MILESTONE
HELPING CHEMISTS



SAVE TIME
GO DIRECT
FOR MERCURY ANALYSIS



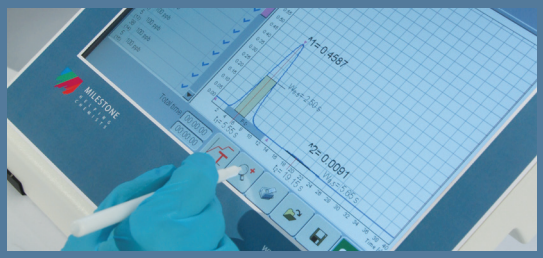
DMA-80 *evo*
Direct Mercury Analyzer



INDUSTRY-LEADING
PERFORMANCE



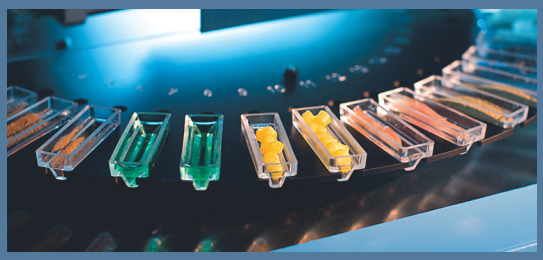
UNPARALLELED
EASE OF USE



HIGH PRODUCTIVITY AND
EFFICIENCY



LOW RUNNING AND
MAINTENANCE COSTS

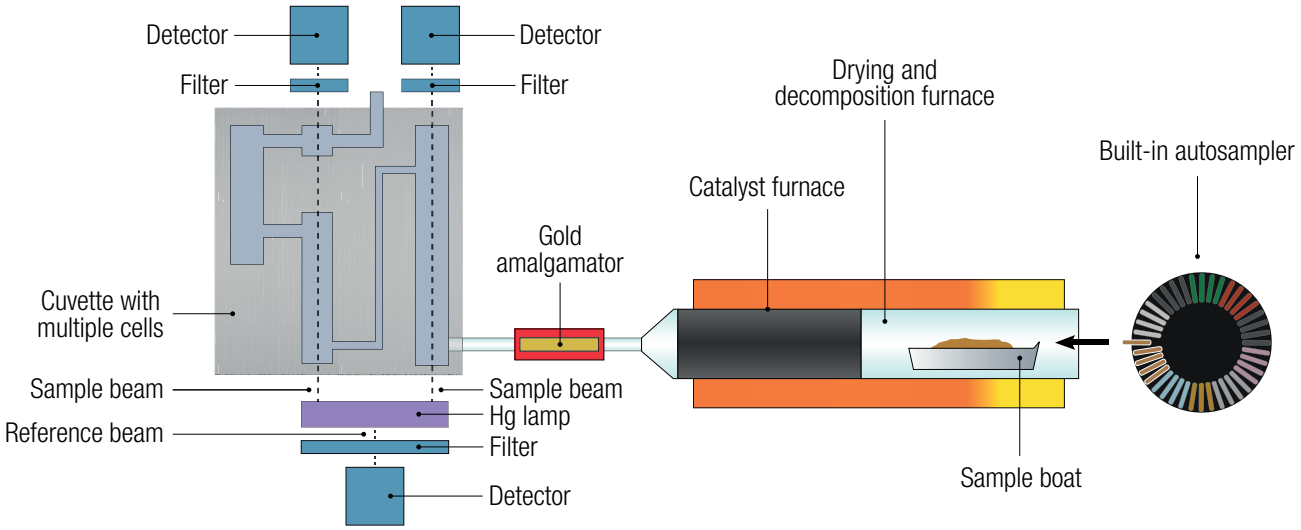


IMPRESSIVE APPLICATION
FLEXIBILITY

SIMPLIFY YOUR TOTAL MERCURY DETERMINATION GO DIRECT !

