



## Q & A's

### Waste<sub>2</sub>O™ - Model W20.180

**What does it do?** Waste<sub>2</sub>O™ rapidly digests soft food waste and converts it into grey water which runs away to drain – simply throw in the food and walk away. The process is called aerobic digestion, and a naturally occurring blend of microorganisms help with this process.

**What can I put in the machine?** The machine will take soft organic food waste such as fruit, vegetables, cooked and uncooked meat, fish and so on. The general rule is that if a human can eat the food, the Waste<sub>2</sub>O™ will process the food. The machine and the microorganisms are designed to process a wide range of food waste types in mixed quantities. If your operation disposes of a large quantity of one type of food waste, contact Mechline for advice before operating the machine.

**What can't I put in the machine?** The machine cannot process anything that is not soft organic food waste and cannot be easily broken down such as bones, seeds and stones, flower stems, packaging, general waste, cutlery, crockery etc. The general rule is that if a human cannot eat the product, then Waste<sub>2</sub>O™ cannot process the product. **This is important because placing the wrong products into the machine could cause damage and could void the warranty.**

**What stays out:** - inorganic or fibrous materials such as:

Bones, wrappers/packaging/styrofoam, plastics, dishes (crockery or cutlery) napkins/serviettes, flower stems, oil/fats/grease, soup/liquid stock, raw dough/flour, yeast, pineapple tops, corn husks or other heavily fibrous materials, fruit seeds & stones (such as mango, avocado, peach, etc.), frozen or chilled food (wait until room temperature).

**What goes in:** - soft, organic, bio-degradable food such as:

Raw or cooked meat, poultry, fish, vegetables, fruit, noodles, bread, pasta, rice, dairy, coffee, etc.

**NB: just like a person - do not put too much of any one kind of food into the machine at any one time.**

**A balanced combination of food waste will digest better.**

**Can I put refrigerated or frozen food waste into the Waste<sub>2</sub>O™?** No. Please allow for the food waste to come to room temperature before adding. If very cold food waste is added it will change the conditions in the chamber and could kill the microorganisms that break up the food waste.

**If anything accidentally drops into the machine, is it safe to fish it out by hand?** Yes. There is a paddle mechanism inside the machine that slowly rotates to stir the food waste, but this automatically stops as soon as the machine lid is opened. Rubber gloves should always be worn when retrieving anything from inside the machine.

**How much soft organic food waste can I put in the machine?** Operators can continually "top up" the machine with food waste – up to 45kgs at any one time. A general rule-of-thumb is to fill up to the axle. Much like the human digestive system, the machine gradually processes the food. Trying to put too much food waste into the machine at one time will overload the machine and slow the process. **Note: Excessive overloading will cause the machine to shut down.** The machine can process a maximum of 180kgs of soft organic food waste over a 24-hour period.

**What if my operation has a period of the day when a significant amount of soft organic food waste is produced - lunchtime for example?** This is very common and is easily overcome by scheduling the loads of food waste put into the machine. Food waste in excess of what the machine can process at any one time should be stored ready to be put into the machine later in the day once the machine has had a chance to process what it already holds.

If the Waste<sub>2</sub>O™ control panel's amber 'WAIT' light is on, the machine has sensed that it is working at full capacity. Note that the Waste<sub>2</sub>O™ lid will automatically lock while the 'WAIT' light is on. As soon as the machine has digested some of its load, the 'WAIT' light will go out and the machine lid will automatically unlock.

**Do not attempt to force the machine lid open while the 'WAIT' light is illuminated.** Doing so could void the machine warranty.

**Operational tip:** Every time the Waste<sub>2</sub>O™ lid is opened, a small amount of power, water and microorganism is used.

Try to minimise the number of times the machine lid is opened by keeping a sealable food waste bucket by the machine. Open the machine lid and pour in the food waste only when the bucket is full.

**Can Category 1 food waste be digested by the Waste<sub>2</sub>O™ machine?** Category 1 is not allowed to go to landfill and therefore, it would not be allowed to be digested and sent to drains. As per DEFRA (<http://www.defra.gov.uk/food-farm/byproducts>), certain destinations, upon return, have their waste deemed as international catering waste (Cat 1). Cat 1 waste has to be incinerated or rendered under the highest controls.

**Can all the contents of the tank, e.g. woodchips, etc., be removed through the top hatch?** Yes; this is actually the only way out of the chamber.

### What is the BOD, COD and suspended solid count for the grey water output from the machine?

Grey water, in its very nature, is waste water containing a percentage of organic materials, and it can be the typical discharge from kitchen sinks, showers, baths, etc. The amount of organic material in the waste water will depend on what was being washed. The output from Waste20™ machines will vary according to what is put inside the machine. And the results can vary daily, depending on the food waste for the day. Ultimately, it is the client's responsibility to determine the suitability of the product before ordering and that installations and operations comply with local authority guidelines.

