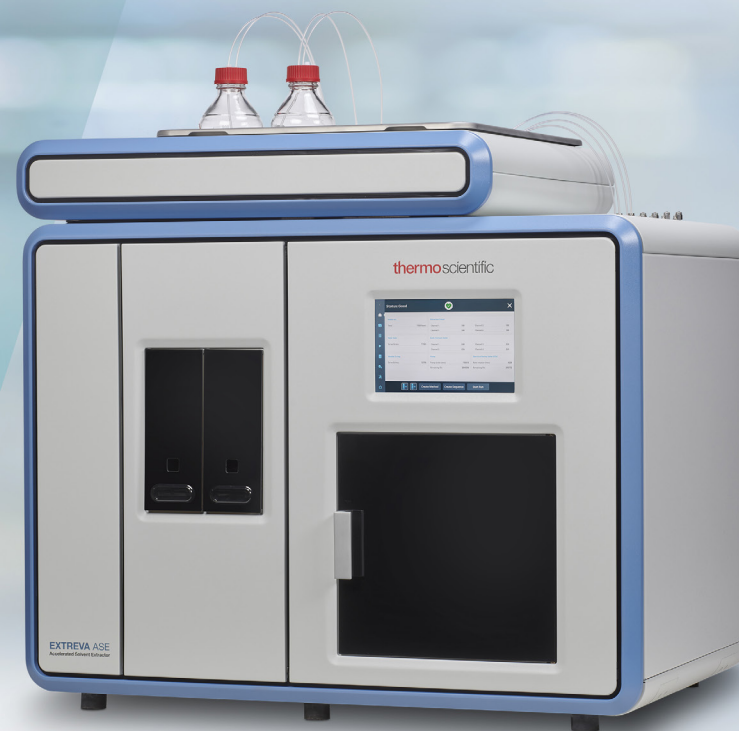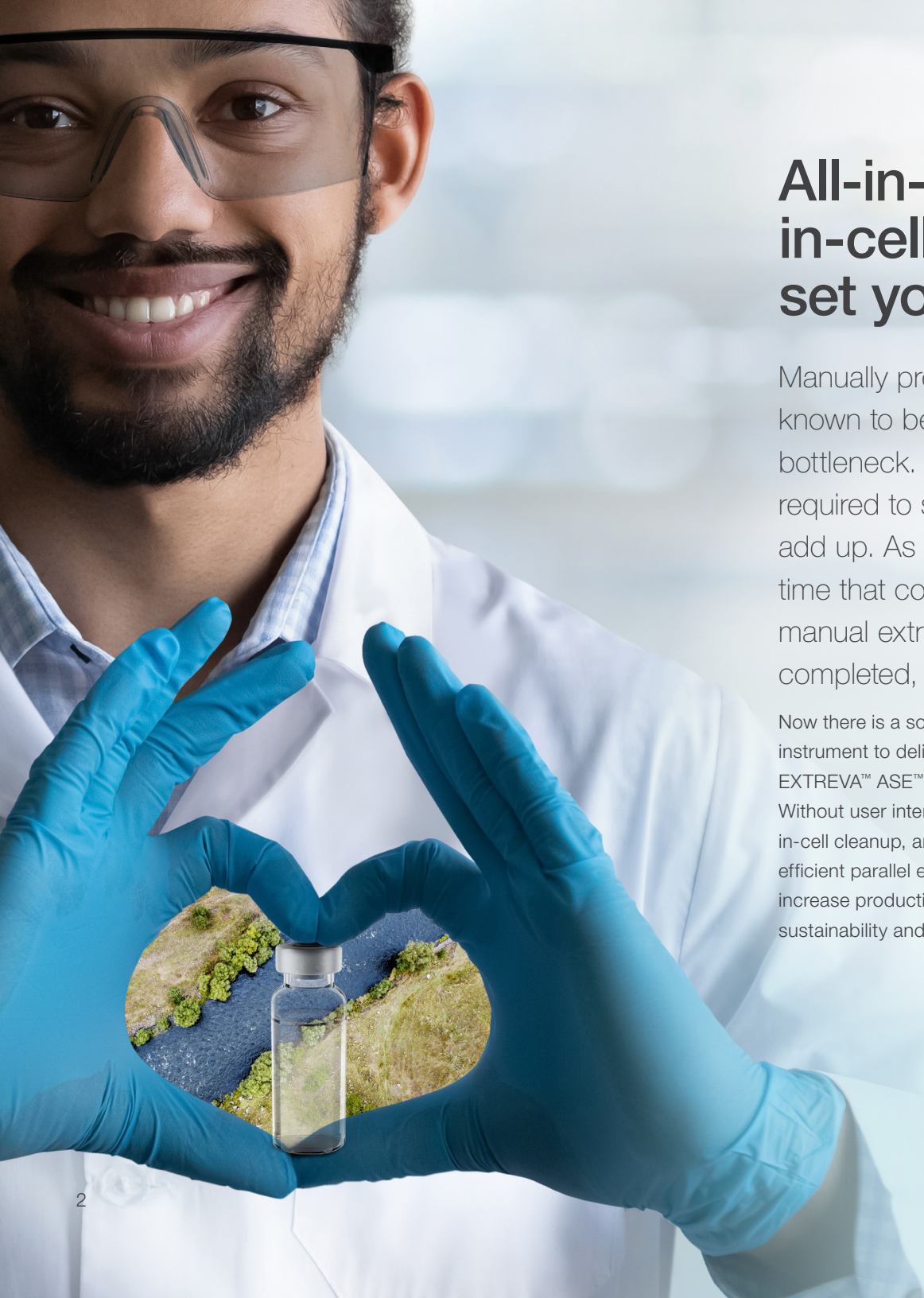# Extract more efficiently with walkaway automation from sample to vial

