

Ignite your productivity

iCAP MSX single quadrupole ICP-MS



Uncompromised **sensitivity** Matrix **robustness**

Ultimate **efficiency**

Ignite productivity and transform your workflow

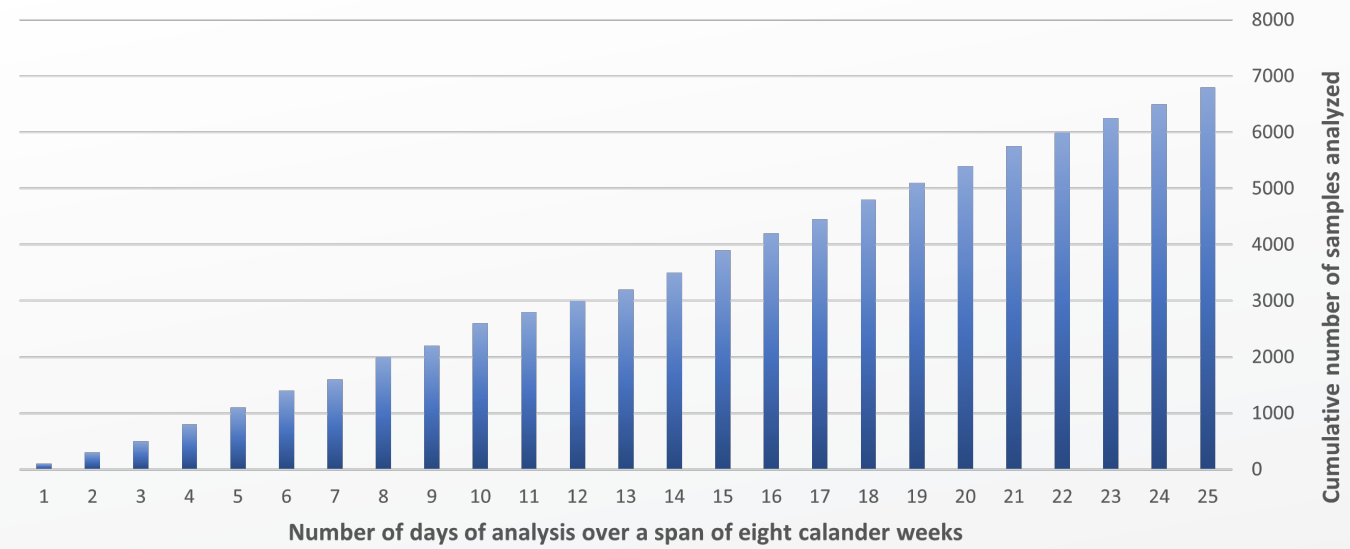
The Thermo Scientific™ iCAP™ MSX Inductively Coupled Plasma Mass Spectrometer (ICP-MS) consistently produces accurate data with maximized instrument uptime. Experience powerful detection capability without compromising matrix robustness to simplify your analysis, even with difficult samples.



Consistent results and stability with unique matrix robustness

The high matrix performance ensures maximized instrument uptime due to the infrequent need for user maintenance and minimal analytical drift.

Dramatically reduce user maintenance to increase instrument uptime. Over 6000 samples analyzed over a span of 8 weeks without any sample introduction maintenance or cone cleaning.



Intelligent Matrix Handling (IMH)

IMH reduces exposure of the instrument to the sample matrix when analyte detection is not taking place

- Confidently analyze samples without QC failures
- Longer analytical runs with minimal interruptions
- Increased productivity and reduced maintenance

Seamless interface control

Achieve the optimal balance of sensitivity to matrix tolerance with control of skimmer potential and forevacuum pump

- Improved detection capability in challenging matrix
- Highest sensitivity for your sample type
- Simple instrument operation via a fully software-controlled system

Easy Argon Gas Dilution (AGD)

Easy AGD reduces analytical drift and matrix deposits with a proprietary dilution gas introduction method

- Right first-time analysis to eliminate re-runs
- Prevents matrix deposits with high matrix samples
- Consistent internal standard recovery throughout the analytical run