### Have you any details on how often during the day food waste can be loaded into the unit, e.g. can 180kgs be loaded into the machine in one go, how long would it be before it can be used again and how much extra would it be able to take?

The machine can process a maximum of 180kgs of soft organic food waste over a 24-hour period. Operators can continually "top up" the machine with food waste – up to 45kgs at any one time. A general rule-of-thumb is to fill up to the axle. If the machine is overloaded, the shot bolt will activate. It is almost impossible to gauge when the next load will be ready, as it depends what kind of food waste went in. Some food groups take longer to digest than others. If the 'WAIT' light comes on each time you "top up" with food waste, then you are constantly overloading the machine and this could reduce the life span of the machine.

### How do I put food waste into the Waste20™? Simply open the machine lid and pour the food waste through the hatch onto the woodchips inside, then close the lid. **NB: Be sure the lid is shut securely to avoid the fluid box from being emptied too soon.**

**Why are there woodchips in the machine?** The woodchips are impregnated with specially blended microorganisms that break up the food waste. The woodchips remain in the machine all of the time and only need topping up every 12 months. Mechline will contact you 12 months after your Waste20™ has been installed to arrange for more woodchips to be delivered.

**Is there any sludge or by-product for me to get rid of?** No. All of the soft organic food waste will be digested by the machine and will run away to drain as grey water.

**Is there anything else I need to do to keep the Waste20™ machine running at it's best?** Yes. You must ensure that there is always a box of Waste20™ microorganism in the machine and that the box is properly connected. This is essential because every time the machine hatch is opened a tiny amount of the microorganism is sprayed onto the food waste. If the microorganisms are not regularly topped up in this way, they will eventually die out and the machine will not be able to function. If the machine lid is opened approximately 25 times per day, the fluid box will last approximately 30 days. If the lid is opened more frequently, the fluid box will require replacing sooner.

The microorganisms have been specially blended for this application and are perfectly safe. The Material Safety Data Sheet for the microorganisms is included with each master box, and there is a copy in the user's manual for your records.

When the fluid requires replacing, the blue '**REPLACE FLUID**' light on the control panel will flash and a buzzer alarm will sound. **NOTE:** If the fluid is not replaced within 72 hours of the alarm sounding, the lid will automatically lock, and will not release until the fluid box is replaced. Follow the replacement instructions on the fluid box. Contact Mechline for replacement fluid 01908 261511. Always keep a spare box in stock.

**Water connections** must be 1/2-in BSP, with permanent (24-hour) warm water supply @ 50°C between 2-5 bar pressure. Maximum hardness 70mg per litre. *NB: If 50°C water supply is not available, consider installing at least a 50L, 3Kw, dedicated water heater.*

**Drain connections** must be 42mm (1 1/2-in) at approx 425mm AFFL. Only use swept waste fittings with a maximum of 4 fittings between the machine and the soil & vent or floor drain. Ensure connection is to foul water drain. Do not fit trap. Appliance is trapped internally. Do not use compression, push-fit, short or close fittings.

Installation must be carried out in accordance with local authority requirements. Water supplies require appropriate back flow prevention. Minimum recommended wall gap to rear of appliance 90mm. Allow a reasonable gap for a service engineer to also access the side panels. Installation should be in a well ventilated area.

**What if the red 'SERVICE' light flashes?** The '**SERVICE**' light will flash and the alarm will sound if the machine shaft becomes jammed. If this happens, open the machine lid and remove the cause of the jam. Rubber gloves should be worn for this operation. The machine shaft will not run until the lid has been closed.

**What if there is a power cut, or someone turns off the power to the machine, or someone presses the emergency knock-off button?** Waste20™ will not automatically restart. Once the power is restored, follow the procedure:

1. Turn the isolator on the front of the machine to the '**ON**' position.
2. Ensure the emergency knock-off switch is pulled out.
3. Press the green '**RESTART**' button on the control panel.

The machine will now restart. **NOTE:** The '**WAIT**' light will illuminate and the lid will remain locked for 20 minutes while the machine warms up. After 20 minutes the machine can be used in the normal way.

**What if the machine is left unused for a long period of time?** If the Waste20™ machine is not used (lid is not opened) for 96 hours (4 days and nights,) it automatically reverts to '**ENERGY-SAVING**' mode. Opening and closing the lid will return the machine to normal running mode.

**NOTE:** If the machine is not used (lid is not opened) for 1 month, the microorganisms inside the machine chamber will die. In this situation a '**BOOSTER PACK**' of microorganism must be added to the machine chamber before the machine is used. '**Booster packs**' can be purchased from Mechline 01908 261511.

**Does the room require a wash down gully?** This is a decision for the client, but it would help to run the drain outlet and a wash down gully together, giving the ability to wash down the room, especially given that there may be spillages of food waste, etc.