EXTREVA ASE
Accelerated Solvent Extractor

All-in-one sample extraction, in-cell cleanup, and evaporation set you free

Manually preparing samples from solid and semi-solid matrices is known to be a costly, error-prone, and time-consuming analytical bottleneck. Costs for solvents and supplies, as well as the time required to set up, run and clean up manual extractions, quickly add up. As much as 60% of a chemist's time—substantial time that could be spent on other priorities—is dedicated to manual extractions. Often, errors aren't evident until analyses are completed, wasting samples and time while increasing costs.
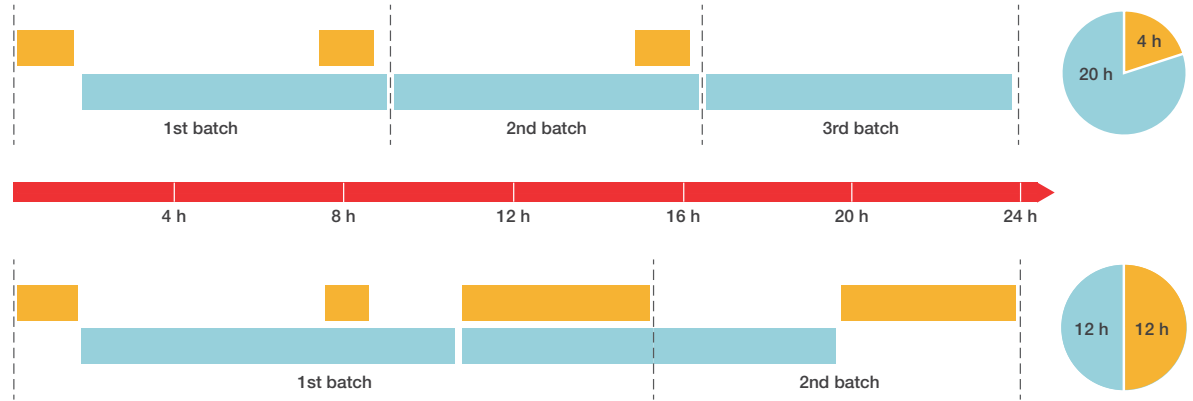
Now there is a solution for this vital step in your analytical workflow. The first automated instrument to deliver true walkaway sample-to-vial sample preparation, the Thermo Scientific™ EXTREVA™ ASE™ Accelerated Solvent Extractor is the perfect partner for your chromatography. Without user intervention, this all-in-one system seamlessly performs sample extraction, in-cell cleanup, and evaporation of four samples in parallel. As a result, you get reproducible and efficient parallel extractions that cut manual sample preparation steps from hours to minutes, increase productivity, minimize errors, and dramatically reduce solvent use to meet laboratory sustainability and cost goals.

EXTREVA ASE system
48 samples per 24 hours

- Manual labor
- Automation

1st batch   2nd batch   3rd batch

4 h   8 h   12 h   16 h   20 h   24 h

Multiple instruments
Up to 36 samples
per 24 hours

1st batch   2nd batch

20 h / 4 h

12 h / 12 h

Increase sample preparation productivity. The EXTREVA ASE system prepares more samples with three times less hands-on time, freeing staff to work on other priorities and increasing sample throughput.