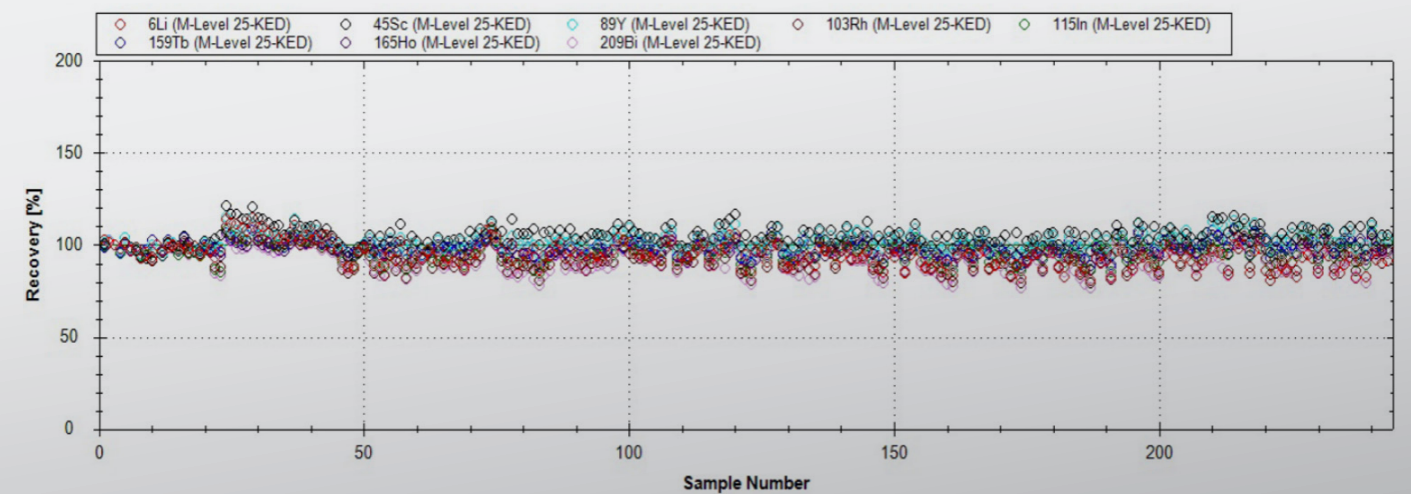
Integrated argon humidifier

Enhance productivity and robustness with a fully integrated argon humidifier

- Increase productivity with software switching between dry and humidified plasma
- Minimized analytical drift from prevention of salt build up on nebulizer and torch
- Clear visual indicators for humidifier status



Deliver right first time results in high matrix samples without drift or QC failures. Soil and wastewater analysis over 12 hrs with IMH and AGD-25, demonstrating minimal analytical drift in a high matrix.



Ultimate analytical detection capabilities with uncompromised performance

The iCAP MSX ICP-MS has the analytical power to meet and exceed global regulations and has the added benefit of future-proofing your laboratory against evolving standards. The analytical performance is enabled by a range of innovations to ensure that the instrument's sensitivity remains optimized and consistent, regardless of user or sample type.

ThermoFisher
SCIENTIFIC

Intellilens™ for optimal performance

The Intellilens optimizes the optical lens settings per analyte to provide maximum sensitivity across the mass range

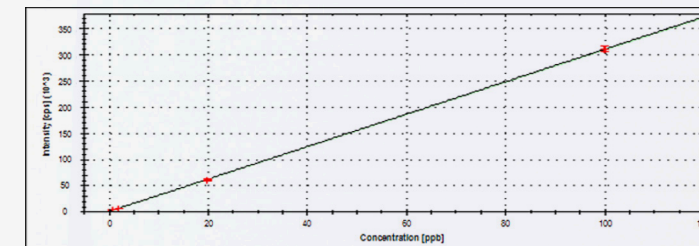
- Optimize sensitivity per analyte with intelligent tuning algorithms
- Integrated within autotunes for simplicity and ease-of-use
- Automated set-up without user instrument interaction

High sensitivity with interface design and control

Advance control of the of the interface and forevacuum boost analytical performance

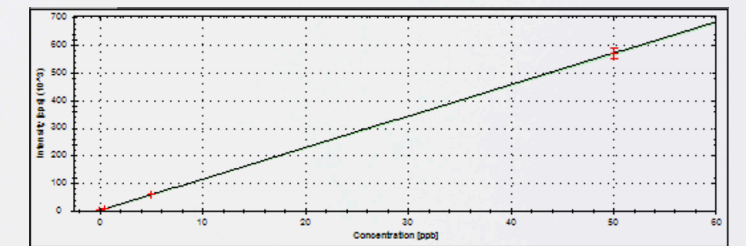
- Sensitivity or matrix tuning to provide the correct parameters for different samples
- Potential applied to skimmer cone, adjusted to optimize performance
- Raised interface vacuum further increases sensitivity

