



MILESTONE
H E L P I N G
C H E M I S T S



MAXI-14

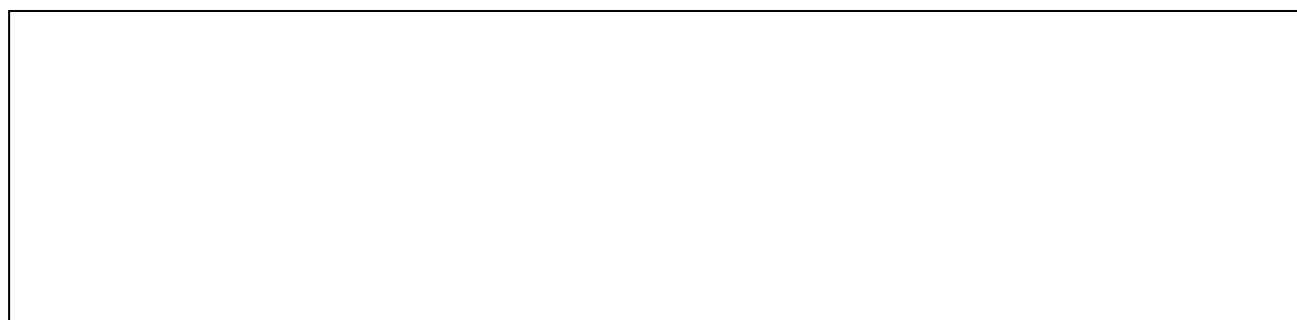
Operator Manual

MA202



Thank you for selecting our microwave system.

We are sure that you will be completely satisfied with the performance of this new unit entering your laboratory. We invite you to read carefully this user manual and to keep it in reach for convenient and fast consulting. The person who will be using this unit should have received an appropriate training from a Milestone trained technician. For any possible clarification or any request for assistance please contact either our Representative in your country:



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ETHICS Milestone does not endorse, encourage or promote the use of its instruments for any illegal activities.

No liability for any consequences, direct or indirect, is accepted if the MAXI-14 is used in any way in which the instrument is not intended to be used.

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1 SAFETY INSTRUCTIONS

1.1 General Information

- Please read carefully this operator manual before starting the system and follow its prescriptions with the utmost care.
- In case the system was delivered with additional accessories, also read carefully the instruction manuals of such accessories.
- Follow particularly the recommended instructions for Service and Maintenance.
- This Operator Manual is part of the delivery, hence shall be always kept together with the instrument on its working place.
- It is imperative that every person operating this system has read and fully understood this manual.
- The non-observance of the instructions contained herein or improper use may involve damages/injuries not covered by product liability!
- The national ruling and international safety norms in working environment shall in any case be observed under user's responsibility.
- It is also user's responsibility to keep constantly updated all safety norms ruling in the country or operation.



Information= indicates important information/recommendation for the user.



Attention = means that the warning non-observance may cause damages to unit or properties.



Warning = means that the warning non-observance may cause injuries, even severe, to people.

1.2 Safety in operations

- The unit shall be operated only according to its intended purpose.
- The unit shall only be operated within the power limits set by technical specifications.
- The unit shall be operated exclusively by specially trained people.
- All electrical parts shall always be protected from wet and humidity.
- The unit shall be kept clean.
- Basic rules of chemistry will always apply. The basic rules of chemistry are valid also for chemicals handling. Working with chemicals, always take into account all safety measures usually required (e.g. lab coat, protective gloves, protective glasses mask, exhausts hood, etc.)

1.3 Any unit manipulation allowed

- Constructive changes/modifications of the unit and its accessories are forbidden.

1.4 Maintenance and parts replacement

- In order to guarantee the good functioning of the unit and user's safety, all replacement parts shall be exclusively original supplied by the manufacturer. The original parts are produced with particular attention to quality and manufactory production.

1.5 Customer support

- The warranty certificate and qc report are included in the documents supplied with the unit.
- In case of unit reparation, please send us a service report with complete problem or damage description.
- For any question or spare parts order, please contact our representative in your country or directly Milestone.

1.6 Other hints

- Please take into account all the safety measures when filling in the vessels before the run or when opening the vessel, once completed the run.



Don't label the vessels. Discoloration may occur on protection shield with the consequent damage.

