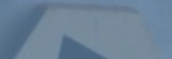




MILESTONE
H E L P I N G
C H E M I S T S



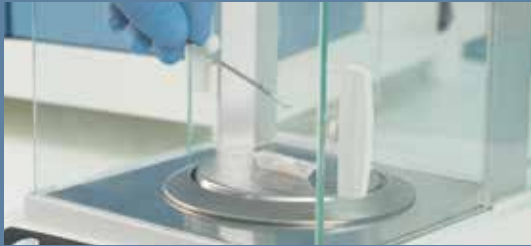
MERCURY ANALYSIS
MADE EASY
AND AFFORDABLE



DMA-1 *evo*
Compact Direct Mercury Analyzer



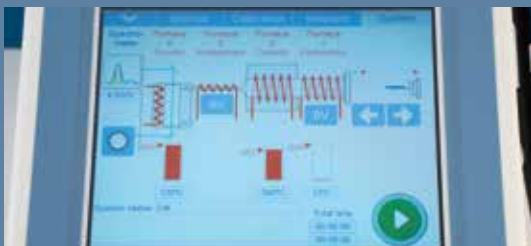
HIGH
PERFORMANCE



EASE
OF USE



COST-EFFECTIVE



SMART
SOFTWARE



COMPACT
AND PORTABLE

HIGH-QUALITY, ECONOMICAL AND FAST ANALYSIS

| DIRECT MERCURY ANALYSIS

Direct mercury analysis offers a straightforward procedure toward mercury determination completely removing the sample preparation step and offering great analytical performances. Milestone has been at the forefront of direct mercury analysis for over two decades. The DMA-1 evo offers to laboratories, an affordable path, to adopt direct mercury determination. Designed to match the needs of laboratories with limited throughput in mercury determination, it offers a rugged, compact, and economical solution to several industries such as environmental, food, energy, cement, cosmetics, agriculture, mining, and petrochemical.



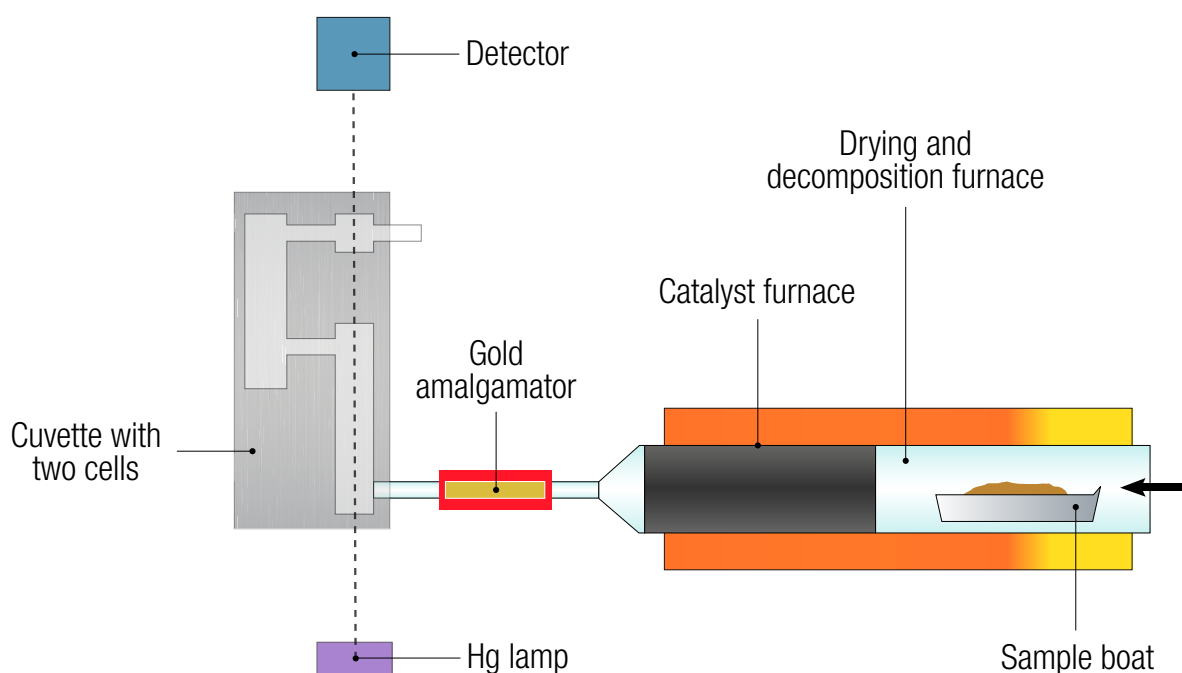
| WHY DIRECT MERCURY ANALYSIS

Mercury analysis is a challenging task for most laboratories. Traditional sample preparation could lead to loss of mercury, due to its volatility, while the analysis suffers of carry over and time-consuming cleaning procedures. Direct mercury analysis eliminates sample preparation, it is matrix independent, and it delivers analysis in less than 6 minutes.

