



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



EFFICIENT & EASY TO ADOPT  
**EXTRACTION  
SOLUTIONS**



**ETHOS X**

Advanced Microwave Extraction System



ENVIRONMENTAL



FOOD



POLYMER



FEED



INDUSTRIAL

# ENABLING SUPERIOR EFFICIENCY IN SOLVENT EXTRACTION

Sample preparation is the least evolved and most error-prone step in chromatographic analytical procedures. Many laboratories still use the Soxhlet method that was developed in 1879. Microwave-assisted extraction uses closed vessels to heat the extraction solvent above its atmospheric boiling point. Working at elevated temperature increases the solubility of the analyte of interest and decreases the solvent viscosity, leading to more efficient sample preparation and lower extraction times. Microwave extraction is selective, fast and produces more accurate and precise results than other methods. Typical applications of microwave-assisted solvent extraction include organic pollutants from environmental matrices, fat determination in food samples, contaminants from food and extraction of additives from plastics.

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GREATER TURNAROUND TIME

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LOWER RUNNING COSTS

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LOW SOLVENT CONSUMPTION

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HIGH EFFICIENCY

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HIGH RELIABILITY

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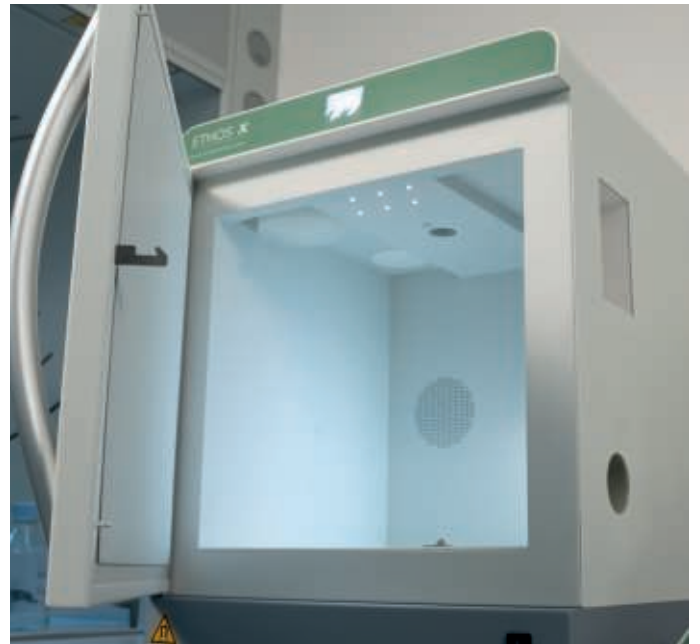


# RELIABLE EXTRACTION USING UP-TO-DATE TECHNOLOGIES

## | MICROWAVE HARDWARE



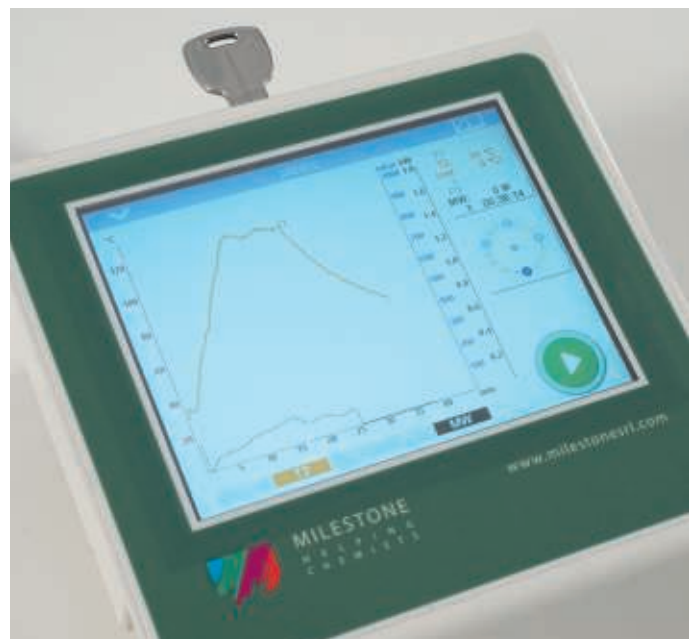
The Milestone ETHOS X microwave cavity accommodates high throughput and performance rotors, improving the laboratory productivity and enhancing the overall safety. The ETHOS X is equipped with two powerful magnetrons for high microwave power, allowing a fast extraction process of several samples simultaneously. The rugged stainless-steel construction ensures a longer lifetime and eliminates lab's downtime. It features up-to-date safety standards such as the stainless-steel pressure responsive door and the automatic door locking system. At the end of the run, the powerful airflow cools the vessels in only few minutes, then the operator can open the door.



## | USER INTERFACE



The ETHOS X is controlled by means of a compact terminal with an easy-to-read, bright, full-color, touchscreen display. The terminal runs a user-friendly, icon-driven, multi-language software, the easyCONTROL, to provide complete and safe control of the extraction process. Simply recall a previously stored method or create a new one, press 'START' and the system will automatically follow the user defined temperature utilising a sophisticated PID algorithm. This assures a consistent quality of extraction and simplifies the use of the instrument. Several applications, including US EPA and ASTM methods are preloaded in the ETHOS X terminal.





## | SENSOR



The system is equipped with a contactless sensor, the easyTEMP, that controls the temperature inside all vessels across the entire extraction process, providing higher safety and reproducibility. The use of a non-invasive sensor, in combination with the vessels design, simplify the user's operation while delivering accurate temperature control. The temperature sensor provides a continue feedback to the easyCONTROL software, which consequently regulates the power emission, to follow the set temperature profile.