1.6.1 Working with accessories

- The complete vessel system must be treated with the utmost care and regularly tested. In case of damage, the corresponding components must be replaced. Please pay particular attention to the chapter "Care and maintenance instructions".

2 SYSTEM DESCRIPTION

2.1 Overview

The MAXI rotor (medium pressure rotor) contains up to **14 vessels** for acid digestion of easy to medium-difficult samples, such as soils, sludge, sediments, wastewater, food and feed, pharmaceutical.

The MAXI-14 rotor is **totally controlled by contact-less infrared sensor (T2)** for temperature control of each single vessel.

A high-quality PTFE vessel serves as well as chemicals and heat resistant. In order to prevent any deformation, the reaction vessel is protected by a PEEK protection cover. This high-quality material keeps the inner vessel fit and ensures a longer lifecycle of vessel systems.

2.2 Configuration

Rotor	Positions	Volume (Vessel capacity)
MAXI-14	14	100 ml

2.3 Technical Specifications

Rotor	Min volume*	Max volume	Recommended working temperature	Max working pressure	Recommended Max Holding Time
MAXI-14	5 ml	50 ml	200°C	35 bar	30 minutes

* Since MAXI is totally controlled by contact-less sensor (IR-TC), the minimum volume could be 5 ml or even less, but it mainly depends on several factors such as sample type, sample amount, acid mix.

Contact Milestone Application Team for more information.



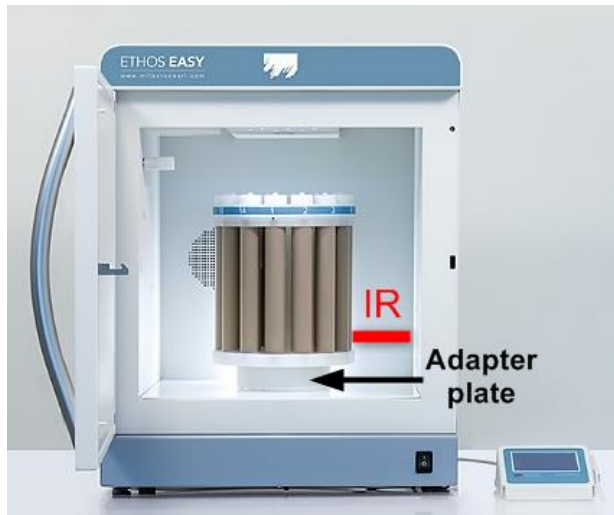
When exceeding the specified limit values, you must consider that the parts are subjected to increased stress or damage. If are used the maximum routine conditions, a regular test of vessel systems has to be carried out. All maximum values are reachable only with the suitable materials.

2.4 ETHOS UP/EASY vs ETHOS LEAN platform: IR sensor position

Working with MAXI-14 rotor, the position of the IR sensor in the cavity is different according to the microwave system that is used.

For ETHOS UP/EASY, X, flexiWAVE platforms, the IR sensor is positioned on the right-side of the cavity wall.

For ETHOS LEAN platform, the IR sensor is positioned on the back-side of the cavity bottom. Due to this reason, MAXI-14 for ETHOS LEAN is used without any rotor adapter plate.



3 VESSEL SYSTEM

3.1 Operations with MILESTONE high throughput rotors

When working with MILESTONE rotors, observe all safety indications and specifications. The user must be familiar with the operations with vessel systems. In addition, follow the operating instructions reported in the microwave system user manual.

3.1.1 Weighing

In order to avoid erroneous changes among the vessels, the internal vessel should be immediately closed and placed in the corresponding position of the numbered rotor.

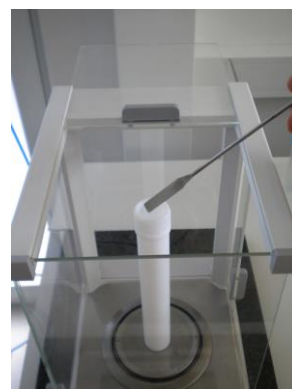


Never label the vessels. The label color contaminates the protection shield and diffuses into the vessel.

1. Place the cleaned vessel on the balance



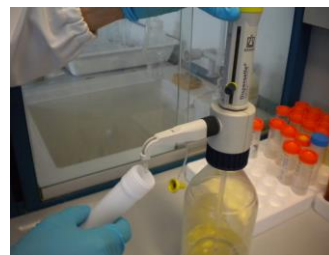
2. Set the balance to zero (tare) and weigh the sample.
3. Take note of the total weight or consider the weight data on the terminal.



