28
35 litre of sawdust x .08 Nitrogen (see table) = 2.8

Total Nitrogen Value = 30.8

Your C/N ratio is:

Total Carbon Value 2870
= 93 C/N Ratio

Total Nitrogen Value 30.8

Too low in Nitrogen!

So, we add additional fresh green materials:

Add 315 litre of fresh grass clippings and 105 litre of kitchen waste:

315 litre of grass x 6 Carbon (see table) = 1890
105 litre of kitchen waste x 8 Carbon (see table) = 840

Total Carbon Value added = 2730

315 litre of grass x .40 Nitrogen (see table) = 126
 105 litre of kitchen waste x .50 Nitrogen (see table) = 52.5

Total Nitrogen Value added = 178.5

Your new C/N ratio is:

Carbon (2870 + 2730) = 5600

Nitrogen (30.8 + 178.5) = 209.3

Good to use!

= 26.76 C/N Ratio

Remember the 4:1 ratio for vegetation we talked about in "Keys to Successful Composting?" That is the ratio our recipe ended up as:

420 litre of fresh green : 105 litre of dead brown; or, 4 parts fresh : 1 part dead.



Recipe #1

(C/N ratio = 34:1)

Fresh grass clippings	12 parts
Sawdust	3 parts

Recipe #2

(C/N ratio = 29.5:1)

Straw	3 parts
Kitchen waste	3 parts
Fresh grass clippings	9 parts

Recipe #3

(C/N ratio = 35:1)

Dead leaves	9 parts
Fresh weeds	3 parts
Dehydrated* cow manure	
(store bought)	3 parts

* Be sure it is not "composted" cow manure

Recipe #4

(C/N ratio = 32.6:1)

Fresh grass clippings	9 parts
Kitchen waste	3 parts
Black & white newsprint*	3 parts

* See page 8 for information on how to prepare the newspaper for composting

Recipe #5

(C/N ratio = 33:1)

Fresh horse manure	7 parts
Sawdust	3 parts
Dead leaves	3 parts

Did you notice that when only vegetation was included in the recipe, the fresh to dead ratio is 4:1? Now you can understand why we use that as a good rule of thumb.



TROUBLESHOOTING WITH THE

SYMPTOM

POSSIBLE CAUSE

**Batch is not heating
(low temperatures)**

Not enough nitrogen

Batch too small

Not enough moisture

Too much moisture

Cooler weather

Cold weather

**Batch smells like:
Strong Ammonia**

Too much nitrogen

Foul

Too wet, grass is fermenting

ComposTumbler

SOLUTION

Add a nitrogen source such as manure, blood meal or activator.

Add more materials to fill the Tumbler; make sure you maintain a correct C/N ratio.

Add water by lightly sprinkling or misting, then turn the drum.

Add absorbent carbon material such as shredded leaves or sawdust.

Add additional fresh materials or booster to "jump start" the batch if warm weather returns.

Stop composting if your temperatures are below 5°C.

Add a high carbon source such as dry shredded leaves, sawdust, or shredded straw.

Aerate the batch by turning the materials and add bulking material such as wood chips to increase air space within the pile. Add absorbent dry material like sawdust.



MANTIS UK LTD
ORCHARD HOUSE
HEMPSHAW LANE,
STOCKPORT
CHESHIRE
SK1 4LH

Freephone number* **0800 988 4828**

*This freephone number is free from UK based landlines.

© 2014

P/N 01993-00 HTMC UK (1/14)