**How do I take care of the machine?** The machine should only be regularly wiped down using a disposable cloth and plain warm water. Do not use bleach, anti-bacterial agents or other harsh cleaning chemicals. Never pour floor washing or cleaning water into the machine as the presence of cleaning agents may kill the microorganisms. Do not turn off the power or water supply to the Waste20™. The machine should be left running.

**What is the cleaning procedure for the machine?** Please avoid using any cleaning agents. As for the "inside", the bacteria and woodchips take care of themselves as they form a cumulative environment for the food waste. If the bugs are working properly, under the right conditions, there is nothing "dirty" in the chamber - it takes care of itself. As stated, the operators should only clean the gaskets, rims and exterior with clean, warm water on a regular basis. If for any reason there is a need to clean the inside of the chamber for service reasons, still avoid any cleansers. Also do not try to jet or spray wash the inside or outside of the unit. As with any electrical appliance, there is a slight possibility that using a high-pressure washing apparatus could overspray and enter the areas where the electronics are housed and lead to a fault.

**Max Temp of Hot water service? If 60 degrees, will it need a thermostat fitted?** Yes; a thermostatic mixing valve will be required, set to 50 degrees.

**Does the unit come fitted with a check valve or will that have to be provided externally?** One must be provided externally.

**Will/could the unit freeze up if it is located outside, even if it is under cover?** There is a danger of this. The machine must not be installed outside, it must be covered by a fully rain-proof shelter and protected from temperatures no lower than 5°C and no higher than 40°C. Avoid inserting food that is frozen or very cold. It is best to let it come to room temperature.

**If the unit is located in a separate room, what extract rate will be required? Or will a extraction fan be adequate?** It is always worth getting decent ventilation into the area; we have units that have operated with both standard ventilation and just a fan. The aim is to get approximately 15-20 air changes, but some sites are less than this. It is for each site to determine how best to provide working conditions suitable for its operators and employees.

**Does the unit have to be drained down for maintenance purposes?** No; in fact it does not have a tank or hold any water, with the exception of the drain pump and water latent in the food waste, which would be dispersed before servicing.

**What height does the drain outlet have to be and what type of open floor tundish, gully, etc.?**

The drain exit from the machine is around 405-435mm off the ground (dependent of how high the adjustable feet are set to). Ideally the drain is discharged into a trapped floor gully.

**What clearance is required around the unit (off the adjacent walls, etc) for access to the service outlets?** Minimum recommended wall gap to rear of appliance 90mm. Allow a reasonable gap for a service engineer to also access the side panels.

**How to determine the capacity of waste/number of units required to cater efficiently for the number of covers served in a catering facility?** The calculation is more a rule-of-thumb as each establishment will differ. Usually outline the following: If you use a range of 0.2kgs to 0.4kgs PER COVER, the lower being where you think there is good control, the latter where it is a more expansive menu i.e. more wastage. For example a restaurant does 100 lunches, 50 breakfast and 250 evening meals, with a total of 400-covers, and it is a broad menu, we have 400 x 0.4kgs=160kgs per day. They may then tell you that they have food waste pick ups twice a week at £85 per lift, giving a monthly charge of approximately £680 per month and an annual charge of £8,160.00. Also, consider costs for black bin liners, as operations could spend £30 per month double bagging food waste.

**How much water is required per day, each time it is loaded?** 600litres is the daily usage. The water usage is pretty consistent over the day; however, there will be a slight increase during operational hours, as this is when the lid is being opened. So if 600litres per day is the maximum draw, it will use about 25litres per hour on average. This will increase slightly during operation and be less than that during the night.

**Will methane gas build up in the machine?** This is not a cause for concern. Only a trace amount of methane is produced which is flushed away down the drain.

**What happens to the food waste inside the Waste20™? Why not derive energy from the waste?**

Through an aerobic process, the machine contains enzymes that digest the food and starts the breakdown of fats and greases, resulting in carbon dioxide and water. About 75% of food waste is water anyway so all the water going back into the sewer system is a good thing. A local company could take the food away and use the same aerobic process to reduce the food to biomass to burn for energy, but heavy, wet food waste is very energy intensive to dry out so why incur the extra costs? Alternatively a local company could use anaerobic digestion (AD) to convert the wet food into methane for energy production but some waste water companies, including Thames Water, already use this process themselves. So it's possible the grey water from the Waste20™ could already be feeding into an energy-producing process. But in these commendable schemes to derive energy from food waste, not only are the processes energy intensive but the food waste still requires collection from site – using fuel to get it to its factory, which would almost certainly use electricity in the process. With the Waste20™, all the food waste disposal is done right next to where the food was prepared. Although there is still some biological content in the water output, this is very much lower than if the food had been mechanically chopped up, macerated or just flushed down the drain and after all, the sewers are designed to take biological waste. The important thing is that an operation is doing something to divert its food waste from landfill where it would form methane that could escape into the atmosphere which is far worse for the environment than carbon dioxide. Mechline has been in close contact with Thames Water and other authorities to ensure due diligence.



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