The weighing with the weighing paper and weighing boat is possible as option and reduces e.g. the weighing errors due to electrostatic charge.

3.1.2 Chemicals addition

Add the necessary chemicals by the dosing station giving attention to wet every possible part of sample left on the inner walls of the vessel.






E.g. by carbonates replacement, sample/chemicals foaming or spray can occur. Take into account the necessary precautions and wear the suitable protection equipment, such as protection glasses, gloves, working under fume hood etc.

When dealing with digestions, it normally makes sense to let the samples react 5 up to 10 minutes before closing the vessels. Before vessels closure, the sample must be well mixed with the acid, otherwise it could result in severe partial reactions.

For this purpose, there are several options: magnetic stirring, stirring bar etc. When handling samples with consequent gas development, a cover is placed on the vessel, in order to avoid spray losses.

3.2 Vessel construction MAXI-14

Vessel 100ml	
Cover	
Vessel cover with thread	

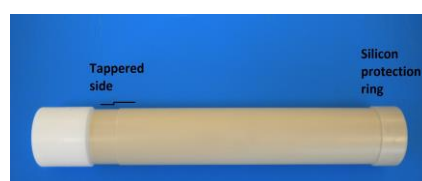
4 OPERATIONS

4.1 Protection shield introduction

Shift the silicon protection ring on the lower side of the protection shield.



The protection ring must be located on the opposite of the tapered side.



Place the protection shield in the notch on the bottom plate. The taper should be placed with the face up.



Once introduced all the protection shields, place the centering plate and screw it with its three screws. Be careful that the marks (black points) coincide.



Place the lifting plate on the rotor and screw it with its screw nuts.

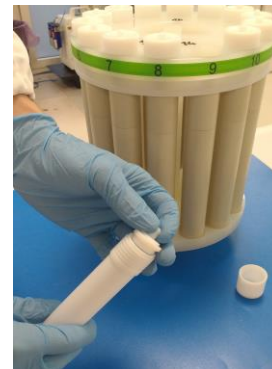
The rotor position 1 and the black mark should coincide.



4.2 Vessel closure and installation

No special closure tool is required to close the vessel, but you can perform it by hands.

Place the little cover on the vessel. The pin on the cover must face up.



Screw the thread cover on the vessel.



Place the closed vessel in the rotor.





In case of free rotor positions, the corresponding protection shields remain in the rotor.



For a better performance of the Infrared Temperature Control (IR-TC) sensor, in case of free rotor positions, vessels must be distributed as homogeneous as possible and firstly on the outer circle positions.

4.3 Rotor installation

In the rotor bottom side there is the driving plate. The inner ring has a square edge on one side.



This edge and the black mark are always located in rotor position 1.



The peek adapter in the unit has a flattered level too.

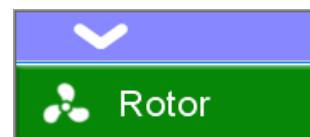


Introduce the rotor in the unit, so that both leveled sides (rotor and peek adapter) matches one with the other.



When the rotor is locked in position, do not force it by turning it using your hands, otherwise the central motor adapter may be damaged.

Use the "Rotor" function to rotate the rotor (see software description).



IR measuring settings can be found in the **ETHOS UP/EASY** and **ETHOS LEAN** user manual



For a better performance of the Infrared Temperature Control (IR-TC) sensor, the **"TWIST"** function must be deactivated (See the User manuals, as above).

4.4 Rotor removal

Remove the rotor by lightly raising it.



4.5 Vessel removal

For a fast removal of all vessels from rotor body, see the following instructions

Untighten the screw nut on the top plate.



Drag out the top plate by the handle with the vessels facing up.



Place the lifting plate with the vessels on the samples holder.



4.6 Vessel opening



Open the vessels only under a fume hood with efficient suction power.

The vessel system must be cooled down, before its opening. In general, a temperature of ca. 50°C is recommended as reference value. But this depends on the boiling point of the chemicals used and cannot be considered as limit value. Before opening the vessel, the pressure has to be released, in order to avoid any fast over-pressure release.

During the opening of the vessels, some fumes could come out from the vessels. Point the vessels in the direction of suction of the fume hood.



