MARS 6 SYNTHESIS

MICROWAVE REACTION SYSTEM

SYNTHESIS
MADE SIMPLE



CEM

MICROWAVE REACTION SYSTEM

Features

1800 WATTS OF DELIVERED ENERGY
Providing the power needed for difficult reactions and high throughput vessel sets

UP TO 24-VESSEL CAPACITY

HIGH-RESOLUTION, FULL COLOR TOUCHSCREEN WITH SPEAKERS
Large 7" (800 x 480) glass capacitive LED screen serves as controller and display

8-GIGABYTE ONBOARD CONTROLLER
No need for a laptop or external controller

TOUCHSCREEN TRAINING VIDEOS
Learn about your system, how to use different vessel sets and options, and how to run reactions right on the MARS 6

MARS CLASSIC METHOD PROGRAMMING
Pre-loaded with methods or easily create a program for your reaction type

DATA AT A GLANCE
Touchscreen interface provides easy access to stored methods, real-time data and results of past runs

ACID- AND IMPACT-RESISTANT COMPOSITE SHELL
Better system protection in a laboratory environment than a metal wrap

RUGGED, HIGHEST GRADE CAVITY
316 Solid Steel Cavity with multi-layered Teflon coating

SPECIALLY DESIGNED WAVEGUIDE
Delivers microwave energy directly to the center of the cavity ensuring microwave uniformity and eliminates the need for motor-driven diffusers or mode stirrers

PATENTED ISOLATOR
Absorbs reflected microwave energy prior to reaching magnetron and allows magnetrons to run at 100% power

REACTIGUARD SENSOR
Constantly monitors cavity for vessel problems



Direct Fiber Optic Temperature Sensor of the Reference Vessel

The fiber optic temperature probe is the gold standard in temperature measurement. Unlike metal thermocouples, which can self-heat in the microwave and give imprecise readings, CEM's fiber optic temperature probe provides accurate measurement every time. An optional NIST-traceable fiber optic temperature probe is also available.

Vessel Options for the MARS 6 Synthesis System

Vessel Type	Max. number of vessels per run	Volume	Max. Temp. (°C)	Max. Pressure (psi)
Open flask	1	Up to 5L	Reflux	----
GlassChem	24	20 mL	180	200
GreenChem	14	100 mL	200	200
EasyPrep	12	100 mL	310	1500

SOFTWARE CONTROL & FLEXIBILITY

The MARS 6 can be controlled using the onboard touchscreen interface or an external computer with SynergyPrep software.





Simple Method Programming

MARS 6 allows you to run one of the preloaded methods or quickly develop a program that contains your unique method parameters.

Easily Manage System Settings

The Tools and Settings menus can be easily accessed from anywhere in the software. Set up Administrator and User login privileges, check and calibrate the temperature sensor and customize your MARS 6 by selecting from seven language settings.

Data Management

Data management is easy with the MARS 6. Import or export methods, instrument settings, and data using any of the 6 USB ports or print results and reports by connecting to an external printer.

Graphical Output

The large, high-resolution, full color touchscreen provides a convenient, built-in interface. Easily monitor an active run from the graphical output of the touchscreen. Navigate between screens to view temperature and microwave power, or view the relative temperature of all vessels with the temperature viewer.

Onboard Help and Training Videos

Have a question about your MARS 6 or vessel assembly? Watch detailed training videos right on the touchscreen of the MARS 6.

Atmospheric Vessel Kit

Each kit includes a 3-L and a 5-L vessel. Also included are extenders, adapters (specific to each vessel) and a vessel stand. The adapters' side port allows for placement of the temperature probe in the reaction vessel to control the reaction conditions.

Enhanced stirring for homogenous sample mixing.



5-L Vessel 3-L Vessel

GlassChem Vessels

The **GlassChem**™ vessels are engineered with a simple screw cap design for ease of use while still providing the temperature and pressure capabilities necessary to perform the full range of experiments in the CEM lab manuals.

This simple to use vessel permits reaction conditions of up to 180 °C and 200 psi. It is designed for undergraduate teaching as well as research. These vessels are available in starter kits of 8, 16 and 24 vessels. Each kit includes a control vessel to provide precise control of reaction conditions.



GlassChem 20-mL vessel with Stir Bar

GlassChem 20-mL control vessel

SPECIFICATIONS

Overall Instrument Dimensions	63.5 cm (25 in.) height x 53.3 cm (21 in.) width X 63.5 cm (25 in.) depth
Weight	63.6 kg (140 lbs.)
Touchscreen	7" (800 x 480) TFT-LED glass capacitive touchscreen display
Ports	5 USB, 1 USB-B, 2 Ethernet, 1 RS-232
Languages	Software available in English, German, French, Italian, Spanish, Chinese, and Japanese.
Turntable Design	PerfectCircle™ design provides absolute radial symmetry. Turntable operates in alternating or continuous mode.
Microwave Cavity	Heavy-duty, multi-layer Teflon® coating
Electrical Requirements	200/208/230 VAC (200-253 VAC), 60 Hz, 15A @ 230 VAC 220/240 VAC (202-250 VAC), 50 Hz, 15A @ 240 VAC
Magnetron Frequency	2450 MHz
Power Output	1800 W – Continuous power available at all power levels to provide more control for reactions.
Magnetron Protection	Solid-state isolator (US patent 4,835,354) to protect magnetron from reflected energy, ensuring constant power output.
Speakers	8 Ω, 2 W, 86 dB
Printer	Onboard thermal printer and USB-B compatible printer port
Safety Features	Three independent door safety interlocks, including an interlock monitoring system plus three independent thermal switches, are used in each instrument to prevent instrument operation and microwave emissions in case of improper door closure or misalignment. The instrument complies with HHS standards under 21 CFR, Part 1030.10, Subparts (C)(1), (C)(2) and (C)(3). Reactiguard continuously monitors the cavity and disables the magnetron if disturbances occur inside the cavity.
Emissions and Safety Approvals	Conforms to Globally Harmonized EN61010-1 Standard for Safety Requirements for Electric Equipment for Measurement, Control, and Laboratory Use Part 1: General Requirements (CAN/CSA-C22.2 No. 1010.1-1992).
Patents	CEM microwave systems and vessel designs may be covered by any one of the following US patents: 04835354, 04080168, 05369034, 04672996, RE034373, 05230865, 04877624, 04672996, 05206479, 05427741. Other patents pending.

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Service & Support

All CEM Systems are backed by our experienced applications support team and award-winning service department. CEM's factory-trained field technicians and in-house service team are well known in the industry for their prompt response and problem-solving capabilities.

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