ADVANCED TECHNOLOGY FOR A SIMPLIFIED WORKFLOW

| PRINCIPLE OF OPERATIONS

The analysis starts by weighing a sample inside a boat and subsequently running it through thermal decomposition under a flow of air or oxygen. All mercury and residual combustion products then flow into the catalyst section. Here, interferences are removed, and mercury residues are reduced and trapped in a gold amalgamator with subsequent release into two measuring cells positioned along the spectrophotometer's optical path. The ability of the catalyst to remove any interferences along with the fast release of mercury from the amalgamator ensures a precise and accurate determination. With the DMA-1 *evo*, you get the right results not only the first time, but every time.



DMA-1 evo schematics

| GREENER ANALYSIS

The DMA-1 *evo* embraces the values of green chemistry enabling laboratories a more sustainable process. It avoids sample preparation, eliminating the use of concentrated acids, generating less wastes and reducing the energy consumption. In addition, the entire process runs under air flow, avoiding the use of other carrier gases.



THE FASTEST PATH TO MERCURY DETERMINATION

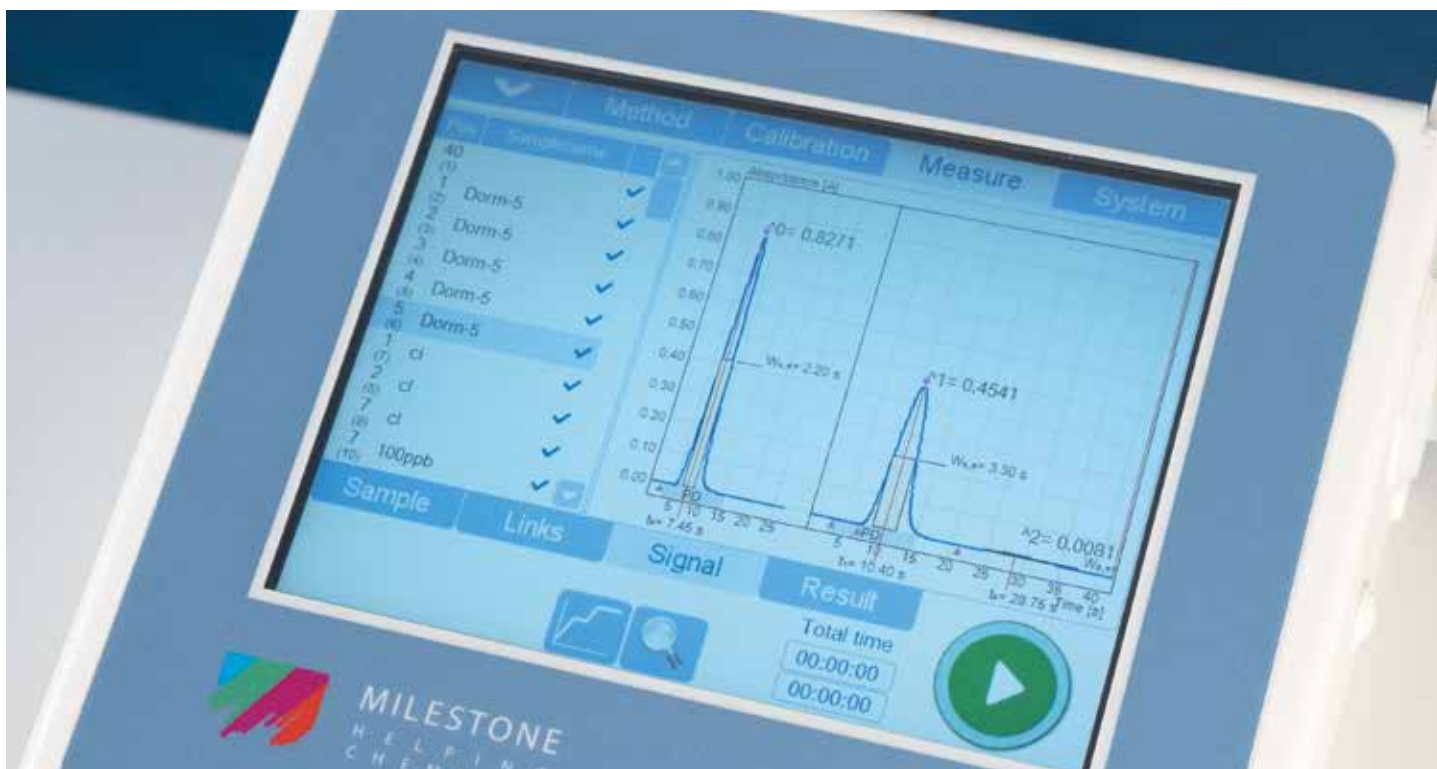
The DMA-1 evo is equipped with metal or quartz boats where the sample (solid and liquid) are weighed. Then the boat is automatically loaded into the system to begin the analysis procedure. The entire process, from the weighing to results, is completed in as few as 6 minutes. The DMA-1 evo provides fast analysis without method development or sample preparation being a great asset for rush samples and whenever turnaround time is crucial.