Remove the cover and the adapter. Transfer the digested solutions in a flask for dilution and analysis



5 CARE AND MAINTENANCE INSTRUCTIONS

5.1 General cleaning

- All rotors should be regularly checked and cleaned. Don't use any organic solvent to clean the plastic parts (e.g. acetone attacks PSU). The rotors should be cleaned from acids or other residues after each run, e.g. with diluted alcohol.
- Water or acid residues should be thoroughly dried before use in the microwave, because they are heated in the microwave and can lead to damages. This concerns particularly water or acid residues between the PTFE inner vessel and the protection shield. For any question, contact Milestone or our representative in your country.
- In case acids, especially high boiling acids (e.g. sulfuric acid), reach the rotor bottom side, the whole rotor must be washed with plenty of water and then completely dried (no water residue should be present at the moment of microwave irradiation).

5.2 Care and maintenance of IR sensor



The IR sensor function must be weekly tested following the instructions in the related Milestone Microwave system User manual.

See the ETHOS UP/EASY or ETHOS LEAN User manual

To ensure a correct measuring by the IR sensor, the sensor (this means the measuring lens and the sensor lens therein) must be cleaned from impurities by using a wet bud and alcohol. In case of contamination, the IR sensor must be cleaned after each run.

The IR sensor lens can be chemically attacked by vapors such as HF. The consequence due to sensor contamination or corrosion is too low measuring values.

In case chemicals reach the sample chamber, the IR sensor function must be absolutely tested in accordance with test prescription.

5.3 Rotor movement

In case of irregular rotor movement, check the bearings on the bottom side of the rotor body. If they cannot be easily moved into the guide, there may be dust or dirt between the bearings and it can be removed using ethanol. The bearings can be sprayed with PTFE-based lubricant.

6 CLEANING INSTRUCTIONS

6.1 General



PTFE vessel and cover, due to their extensive use, accumulate e.g. NO_x, that the microwave properties are considerably changed. This mainly occurs in case of digestion temperatures over 200°C and is accelerated by even high temperatures and high pressure.

6.2 Leaky cover

If a cover is leaky, e.g. due to deformation, it must be replaced.

6.3 Cleaning of the cover

The cover should be cleaned only with clear water.

6.4 Cleaning of protection shield

The protection shield should be cleaned only with clear water and should be dried before the use.

6.5 Cleaning of PTFE vessel

Graphite or grease residues on all PTFE vessels can be cleaned with organic solvents (e.g. alcohol). It is recommended to clean the surface with a paper towel. The vessels can be cleaned in a laboratory dishwasher.

An almost complete decontamination can be reached by a cleaning procedure with HNO₃ 65 %. A maximum cleaning temperature of 180°C is enough for this purpose. The steaming out of vessels with Milestone TraceCLEAN is easier and more efficient.

6.5.1 Microwave absorption test for MAXI vessels

See MAXI 14 rotor [Tips and Techniques](#) guide.

6.5.2 NO_x decontamination procedure for vessels and covers

See MAXI 14 rotor [Tips and Techniques](#) guide.

7 APPENDIX

7.1 Regular test Accessories/vessels/rotors

Customer address:

Company:

Department:

Contact:

Address:

Post Code, place:

Tel./FAX:

E-mail:

VESSEL SYSTEMS CONDITIONS

Vessel type	p/n	Status

ROTOR BODY CONDITIONS

Rotor type	p/n	Status

UNIT/ACCESSORIES GENERAL CONDITIONS

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8 MAXI-14 ROTOR TIPS AND TECHNIQUES

8.1 General working specifications

Sample amount

Maximum sample amount: 500 mg (of organic dried matter with low reactivity)

Volumes

Minimum volume: 5 mL

Maximum working volume: 50 ml

Temperature

Maximum working temperature: 200°C

Maximum holding time at maximum working temperature: 30 minutes

Pressure

Maximum working pressure: 35 bar

Acid solutions

MAXI-14 vessels are able to perform digestions with all kind of acids mixtures. Most common acids used for sample preparation are: HNO₃, HCl, HF, HBF₄, H₂SO₄, H₃PO₄, HClO₄, H₂O₂



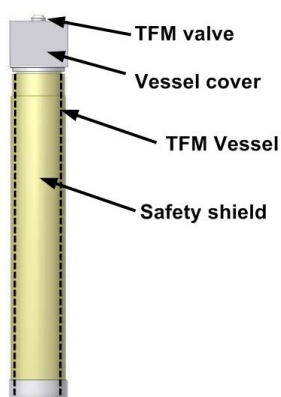
8.2 MAXI-14 Vessels

Each closed, microwave sample preparation vessel is actually a system of components. They function in tandem to provide:

1. A closed, clean environment for containing the sample during processing, thereby preventing contamination;
2. A closed container that prevents loss of volatile species, even when processing materials at temperatures far above the normal boiling point of the mixture;
3. A closed container that minimizes the use of expensive acids/solvents;
4. A system that can safely release (vent) over-pressure in the vessels, then reseal the vessel and continue the microwave process until completion.