All-in-one sample preparation sets you free
The EXTREVA ASE system automatically extracts and concentrates samples in one seamless integrated operation, eliminating the need to manually move sample extracts to another device for solvent evaporation.

Walk-away solution decreases hands-on time
The system minimizes hands-on sample preparation tasks, enabling staff to focus on other time-critical tasks such as data analysis.

Parallel extraction boosts productivity
One EXTREVA ASE system can perform four parallel sample extractions, substantially increasing throughput and efficiency.

Green technology reduces solvent use and costs
In most cases, the patented gas-assisted extraction mechanism reduces solvent consumption to between 5 and 100 mL per sample.

Automation enhances accuracy and consistency
Full automation improves recoveries and reproducibility while substantially reducing errors. Unlike humans, automated systems are ideal for performing the same tedious task repeatedly, with minimal errors.

Provides method flexibility and optimization
Up to six different solvents can be used, during extraction and rinse steps. Precise flow control optimizes methods.

Facilitates data tracking and ensures data integrity
The system tracks sample information and extraction parameters using a 2-D barcode reader, recording the data on the instrument or Thermo Scientific™ Chromeleon™ Chromatography Data System (CDS) Software.

Efficiency and productivity at last
Access unique technology to fully automate sample preparation

Though other instruments streamline portions of sample preparation methods, considerable manual interaction and attention is required during their use. Adding to the inconvenience, different instruments are usually needed to perform all the steps required to prepare samples for analysis. The EXTREVA ASE system is the first to deliver an authentic walk away, sample to vial workflow. When sample preparation is complete, simply cap the vials and place them in the autosampler for chromatographic analysis.

Simply use the Thermo Scientific™ Dionex™ ASE™ 350 Extraction cells that you're familiar with.

To maximize productivity and minimize carryover, extract, evaporate, and concentrate four samples in parallel using four separate ovens arranged in independent flow paths. There is no need to manually move samples to an evaporator, nor to use more than one instrument.
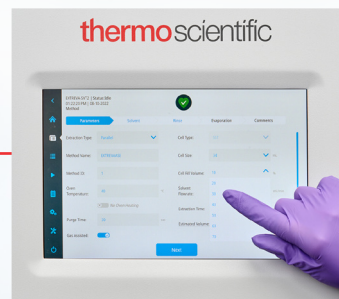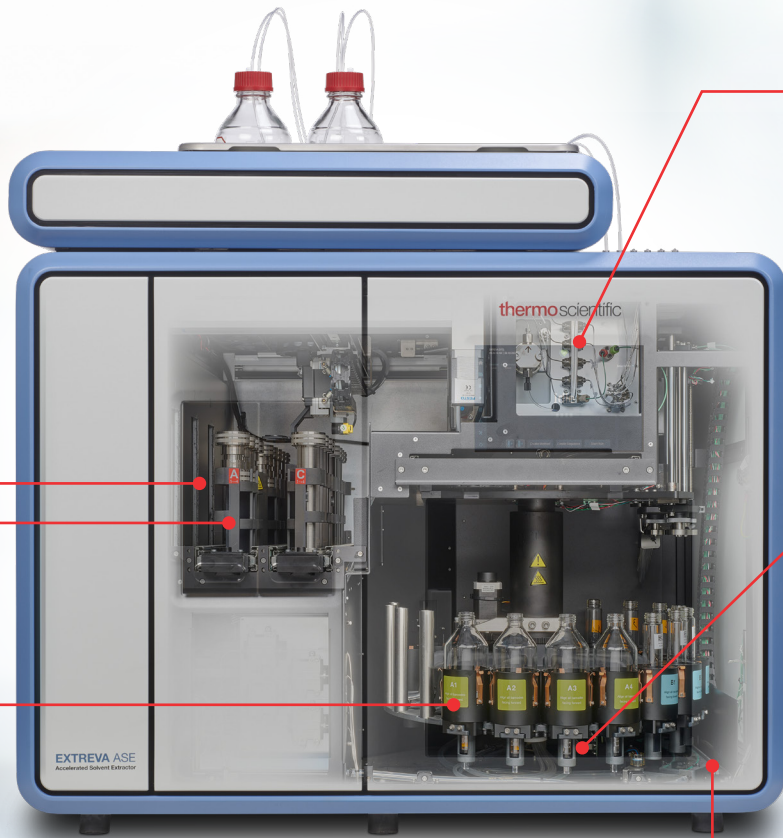
Gas assisted dynamic extraction reduces the amount of solvent used and enhances method optimization with precise flow control.