The Milestone DMA-80 has been at the forefront of direct total mercury analysis for almost two decades. The challenges in mercury determination are well known to analysts who often have to face a number of issues due to either the tedious sample preparation process or the analysis step. The latter, even with the latest generation of ICP-MS or cold vapor systems, may create a memory effect even after long cleaning cycles. The DMA-80 can analyze any matrix (solid, liquid or gas) without any pre-treatment or chemical additions in as few as 6 minutes. We are and have been the benchmark for direct mercury determination in most industries: environmental, food, energy, cement, cosmetics, agriculture, mining, and petrochemical. With thousands of DMA-80s installed in over 80 countries, Milestone has a wealth of experience and knowledge regarding direct mercury determination, ensuring your lab state-of-the-art technology and premium customer support.





DMA-80 evo schematics

SUPERIOR PERFORMANCE EVEN AT THE PPT LEVEL

The analysis process starts by weighing sample into a boat and then running it through thermal decomposition under air or oxygen flow. All mercury and residual combustion products then flow into the catalyst section. Here, interferences are removed and mercury species are reduced and trapped on a gold amalgamator with subsequent release into multiple measuring cells positioned along the spectrophotometer's optical path. The DMA-80 evo double beam dramatically increases the signal-to-noise ratio, which greatly improves the quantification limit, enabling accurate and precise mercury determination even at the ppt level. This increased signal stability improves the reproducibility and reliability of analysis even at low concentrations. With the DMA-80 evo, you get the right results the first time, every time.

IMPROVED DESIGN
FROM THE INSIDE OUT

FULL MERCURY RECOVERY

The DMA-80 evo is equipped with an advanced catalyst tube and gold amalgamator to provide high-end performance, full mercury conversion, interference removal, and fast mercury release. These components allow the DMA-80 evo to deliver fast and accurate results in a single measurement, providing symmetrical peaks and avoiding mercury overestimation or underestimation.

Sample	Amount	Concentration
Blank	-	0.0001 µg/L
Water Sample 1st	0.5 mL	0.105 µg/L
Water Sample 2nd	0.5 mL	0.107 µg/L
Water Sample 3rd	0.5 mL	0.097 µg/L
Water Sample 4th	0.5 mL	0.110 µg/L
Water Sample 5th	0.5 mL	0.101 µg/L
Average	**-**	**0.104 µg/L** σ_{rel} **: 4.90%**

Example of reproducibility of the DMA-80 evo at very low mercury concentrations

DELIVERING PERFORMANCE WITH EASY TO USE TECHNOLOGY

Direct mercury analysis is inherently easier, simplifying mercury determination to its roots. The DMA-80 evo's many features ensure superior ease of use coupled with greater accuracy and precision.

A SINGLE LONG-LASTING CALIBRATION FOR ALL MATRICES

A single calibration, completed using liquid or solid reference materials, suits a large variety of samples for a wide concentration range - from ppm to ppt. Moreover, because of both system stability and long working-life of the catalyst tube and gold amalgamator, calibration of the DMA-80 evo offers long-term reliability. Daily calibrations often required by conventional instrumentation are not necessary.

Certified material	Certified (µg/kg)	DMA-80 (µg/kg)
NIST 1568a Rice Flour	5.8 ± 0.5	5.9 ± 0.2
BCR-150 Skim Milk Powder	7.7 - 11.1	9.2 ± 0.2
NIST 1630a Coal	93.8 ± 3.7	93.4 ± 2.4
NIST 1633b Fly Ash	141 ± 19	149 ± 2
BCR-61 Aquatic Plant	210 ± 250	221 ± 3
GSD-10 Stream Sediment	280 ± 40	270 ± 15
BCR-422 Cod Muscle	543 - 575	558 ± 8

Results of various certified reference materials using the same calibration

ENHANCED SOFTWARE CAPABILITIES AND CONTROL

The intuitive DMA-80 evo software, EasyCONTROL, available on both the dedicated terminal and on PC, includes the most advanced features to simplify analysis reporting: LIMS connection, data handling, data import/export, and an audit trail in compliance with 21 CFR part 11. Our data reprocessing feature prevents the need to re-run a specific sample.