8.2.1 Components

Each MAXI-14 vessel assembly is a system of components that consists of:



- 1) A vessel that contains the sample;
- 2) A vessel cover and an adapter that seal the vessels and act as an overpressure reseal valve;
- 3) A safety shield that surrounds the vessel and prevents deformations at high temperatures and pressures.

8.2.2 Labeling

Milestone recommends to store the components of each individual vessel assembly as a set.

Vessels and covers, in particular, should share a common history and Milestone do not suggest to mix new vessels with old ones, but to keep them in separate batches.

This will facilitate maximum useful lifetime, maximize performance for routine operations at the limits of vessels specifications and easy identification, isolation and replacement of worn components when they begin to affect sample preparation performance.



Etching the MAXI-14 vessels is not recommended.

Vessels must not be ink-labeled. The label colour contaminates the protection shields and diffuses into the vessels.

8.2.3 Usage Log

A log system is an important tool to help in determining the expected lifetime of the assemblies in particular application and can provide a rationale for budgeting for future consumables purchases. A usage log can also help in tracking variable sample results by providing a complete elemental history for the vessel.

8.3 Operating tips

The following is an overview of all operating steps: sample weighing, acid addition, digestion temperature and vessel closure / opening.

8.3.1 Sample Weighing

As per rotor specifications, the maximum sample amount is 500 mg considering a dried organic material. Anyway, the sample amount can be different according to the sample reactivity.

Samples reactivity	Samples type	Sample amount
Water samples (EPA 3015)	-	45 mL
Non-reactive samples	Soils, aqueous solutions, environmental samples, fertilizers, etc..	0,5 g
Samples with medium reactivity	Food (dried), feed (dried), organic tissues, etc...	0,3 g
Highly reactive samples	Oils, high fat content cheese, etc...	Up to 0,2 g

During the weighing in the PTFE vessels, some powdered samples can show "electrostatic" issues, making the weighing procedure more difficult and causing instability of the balance.

To reduce such electrostatic issues, Milestone suggests to:

- Rinse PTFE vessels with high purity water.
(it's not necessary to dry them before the weighing)
- Use an **anti-electrostatic gun** or other **static eliminator**
- Use a disposable plastic funnel to weigh sample instead of using a spatula



Anti-electrostatic gun

8.3.2 Acid addition and digestion temperature



Milestone recommends that all additions of acid mixtures or hazardous solvents to the vessels should take place inside an appropriately vented fume hood.

In order to obtain a good digestion result, the sample must be completely wet by the acid and the acid volume must be enough in order to complete the digestion.

For the mayor part of applications, the **acid used for digestions of organic samples is HNO₃ or**, in all cases where a strongest oxidation is required, **a mixture of HNO₃ with H₂O₂.**

As we have seen in the previous paragraph, the minimum suggested volume for MAXI-14 is 8 mL.

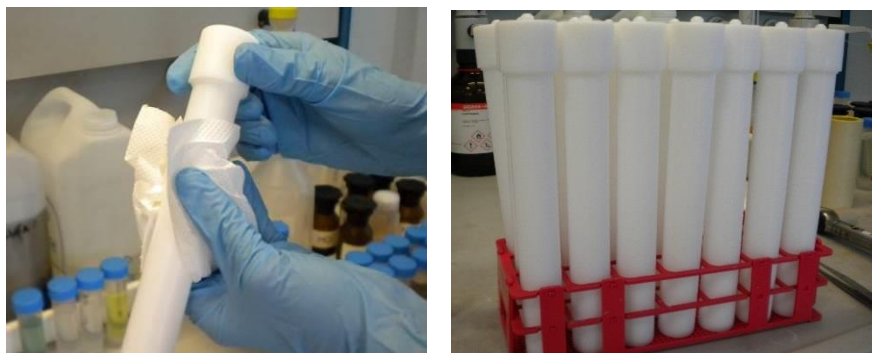
Since the temperature reading of MAXI-14 is performed by an infrared sensor, the working volume can be reduced to 5 mL, according to the sample reactivity, the sample amount and the working temperature.