Sample is weighed inside the metal or quartz boat



Boat with sample is placed inside the system



Sample analysis is completed in 6 minutes

AFFORDABLE TO GET ECONOMICAL TO RUN

I COST-EFFECTIVE ANALYSIS

DMA-1 *evo* offers an accessible path to mercury analysis with a limited initial investment, low running costs and less operator time. It enables laboratories to eliminate the costs related to acids (often ultrapure), digestion processes and wastes. DMA-1 *evo* frees up all the time typically dedicated to sample preparation, allowing the operator to accomplish other tasks.

I GO DIRECT ON ANY SAMPLE

DMA-1 *evo* has been seamlessly integrated into a wide range of applications. It is used for mercury determination in environmental applications, in compliance with US EPA method 7473, and in several other matrices such as fish, coal, biological and many others.

Sample	Concentration DMA-1 <i>evo</i> (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-1 <i>evo</i> (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*



Environmental



Food/Fish



Power plant/Coal



Cement/Mining



Clinical/Biological



Petrochemical

ONE CALIBRATION FIT ALL

A single calibration, completed using liquids or CRMs, suits a large variety of samples for a wide concentration range. Moreover, calibration of the DMA-1 evo offers long-term reliability thanks to both the system's stability and the long working life of the catalyst tube and gold amalgamator.

Certified material	Certified (µg/kg)	DMA-1 evo (µg/kg)
BCR-150 Skim Milk Powder	7.7 - 11.1	9.2 ± 0.2
NIST 1630a Coal	93.8 ± 3.7	93.4 ± 2.4
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

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

COMPACT AND PORTABLE

The DMA-1 evo is a compact standalone mercury analyzer with a minimal footprint which is further reduced through the integrated terminal. Its rugged design and easy setup make the DMA-1 evo an excellent solution for on-site testing and on mobile laboratories too.



SMALL FOOTPRINT FOR HIGH FLEXIBILITY

Pos	Sample name	Amount	State	Height	Hg [µg]	[µg/Kg]	Cal Factor	Σ	Group
2	cl	1.0000g	✓	0.0001	0.0001	0.0001	0.9990		
3	cl	1.0000g	✓	0.0002	0.0004	0.0004	0.9990		
4	boat	1.0000g	✓	0.0298	0.0505	0.0505	0.9990		
5	boat	1.0000g	✓	0.0362	0.0614	0.0614	0.9990		
6	boat	1.0000g	✓	0.0257	0.0434	0.0434	0.9990		
7	boat	1.0000g	✓	0.0280	0.0474	0.0474	0.9990		
8	boat	1.0000g	✓	0.0526	0.0896	0.0896	0.9990		
1	DORM-3	0.0750g	✓	0.0251	28.0822	374.4287	1.0000		
2	DORM-3	0.0770g	✓	0.0263	29.4348	382.2704	1.0000		
3	DORM-3	0.0670g	✓	0.0226	25.2671	377.1208	1.0000		
4	DORM-3	0.0750g	✓	0.0249	27.8568	381.5999	1.0000		
5	DORM-3	0.0660g	✓	0.0224	25.0421	379.4252	1.0000		
6	DORM-3	0.0780g	✓	0.0269	30.1115	386.0449	1.0000		
7	DORM-3	0.0670g	✓	0.0244	27.2935	407.3661	1.0000		

Sample Links Signal Result
 m=244.2604 µg/Kg
 σ_{RM}=189.1387 µg/Kg
 σ_{RM}=77.43%

Statistics on the DMA-1 evo software



www.milestonesrl.com

MILESTONE HELPING CHEMISTS

Established in 1988, Milestone's headquartered is in Italy with offices in the Unites States, China, Japan, and Korea. The R&D and manufacturing sites are in Germany (MLS) and Switzerland (MWS), along with offices for Austrian, German and Swiss markets. We operate worldwide through a network of over 100 exclusive distributors which provide premium application and service support to all our customers. 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 and responsive service and application support, allows Milestone to achieve our goal of giving you the highest return on investment possible.

| ADDITIONAL MILESTONE SOLUTIONS



DMA-80 *evo*

Direct Mercury Analyzer



ETHOS UP

High Performance
Microwave Digestion
System



ultraWAVE

The Game Changer in
Microwave Digestion

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