Statistics on the DMA-80 evo software



Complete audit trail in full compliance with 21 CFR part 11

FORGET MEMORY EFFECT

The memory effect in mercury analysis is widely recognized as one of the most common challenges that analytical chemists face. Milestone's DMA-80 evo fully overcomes it with a revolutionary feature: Autoblank. This, along with the other high-performance components of the system, eliminates overestimation and ensures low blanks, thus enhancing user confidence in the data collected, while still ensuring high productivity.



1. SEABASS

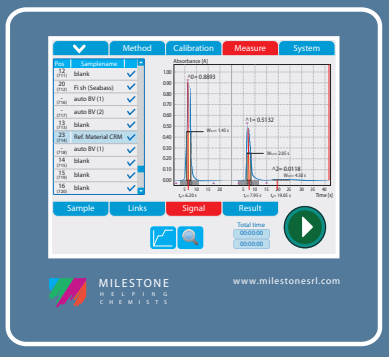
Direct mercury analysis of a seabass sample.

Hg: 1239.66 µg/kg



2. AUTOBLANK

When the Hg concentration is above the set value in the Autoblank, the system automatically starts a blank cycle.



3. LOBSTER HEPATOPANCREAS (TORT-3)

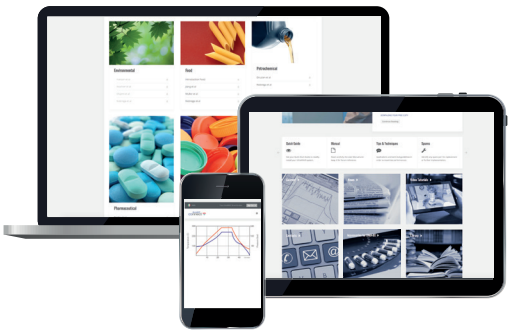
Thanks to the Autoblank feature the next sample is analyzed with great precision and accuracy, avoiding overestimation.

Hg: 287.65 µg/kg
Certified value: 292 ± 22 µg/kg

MILESTONE CONNECT

30 YEARS OF EXPERIENCE AT YOUR FINGERTIPS

Included with the DMA-80 evo is a unique web-based application: Milestone Connect. This app allows you to become a part of the Milestone community and gain exclusive access to a robust library of information: lists of parts, technical notes, user manuals, video tutorials, continuously updated application notes and all relevant scientific articles. Milestone Connect also extends instrument control to your smartphone, tablet or PC, allowing remote monitoring of the system. With Milestone Connect you have instant access to 24/7 support.



milestone connect

MAXIMIZE LAB PRODUCTIVITY AND RETURN ON INVESTMENT

THE FASTEST PATH TO MERCURY DETERMINATION

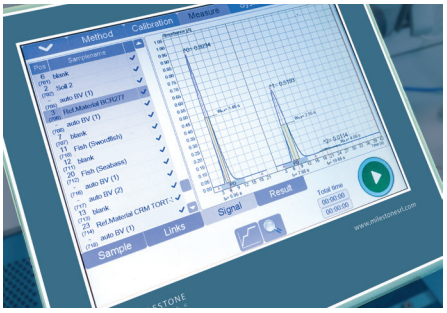
The DMA-80 evo is equipped with a 40-position autosampler suitable for solid, liquid and gas samples. Samples are directly weighed in a boat, the weight is recorded by the EasyCONTROL software, then the quartz or metal boat is placed into the 40-position autosampler to begin analysis. This process is completed in as few as 5 minutes from weighing to results. Method development and sample preparation are unnecessary. The DMA-80 evo runs unattended, offers a quick turnaround time and has become a necessity for mercury determination in many labs over a wide range of applications.