Samples reactivity	Samples type	Sample amount (s)	Acid volume	Working temperature
Water sample (EPA 3015)	-	45 mL	5 mL	180°C
Non-reactive samples	Soils, environmental samples, fertilizers, etc..	0,5 g	8 mL	200°C
Samples with medium reactivity	Food (dried), feed (dried), organic tissues, etc...	0,3 g	8 mL	200°C
Highly reactive samples	Oils, high fat content cheese, etc...	Up to 0,2 g	8 mL	180°C

8.3.3 Vessels closure / opening.

Close the vessels tightening very well all the caps.

Before introducing them into the rotor shields, clean the external surface of each PTFE vessel with a tissue/paper, in order to remove dust and acid drops.



8.3.4 How to open the vessels (venting)

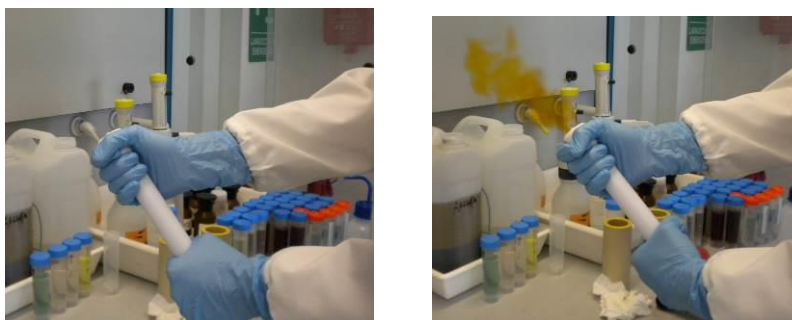


Milestone suggests to open the vessels only when the internal temperature is below 80°C.

The microwave heating process will generate reaction products inside the vessel. Even after the vessels have been cooled down, digestion products will continue to exert a positive pressure inside the closed vessel.

Milestone recommends to open the vessels inside an appropriately vented fume-hood to contain and convey reaction vapors.

The vessels cover, during the opening, must be faced to the inside of the fume-hood, in order to release all the acid fumes. See picture below.



8.4 Cleaning and maintenance tips

Each vessel assembly requires a certain level of care and attention to its components in order to maintain sample preparation performance, maximize the useful lifetime and to ensure continuous safe operation of the labstation.

The exact lifetime of each component cannot be specified as it is a complicated function of the temperatures, pressures and chemistry of your specific application.

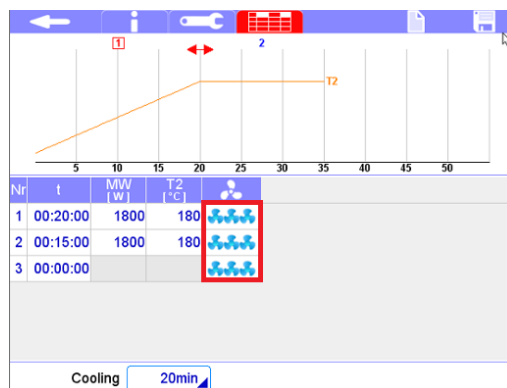
8.4.1 Active cooling after every run

After the completion of a microwave heating cycle, Milestone recommends active cooling of each microwave vessel (while still in its individual rotor position or rotor segment).

Active cooling is important because it reduces the time the vessel components are exposed to temperature and pressure limits, which in turn minimizes the stress on the vessel components. Active cooling also allows faster access to prepared samples.



It's recommended to set maximum air cooling (three fans in method page, as below picture), during the whole digestion run and cooling time.



8.4.2 Clean and dry between runs

All external surfaces of vessel components should be cleaned and dried before they are reassembled and used for the next microwave sample preparation process. It is particularly important to eliminate any moisture or process residues from between component surfaces (between the vessel and safety shield, between the vessel cover and safety spring, etc.). Such trapped moisture or residues will accelerate the degradation of components during subsequent heating cycles.