Reach a As LOD of 0.0024ppb in whiskey



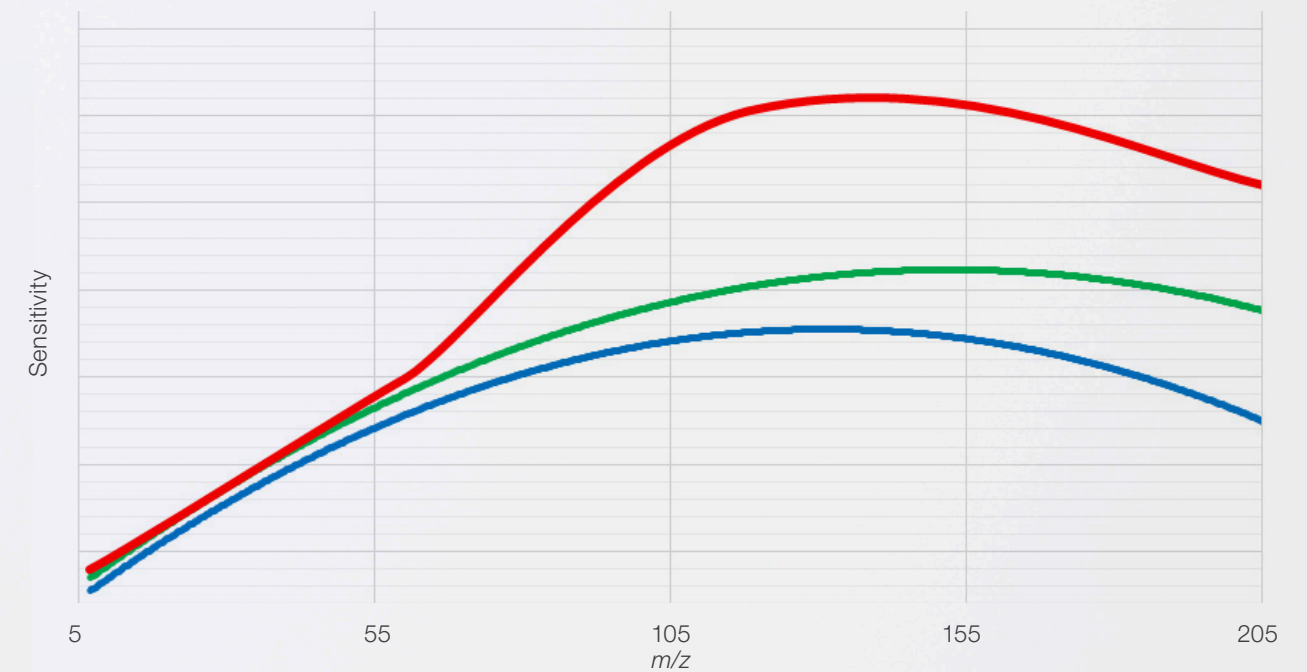
f(x) = b*x + a				
Parameter	Value	Confidence Delta at 90%	StdErr	Rel. StdErr [%]
b	3.093.028	+/-9.458	6.408	0.207
a	45.000	+/-0.000	0.000	0.000
R ²	1.000			
BEC	0.0145 ppb			
IDL(LOD)	0.0024 ppb			
RSE	1.761 %			

Achieve Pb LOD of 0.0048ppb in soil



f(x) = b*x + a				
Parameter	Value	Confidence Delta at 90%	StdErr	Rel. StdErr [%]
b	11.401.033	+/-61.880	37.785	0.331
a	50.033	+/-0.000	0.000	0.000
R ²	1.000			
BEC	0.0044 ppb			
IDL(LOD)	0.0048 ppb			
RSE	5.820 %			

Ensure detection limit requirements are consistently achieved: Sensitivity specifications: Sensitivity of iCAP MSX ICP-MS (red) compared to other ICP-MS instruments (green and blue)



