



Organic Solutions Offerings (Non-PFAS)

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Product Offerings



EDGE®

- Pressurized Fluid Extraction
- Sequential
- Filtration step included
- 1 sample processed

MARS 6 Extraction™

- Microwave Extraction
- Batch
- Filtration required
- Up to 40 samples processed

Discover Prep™

- Microwave Hydrolysis
- Sequential
- Stirring
- 1 sample processed

Product Offerings

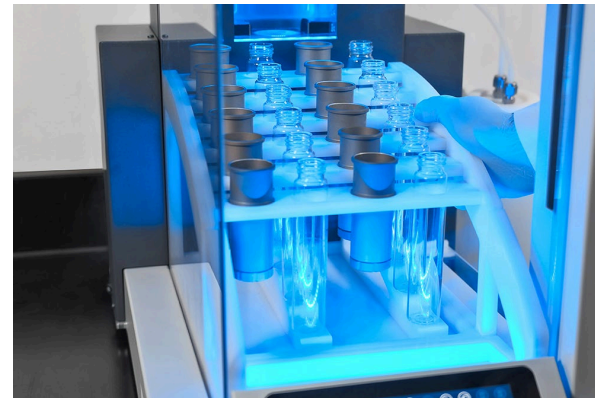
MARS 6 Extraction

- Solvent Extraction
- Hydrolysis



EDGE

- Solvent Extraction



Discover Prep

- Hydrolysis
- Solvent Extraction



MARS 6 Extraction™

MARS 6 Extraction Configurations

Included in All Configurations:

- Two IR sensors
- Stirring
- Solvent Sensor
- Accessory Kit

Configuration Options:

- iLink
- Printer
- Door Lock

All options available for 230V, 240V and 200V

Vessel sets not included in configurations.



MARS 6 Extraction Configurations

230V/60

927540-1	MARS 6 EXTRACTION 230V/60 SALES
927540-2	MARS 6 EXTRACTION 230V/60 SALES W/ILINK
927540-3	MARS 6 EXTRACTION 230V/60 SALES W/PRINT
927540-4	MARS 6 EXTRACTION 230V/60 SALES W/ILINK & PRINT
927540-5	MARS 6 EXTRACTION 230V/60 SALES W/DR LOCK
927540-6	MARS 6 EXTRACTION 230V/60 SALES W/PRINT & DR LOCK
927540-7	MARS 6 EXTRACTION 230V/60 SALES W/ILINK,DR LOCK & PRINT
927540-8	MARS 6 EXTRACTION 230V/60 SALES W/ILINK & DR LOCK

MARS 6 Extraction Configurations

240V/50

927541-1	MARS 6 EXTRACTION 240V/50 SALES
927541-2	MARS 6 EXTRACTION 240V/50 SAL50ES W/ILINK
927541-3	MARS 6 EXTRACTION 240V/50 SALES W/PRINT
927541-4	MARS 6 EXTRACTION 240V/50 SALES W/ILINK & PRINT
927541-5	MARS 6 EXTRACTION 240V/50 SALES W/DR LOCK
927541-6	MARS 6 EXTRACTION 240V/50 SALES W/PRINT & DR LOCK
927541-7	MARS 6 EXTRACTION 240V/50 SALES W/ILINK, DR LOCK & PRINT
927541-8	MARS 6 EXTRACTION 240V/50 SALES W/ILINK & DR LOCK

MARS 6 Extraction Configurations

200V/50

927542-1	MARS 6 EXTRACTION 200V/50 SALES
927542-2	MARS 6 EXTRACTION 200V/50 SALES W/ILINK
927542-3	MARS 6 EXTRACTION 200V/50 SALES W/PRINT
927542-4	MARS 6 EXTRACTION 200V/50 SALES W/ILINK & PRINT
927542-5	MARS 6 EXTRACTION 200V/50 SALES W/DR LOCK
927542-6	MARS 6 EXTRACTION 200V/50 SALES W/PRINT & DR LOCK
927542-7	MARS 6 EXTRACTION 200V/50 SALES W/ILINK, DR LOCK & PRINT
927542-8	MARS 6 EXTRACTION 200V/50 SALES W/ILINK & DR LOCK

MARS 6 Extraction Temperature Specifications

Application	Minimum Temperature (°C)	Maximum Temperature (°C)
Extraction	90	140
Acid Hydrolysis	120	160
Base Hydrolysis	120	190

Extraction

- Temperature range recommendation for common applications is 80 – 140 °C
 - Do not recommend temperatures below 80 °C
 - Maximum temperature dependent upon extraction solvent boiling point and polarity
- Recommend 100 – 115 °C for US EPA 3546
- One Touch methods at 120 °C and 130 °C were created for specific customers

Hydrolysis

- Acid Hydrolysis: Temperature range recommendation 120 – 160 °C
- Base Hydrolysis: Temperature range recommendation 120 – 190 °C

Contact organic.support@cem.com for additional guidance if outside these recommendations.