8.4.3 Cleaning vessels and covers

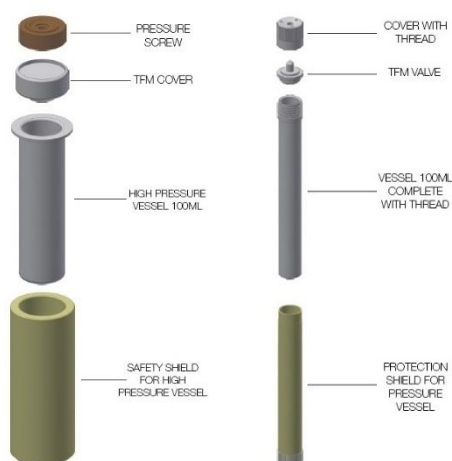
Particular attention must be paid to keep safety springs clean and dry.

Milestone recommends to clean safety springs just using a moist paper cloth and to well dry them before every use.

Never use solvents or acids to clean safety springs.

Never put safety springs into water. If this should happen, be sure to dry them very well, especially the internal parts, by placing them into an electrical oven for at least 2 hours at 100°C.

8.4.4 Cleaning vessels and covers



Milestone vessels and vessel covers are made of a modified polytetrafluoroethylene blend (TFM). The characteristics of the TFM material make it chemically inert and resistant to the digestion process. TFM has additional unique properties of material density and mechanical strength. Under strict quality control standards, the vessels and covers are crudely formed from the raw material under isostatic pressure, sintered under high temperature, and finally machined to close tolerances.

TFM is not a crystalline material. As such, all vessels have a certain degree of permeability.

Under the influence of heat and pressure, as such, trace quantities of elements may migrate into the bulk of the vessel material.

Milestone's TFM vessels can be cleaned to any level of analytical sensitivity. At present, Milestone sample vessels are being used to effectively process samples for analysis at concentrations from the percent level all the way down to parts per trillion (ppt). Specific cleaning procedures are recommended to achieve this large dynamic range.

The following are recommended cleaning procedures for PFA and TFM vessels used in Milestone microwave labstations.

8.4.5 Surface Cleaning

1. Single Rinse – In some applications, particularly where the concentration of the analyte of interest is sufficiently high, vessel cleaning may involve nothing more than simply rinsing the vessels with

deionized water after each use. This may be appropriate when little or no analyte is retained on the surface or when the analyte concentration is very high (percent level).

If large organic molecules are the analytes of interest, such as when microwave acid extractions are being performed, then rinsing with clean solvent may be all that is necessary as large molecules do not easily diffuse into the vessel material.

2. **Closed Vessel Acid Reflux** –The reflux cleaning technique consists of processing a blank in the closed vessels. In this procedure, the acids or solvents used to process samples are run in the vessels under the same time, power and temperature conditions used to digest them (usually 180 °C – 200 °C). The blank is then discarded and the vessels rinsed and dried before.

Standard cleaning procedure (suggested):

- Add 5 ml of HNO₃ and 5 ml of H₂O to each vessel;
- Start the following microwave program:

Time	Power	Temperature
00:20:00	1800W	160°C
00:10:00	1800 W	180°C

- Cool down and open the vessels;
- Rinse the vessels with bi-distilled water.



The above procedures are used specifically for closed vessel cleaning techniques. It is never appropriate to heat an open vessel containing acids in the Milestone Microwave Labstation. Heating acids in open vessels does not provide the elevated temperatures that can be obtained in closed vessels.

Furthermore, operators will be exposed to acid vapors and instrument longevity may be affected.

8.4.6 Alternative Cleaning Procedures

Under the influence of heat and/or pressure, trace contaminants can diffuse past the surface and into the bulk of the vessel material.

To achieve the lowest level blanks and, therefore, the greatest analytical sensitivity, this deeply diffused contamination must be removed.

Deep cleaning involves heating the vessels in a volume of acid for an extended period of time.

How long the process takes will depend on the particular application and the level of contaminants to be removed. Heat and time are required to effectively leach out any contaminants that have diffused into the vessel walls. One or more cleaning steps may be required.