Optimized efficiency and streamlined workflows for maximum productivity

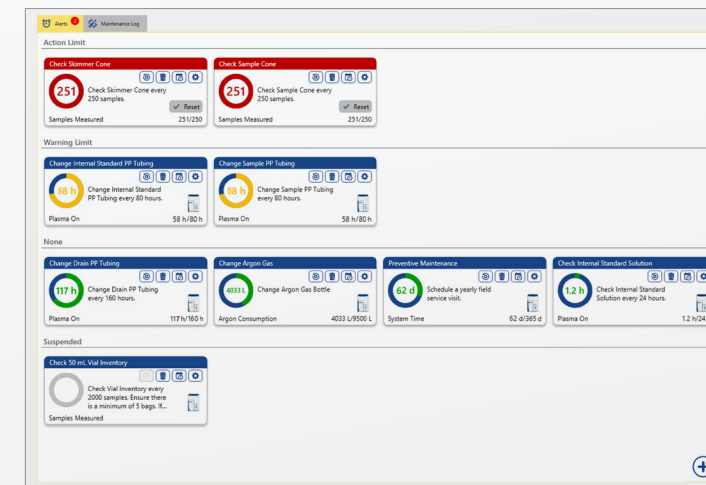
The iCAP MSX ICP-MS enables optimized productivity of your analysis from sample to results, to maximize your laboratory efficiency. The Thermo Scientific™ Qtegra™ Intelligent Scientific Data Solution (ISDS) software seamlessly controls your workflow from the initial instrument set-up, throughout daily operation to reporting results. You can be assured that you are meeting the demands for accurate analysis and traceable data with robust and reliable automated processes.



Workflows designed for efficiency

- Save time with Get Ready which can pre-program the instrument to be ready and operational when the samples are ready for analysis
- Optimal instrument up-time is provided the Thermo Scientific™ HAWK™ Consumable and Maintenance Assistant which notifies the analyst when important maintenance activities are required
- Ensure QCs pass consistently by monitoring instrument performance trends to recognize when impromptu maintenance may be necessary

Ensure instruments are operational and performance is maintained: The HAWK Consumable and Maintenance Assistant alerts the user to perform critical maintenance tasks



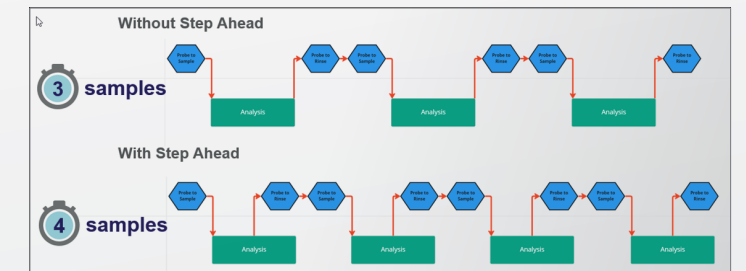
Unique user experience

- Reduce training requirements with Qtegra ISDS Software which is used with all ICP technologies from Thermo Fisher Scientific
- Increase productivity with one software application, removing the need to navigate to different applications to execute analytical work
- Clear visibility of instrument status from anywhere in the lab with comprehensive status LEDs

Step Ahead

- Increase productivity as the cycle time of analysis is significantly reduced
- Ensure efficient workflows as analysis and preparation of the next sample are executed in parallel to save time
- Save on utilities such as argon with reduced analysis times

Analyse more samples in a given time frame: The Thermo Scientific™ iSC-65 autosampler fully integrates with the iCAP MSX ICP-MS and Qtegra ISDS Software to provide increased productivity with the Step Ahead feature