Use nitrogen and vacuum at the same time to expedite evaporation. Gentle heating may also be applied if desired. The vacuum is set at a low level so semi-volatile compounds will not be lost.

Fully control the EXTREVA ASE system from the front panel, as shown here, or with Chromeleon CDS for an integrated solution that drives productivity with superior networking capabilities, instrument control, automation, and tools to maintain and demonstrate compliance.
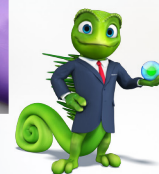
Confidently ensure data integrity across your entire analytical workflow by automatically recording and saving all sample extraction parameters in the EXTREVA ASE system or in Chromeleon CDS, minimizing manual documentation steps. 2-D barcoding is available for all extraction steps, from sample cell to vial, for electronic tracking. Data can quickly be retrieved from either the EXTREVA ASE system control panel or the Chromeleon CDS.
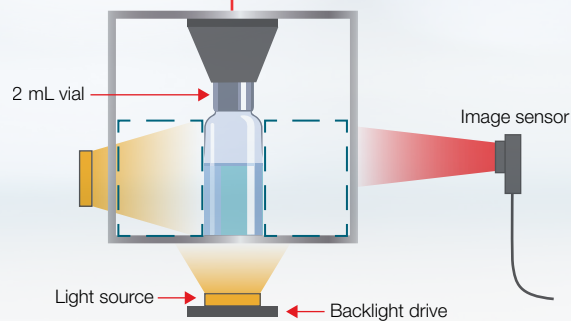
Smart end-point detection automatically stops evaporation once the desired volume in the autosampler vial is reached, eliminating the need to constantly check on samples during concentration. The feature uses machine learning to independently stop evaporation in each channel at a user-specified volume.

2 mL vial

Image sensor

Light source

Backlight drive

Next-generation accelerated solvent extraction exceeds your application needs

Accelerated solvent extraction (ASE) is a sample preparation technique that generates high-quality chromatographic results by using organic solvents at high temperatures and pressures to remove unwanted matrix components quickly and efficiently.

Automating ASE mitigates the variability associated with manual sample preparation, ensures reproducible results, and makes extraction faster, safer, and easier. With the EXTREVA ASE system, you get walkaway, worry-free operation for the preparation of solid and semi-solid samples like soils, fruits, and vegetables.

Applications for the EXTREVA ASE system

Applications ideally suited to the EXTREVA ASE system include environmental monitoring, food safety testing, and pharmaceutical QA/QC. The addition of ASE preparation materials enhances your workflow with better sample drying and in-cell cleanup.

Environmental monitoring

- Persistent organic pollutants
- Polyaromatic hydrocarbons (PAHs)
- Polychlorinated biphenyls (PCBs)
- Dioxins, furans, brominated flame retardants (BFRs), and pesticides

Food and beverage safety testing

- Pesticides
- Food contaminants
- Fat and lipid analysis
- Food packaging extractables and leachables

Pharmaceutical/Biotech

- Drug substance contact and packaging materials
- Extractables and leachables

Why accelerated solvent extraction?

The elevated temperature used during the ASE process increases the efficiency of the extraction of analytes from the matrix. The increased pressure keeps the solvent liquid, even as the temperature surpasses its boiling point. The lower solvent viscosity improves analyte diffusion into the solvent, making extraction faster and more efficient. Ultimately, this technique supplies a cleaner sample for subsequent separation and detection of sample components during chromatographic analysis, and ultimately more accurate results for many applications.