MARS 6 Extraction Vessel Options

Must maintain a minimum headspace of 1/3 the vessel volume including sample, solvent and any salts or sorbents. Overfilling the vessel will result in over pressurization and vessel events.

	20 mL MARSXpress (PFA)	55 mL MARSXpress	75 mL MARSXpress	110 mL MARSXpress Plus (TFM)	110 mL MARSXpress Plus (TFM w/ glass)
Maximum Sample Size (g)	4	10	20	20	20
Minimum Solvent Volume (mL)	2	5	5	5	5
Maximum Solvent Volume (mL)	4	10	25	35	25

MARS 6 Extraction Vessel Options

- The MARS 6 Extraction is intended to be run with MARSXpress or MARSXpress Plus vessel types.
 - The IR sensor works well for the lower temperatures needed for extraction and hydrolysis.
- For customers running large sample types we recommend the 110 mL MARSXpress Plus (TFM) or 75 mL MARSXpress vessels.
 - Example: US EPA 3546
- TFM liners are recommended for 110 mL MARSXpress Plus and glass insert users.
 - PFA liners should not be used with glass inserts.
- The 20 mL MARSXpress vessel is recommended for hydrolysis applications.
 - The 20 mL MARSXpress vessel is only available in PFA.
- Maintaining 1/3 headspace is critical for optimal performance.



MARS 6 Extraction Applications

Solvent Extraction

- Environmental
 - soils, sludge, sediment
 - US EPA 3546
- Additives in Plastics
 - antioxidants, slip agents, UV stabilizers
- Food and Feeds
 - pesticides, PCB's, dioxins



Hydrolysis

- Acid and Base hydrolysis

FAMES

- Individual fatty acids
- Not to be used as a total fat determination



EDGE[®] Extraction (Non-PFAS)

EDGE Configurations

Included in All Configurations:

- Common Accessory Kit
 - Includes Q-Cups, 12 S1 Q-Discs, Q-Screens, etc.
- Rack Kit
 - Includes rack and collection vials or tubes

Configuration Options:

- 40 mL Glass Collection
- 60 mL Glass Collection *most common
- 50 mL Centrifuge Tube Collection

All options available for 120V and 240V

Recommend adding a box of S1 Q-Disc to order.



EDGE Configurations

925265-1	EDGE - 120V with Centrifuge Rack Accessory Kit
925265-5	EDGE - 120V with 40 mL Glass Rack Accessory Kit
925265-9	EDGE - 120V with 60 mL Glass Rack Accessory Kit
925265-3	EDGE - 240V with Centrifuge Rack Accessory Kit
925265-7	EDGE - 240V with 40 mL Glass Rack Accessory Kit
925265-11	EDGE- 240V with 60 mL Glass Rack Accessory Kit

EDGE Specifications

- The system uses internal thermocouples to give a precise temperature measurement
- The system should be run between 40 – 180 °C
 - You can program other temperatures but this is the preferred range.
 - Contact organic.support@cem.com if you wish to work outside this range.
 - The maximum pressure of the EDGE system is 200 psi, so that will limit the temperature you can achieve for certain solvents
- The maximum sample size is typically 10 grams
 - Sample and any necessary sorbents or salts must fit in the Q-Cup below the outer band.
 - This may reduce the maximum sample size depending upon sample.
- Maximum of 6 solvents or solvent mixtures
 - Mixed solvents must be miscible.
 - Strong acids or bases are not compatible with the system.



Consumables

Q-Disc

- S1 is the universal Q-Disc and is recommended for all EDGE applications.
 - Glass fiber Q-Disc is supported by two cellulose Q-Discs.
- For users who need a cellulose-free solution, G0 filters through the same glass fiber Q-Disc used in S1
 - It does require the use of Q support stainless steel backing.