Sample weighing into the boat



Sample boat is placed into the autosampler



In 5 minutes the sample is analyzed

LOW RUNNING COSTS, SUPERIOR ROI

A streamlined workflow is essential in a modern lab. The DMA-80 evo accommodates those needs by providing an easy-to-maintain system with a low running cost. The advanced components of the DMA-80 evo are synonymous with reliability, ensuring the same quality over and over again. The DMA-80 evo runs perfectly with either compressed air or oxygen as a carrier, providing additional savings to your lab without compromising on performance.

	DMA-80	CV-AAS/ ICP-MS
Sample type	Solid, liquid and gas	Aqueous
Working range	From ppt to ppm	ppb
Sample preparation	Not required	Required
Memory effect	Very low	Medium to high
Daily calibration	Not required	Required
Matrix effect	None	Medium/High
Productivity	Very high	Low/Medium
Running cost	Low	Medium/High

Comparison between different technologies for mercury determination

THE PERFECT TOOL FOR ANY APPLICATION

GO DIRECT FOR ANY SAMPLE

Since its introduction, the DMA-80 evo has seamlessly integrated into a wide range of applications and industries. It is used for mercury determination in environmental applications such as soil, wastewater, sediment, and waste testing. It has also been adopted into the food industry, where fish testing is the primary application. The DMA-80 evo combines high performance, impressive productivity and ease of use in a single solution.



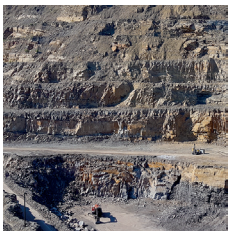
Environmental



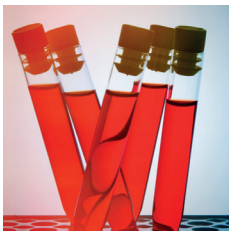
Food/Fish



Power plant/Coal



Cement/Mining



Clinical/Biological



Petrochemical

OFFICIAL METHODS COMPLIANCE

The DMA-80 evo is fully compliant with multiple official methods such as the US EPA method 7473, developed with the DMA-80 evo, (Mercury in solids and solutions by thermal decomposition, amalgamation, and atomic absorption spectrophotometry), the ASTM method D-6722-01 (Total mercury in coal and coal combustion residues) and ASTM method D-7623-10 (Total mercury in crude oil).

Sample	Concentration DMA-80 (mg/kg)	Certified (mg/kg)
NIST 1633b	0.142	0.14 ± 0.02
NIST 1633b	0.142	0.14 ± 0.02
NIST 1633b	0.139	0.14 ± 0.02
NIST 1633b	0.135	0.14 ± 0.02
NIST 1633b	0.140	0.14 ± 0.02

NIST 1633b, Constituent Elements in Coal Fly Ash Certified Material
RSD: 2.06% - Mean: 0.139 mg/Kg - SD: 0.028

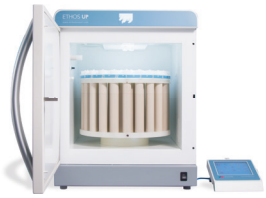
Sample	Concentration DMA-80 (mg/kg)	Certified (mg/kg)
BCR 277R	0.125	0.128 ± 0.017
BCR 277R	0.122	0.128 ± 0.017
BCR 277R	0.123	0.128 ± 0.017
BCR 277R	0.127	0.128 ± 0.017
BCR 277R	0.127	0.128 ± 0.017

BCR 277R, Estuarine Sediment Certified Material
RSD: 1.83% - Mean: 0.124 mg/Kg - SD: 0.0023

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Established in 1988, Milestone is headquartered in Italy and has offices in Germany, Switzerland, the Unites States, China, Japan and Korea. We operate worldwide through a network of over 100 exclusive distributors, all providing our customers 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 providing you the highest return on investment possible.

ADDITIONAL MILESTONE SOLUTIONS



ETHOS UP

High Performance Microwave Digestion System



ultraWAVE

The Game Changer in Microwave Digestion



Clean Chemistry

Acid Purification and Acid Steam Cleaning Systems



ETHOS X

Advanced Microwave Extraction System for Environmental Applications

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