## | CLOSED VESSEL TECHNOLOGY



The use of microwave closed vessel technology is well established in many industries and application. While microwave provides a selective heating, the closed-vessel technology enables to achieve a high temperature even with low boiling solvents. This results in a high extraction efficiency within a fraction of time compared to conventional extraction systems. The well-known vent-and-reseal technology maintain the vessel sealed during the extraction process. In fact, pressure is safely released only if the maximum operating pressure is achieved, ensuring high safety of operation across the entire run.

# DEDICATED CONFIGURATIONS TO MATCH YOUR EXTRACTION NEEDS

## Typical Applications



### ENVIRONMENTAL

PAH, PCB, Dioxins, Phenols, Phthalates, EOM, Pesticides Herbicides, PBDE, TPH-hydrocarbons



### PLASTICS & POLYMERS

Additives in polyolefins, overall migration in oil, Phthalates



### FOOD & FEED

FAMEs, Total Fat, Free fat, PAH, PCB, Dioxins, Steroli, Chloramphenicol Nitrofurans, Polyphenols



### OTHERS

THC and CBD from Cannabis, Polyphenols in plants, PAH in asphalt, EOM in rocks, extractables from pulp and wood

## | fastEX-24eT

The fastEX-24eT rotor offers high flexibility as it meets the sample preparation requirements of several analysis such as organic pollutant from environmental matrices, and determination of contaminants from food samples. The fastEX-24eT is built around disposable glass vials placed on Weflon rings that enable extraction with any solvent mixture. The use of disposable glass vials simplifies the overall workflow, as it requires less handling and completely removes the cleaning step.



# of positions	24
Working temperature	Up to 120°C
Vessel	145 mL, PTFE-TFM
Glass Vial	100 mL, disposable glass
Types of solvent	Any

## | SR-15

The SR-15 rotor ensures high versatility. Its working range enables extraction at high temperature, up to 180°C. The samples and the reagents are placed into the high purity PTFE-TFM vessels with 100 mL volume into the dedicated glass inserts. To expedite the heating of any reagent mixture each vessel is equipped with dedicated Weflon inserts. The SR-15 naturally fits into high temperature applications, such as dioxins from fly ash and gravimetric determinations like total fat in food and feed.



# of positions	15
Working temperature	Up to 180°C
Vessel	100 mL, PTFE-TFM
Glass Vial	80 mL, glass
Types of solvent	Any

Sample preparation for molecular analysis doesn't end with the solvent extraction, in fact it often requires additional steps, such as filtration and evaporation. To simplify and expedite these processes Milestone has created a suite of tools for filtration and evaporation.

# FAST & EASY POST-EXTRACTION PROCEDURES

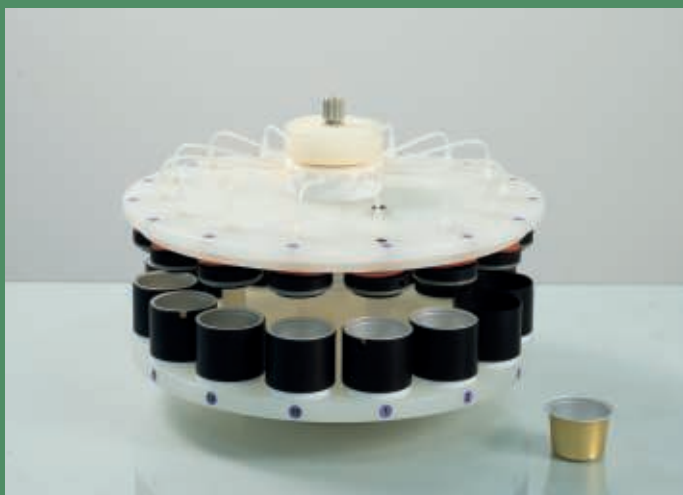


## I SFS

The SFS-24 (Simultaneous Filtration System) is a compact and complete workstation to filter up to 24 samples simultaneously in a few minutes. Samples are filtered into standard evaporation tubes, using disposable funnels, providing easier handling, and reducing fume hood space. Its inherent flexibility makes the SFS suitable for several applications: environmental, polymers, food, etc.

## I RAR

The evaporation rotor, RAR-15, offers fast evaporation of solutions, under vacuum, via disposable aluminium caps placed into a weflon holder. The holder promotes fast evaporation of any solvent, both polar and non polar,, thanks to the great microwave absorption and the consequent fast heating. One example of its use is the gravimetric determination of total fat in food and feed.



## I MMR

The MMR rotor is designed to perform the evaporation without the need for transferring the solvent from the extraction vessels. The vessels with solvents are placed into the MMR rotor and then the program begins. Microwave energy along with the vacuum pump ensure a fast evaporation in 15 positions simultaneously.



# MILESTONE HELPING CHEMISTS

Established in 1988, Milestone is headquartered in Italy with its R&D and manufacturing centre in Germany and Switzerland and offices in the United States, China, Japan and Korea. We

operate worldwide through a network of over 100 exclusive distributors, all providing our customers with premium application and service support. Milestone's mission is to help chemists by offering them the most advanced instrumentation for sample preparation and direct mercury analysis in the world. Our industry-leading technology, in combination with fast, responsive service and applications support, allows Milestone to support our goal of giving you the highest return on investment possible.

## | ADDITIONAL MILESTONE SOLUTIONS



### **ultraWAVE**

The Game Changer in  
Microwave Digestion



### **ETHOS UP**

High Performance  
Microwave Digestion  
System



### **DMA-80<sub>evo</sub>**

Direct Mercury Analyzer

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