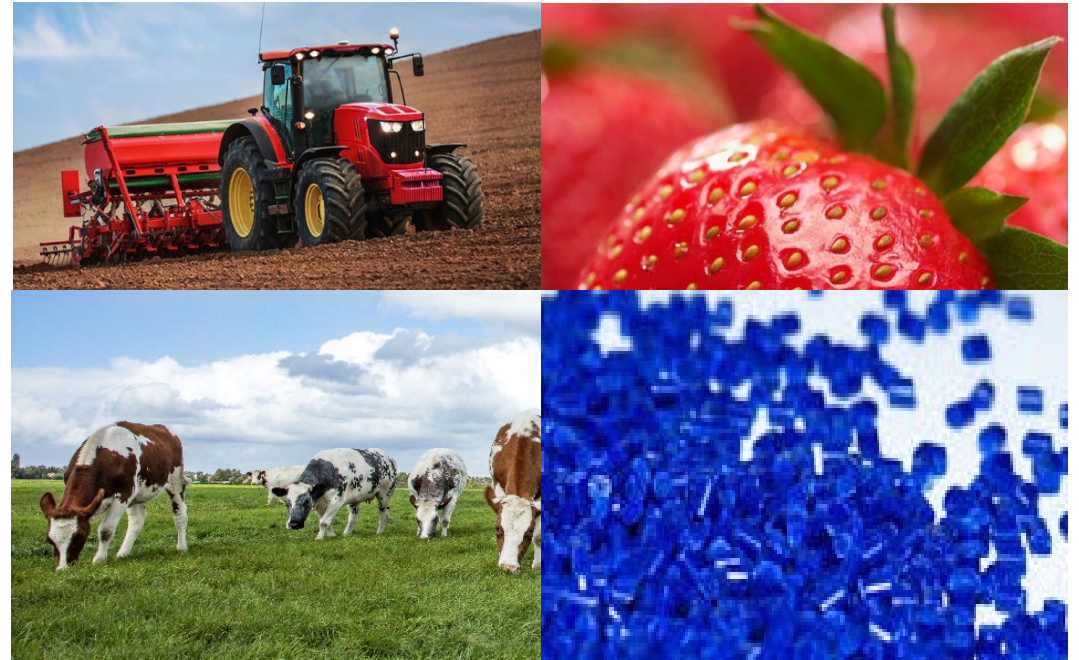
Q-Matrix Hydra

- Sorbent that is used for wet samples, such as produce and seafood.
- You would typically add 1 – 3 grams to a sample and mix.
 - If 3 grams is not sufficient please contact organic.support@cem.com.
- The maximum temperature to run Q-Matrix Hydra is 75 °C.
- It is not included in the accessory kit.



EDGE Applications

- Environmental
 - It is great for the European Norm methods which work with nonpolar solvents.
- Food
 - Extractions of antioxidants, ingredients, nutrients, etc.
- Anything that an ASE is used for
- Sequential solvent extraction solution for solid and semi-solid samples



Discover Prep™

Discover Prep Configurations

Included in All Configurations:

- Accessory Kit
 - Includes 6 quartz vials, caps, etc.

Configuration Options:

- iLink
- Autosampler

All options available for 120V and 240V

Liners need to be added to order for base hydrolysis applications.



Discover Prep Configurations

- P/N 925348-1 100/120V system
 - P/N 925348-2 100/120V system with iLink
 - P/N 925348-3 240V system
 - P/N 924348-4 240V system with iLink
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- P/N 925168-1 100/120V system with autosampler 48
 - P/N 925168-2 100/120V system with autosampler 48 with iLink
 - P/N 925168-3 240V system with autosampler 48
 - P/N 925168-4 240V system with autosampler 48 with iLink

Discover Prep Specifications

- The Discover Prep is only offered with a 35 mL vial.
- The quartz vial is recommended
 - 6 quartz vials are included in the accessory kit.
 - Quartz is reusable and ideal for higher temperature applications such as hydrolysis
 - Pyrex vials are one-time use
- Discover Prep with Autosampler will automate 24 samples
 - We have discontinued the Autosampler 12 for Discover Prep.



Discover Prep Specifications

- The standard working volume is 2 - 20 mL for 35 mL vials
- The recommended temperature range is 50 - 200 °C
 - Most applications are run between 70 - 180 °C.
 - The vapor pressure of the solvent will limit the temperature range of some solvents.
 - Quartz vials are recommended when working at temperatures at or above 160 °C.
 - You should contact organic.support@cem.com for use of temperatures outside of the recommended range.
- Liners must be used for any application using base, including base hydrolysis
 - We are currently testing the longevity of liners.
 - Information will be included in a future Extraction Guideline Document.



Discover Prep Applications

- The most common application is acid or base hydrolysis
- Other applications to consider:
 - Polymer extractions where the sample is dissolved.
 - Extractions where stirring is beneficial.
 - Samples too small for the EDGE or MARS 6 Extraction.
 - Research by universities.



Conclusions

Solvent Extraction and Hydrolysis options to fit the customers needs.



EDGE®



MARS 6 Extraction™



Discover Prep™

Organic solutions guideline document coming soon.



Collateral

Applications

CEM systems are utilized in a wide variety of application areas. Select an application area to view application notes (including applicable results and run information) and posters that have been presented at conferences around the world.



Ashing



Fat Analysis



Hydrolysis



Microwave Digestion



Microwave Synthesis



Moisture and Solids Analysis



Peptide Synthesis



PFAS Extraction



Protein Analysis



Solvent Extraction



Sulfated Ashing

Collateral



Solutions for Environmental Testing

Soil Application – In Accordance with US EPA 3545A or US EPA 3546



EDGE and MARS 6

Pressurized Fluid Extraction

Microwave Solvent Extraction