Extract organochlorine pesticides (OCPs) from soil

Preparing soil samples for OCPs analysis using the EXTREVA ASE instrument yields recoveries well within the acceptable limits of 80 and 120%, meeting typical U.S. EPA Method requirements.
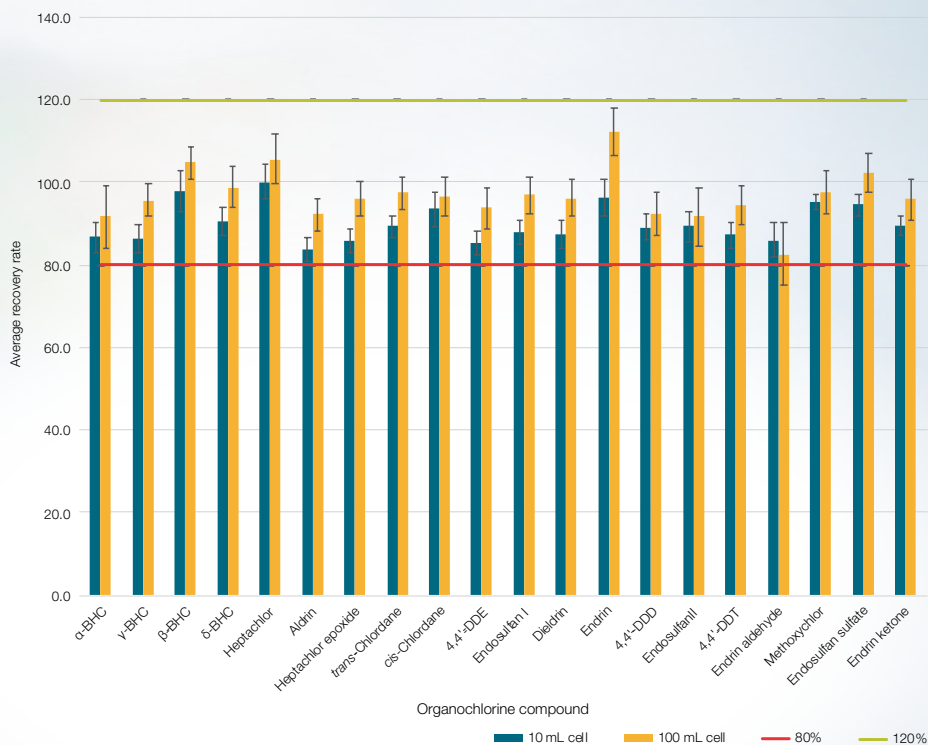
Average recovery rates for organochlorine pesticides (OCPs) spiked at 25 µg/kg fell within the 80 and 120% limits using the EXTREVA ASE system.

Extract PAHs from soil

The EXTREVA ASE system provides excellent reproducibility that is well within the acceptance range for PAH analysis, even for the more volatile compound like naphthalene.

PAH compound	Certified value	Acceptance range	Average recovery and RSD (10 mL cell)	
	µg/kg	µg/kg	Avg (n = 12) µg/kg	RSD (n = 12)
Naphthalene	494 ± 38	164 to 824	362	6.76
Acenaphthylene	630 ± 38	328 to 933	490	1.58
Acenaphthene	651 ± 64	141 to 1162	502	1.25
Fluorene	157 ± 19	10.7 to 303	140	3.07
Phenanthrene	290 ± 26	65.2 to 516	283	0.58
Anthracene	612 ± 51	173 to 1051	447	2.76
Fluoranthene	333 ± 25	119 to 547	349	0.95
Pyrene	202 ± 20	35.7 to 369	240	2.21
Benz[a]anthracene	329 ± 20	158 to 500	404	1.22
Chrysene	146 ± 12	49.8 to 241	168	4.45
Benzo[b]fluoranthene	69.9 ± 4.5	32.6 to 107	79	1.74
Benzo[k]fluoranthene	266 ± 21	95.0 to 437	251	1.41
Benzo[a]pyrene	223 ± 17	83.5 to 363	206	4.34
Indeno[1,2,3-cd]fluoranthene	88.8 ± 8.3	19.5 to 158	106	6.5
Dibenz[a,h]anthracene	193 ± 16	74.4 to 312	230	1.95
Benzo[ghi]perylene	224 ± 22	44.3 to 404	274	1.49

Average recoveries of PAHs from certified soil samples using the EXTREVA ASE system.

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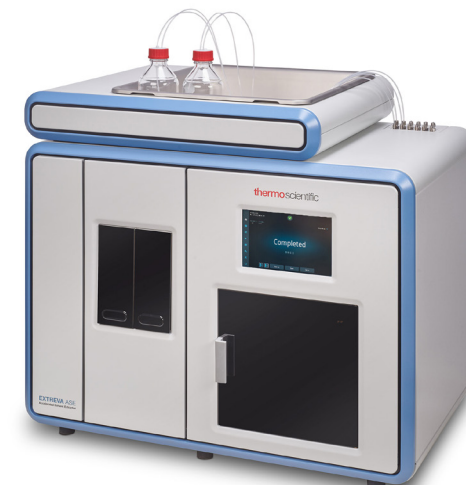
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