1. PFA or TFM vessels and covers (**excluding the reference cover**) are submerged in a container of high purity acid, typically 1:1 nitric acid and water, and heated on a hot plate to between 80°C - 90°C for an hour, or more. The vessels and covers are then rinsed with high purity deionized water and allowed to air dry before they are used to process samples.
2. A further step is to submerge vessels and covers (**excluding the reference cover**) in a container of a second-high purity acid, typically 1:1 hydrochloric acid and water, and heated on a hot plate to between 80 °C – 90 °C for an hour, or more. The vessels and covers are then rinsed with high purity deionized water and allowed to air dry before they are used to process samples.
3. Some may need to use even a third step in the cleaning process. After the hot acid cleaning steps, the vessels and covers are submerged in high purity deionized water, and heated on a hot plate to between 80 °C – 90 °C for an hour, or more. The vessels and covers are then allowed to air dry before they are used to process samples.

There is no definite period of time that can be recommended for the cleaning process. Only experience and the demands of the particular application will determine the time required to thoroughly leach contaminants that have diffused into the bulk of the vessel material. Some users complete one, two or three of the cleaning steps outlined above. The period for each step may extend anywhere from 1 to 24 hours.



An alternative and effective way for a deep cleaning of vessels is to use an acid steam cleaning system such as the Milestone TraceCLEAN.

Thanks to the high performance of this unit, it is possible to clean all Teflon vessels to trace metal level, in a very short time (typically about 1.5 hours).

The extended cleaning time is often the reason that some users will maintain several sets of vessels and covers for their laboratory.

In many cases users may even dedicate sets of vessels to specific applications or levels of sensitivity. One must always be kept in mind that the vessels can be cleaned to any level of sensitivity required for the application. However, the effort needed to achieve and maintain a specific level of sensitivity will depend on the application, the laboratory environment and skill of the operator.

8.4.7 Cleaning vessels and covers from NO_x contamination

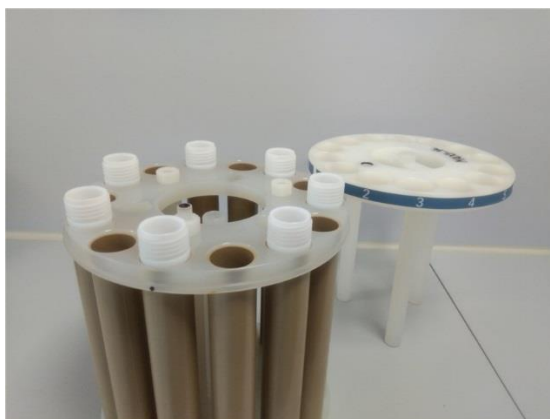
TFM vessels and covers, due to their extensive use, could accumulate NO_x that could affect the microwave performance (TFM starts absorbing MW).

This mainly occurs in case of digestion temperatures over 200°C and is accelerated by even high temperatures and high pressure.

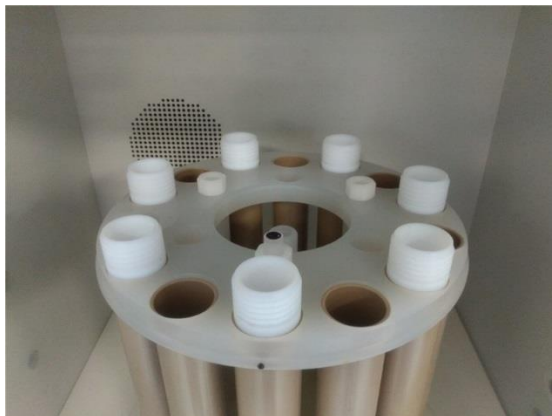
Microwave absorption test

In order to check, if vessels are contaminated by NO_x gases, the following simple test could be performed :

1. Remove the top plate from the rotor body and introduce the MAXI empty vessels to be tested into the rotor. A maximum of 7 vessels should be used.



2. Place the rotor into the microwave cavity. Notice that the parts to be tested must be washed and dried, so that no acid residues may be located on the parts.



3. Start the following microwave program, depending on the vessels number.
 - 45 seconds 600 W (for 4 up to 7 vessels)
 - 45 seconds 450 W (for 3 or less vessels)
4. Once concluded the run, check immediately the temperature with the hands (it would be better with thin gloves) or possibly via the IR control. A rough evaluation of the temperature, such as cold/slightly warm/really warm/hot is enough.

NOx decontamination procedure

If TFM vessels and covers absorb excessively the microwaves, please operate as follows:

1. Rinse the pre-cleaned vessels with deionized water thoroughly and place them at least for 4 hours in an electric oven (ventilated, if possible) at 150°C.
2. PTFE vessel should be placed with the opening facing up.
PTFE cover should be placed with the bottom side facing up.



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