Increased productivity with single analysis mode

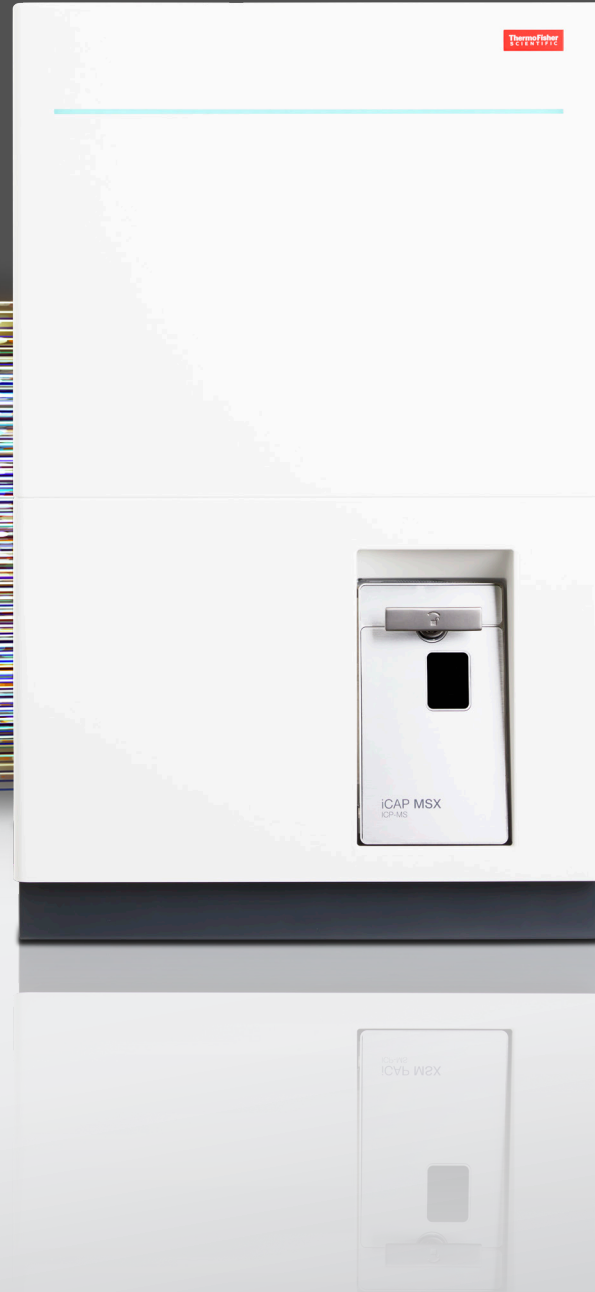
- Interference free analysis is provided by Single HeKED analysis which effectively removes interferences across the entire mass range
- Fast analysis time with no CRC gas changes for commonly encountered interferences
- Simplicity of single measurement mode to reduce instrument start-up time and method set-up and development

Produce right first results Single HeKED analysis mode: proven technology for routine applications 55 elements, 2.5 mins/sample in natural waters

Element	CRM SLRS-6 River water n=40		CRM LGC-6026 Hard drinking water – metals n=40	
	Mass fraction (µg/kg)	Recovery (%)	Mass fraction (µg/kg)	Recovery (%)
Al	33.9 ± 2.2	108.3 ± 5	199.9 ± 6.1	Outside calibration range
Sb	0.3372 ± 0.0058	103.8 ± 4	4.99 ± 0.17	105.0 ± 3
As	0.57 ± 0.08	109.6 ± 9	10.00 ± 0.31	109.2 ± 2
Ba	14.3 ± 0.48	100.5 ± 4	116.1 ± 3.5	104.8 ± 3
Be			5.08 ± 0.26	101.6 ± 9
Cd			4.98 ± 0.15	112.0 ± 3
Cr	0.252 ± 0.012	118.9 ± 3	50.0 ± 1.9	118.3 ± 3
Co	0.053 ± 0.012	113.5 ± 3	4.88 ± 0.17	116.2 ± 3
Cu	24.0 ± 1.8	108.8 ± 3	2017 ± 56	Outside calibration range
Fe	84.5 ± 3.6	87.7 ± 2	198.4 ± 5.5	91.4 ± 3
Pb	0.170 ± 0.026	89.1 ± 3	9.98 ± 0.14	90.6 ± 5
Li			11.24 ± 0.58	112.5 ± 5
Mn	2.12 ± 0.10	113.8 ± 4	48.4 ± 1.5	119.0 ± 2
Mo	0.215 ± 0.018	83.8 ± 6	4.77 ± 0.25	98.7 ± 6
Ni	0.617 ± 0.022	89.1 ± 6	19.00 ± 0.72	90.6 ± 3
Se			10.19 ± 0.59	86.6 ± 3
Sr	40.72 ± 0.32	100.0 ± 3	491 ± 20	107.5 ± 5
U	0.0699 ± 0.0034	88.3 ± 5	4.95 ± 0.40	95.8 ± 3
V	0.352 ± 0.006	88.5 ± 3	4.96 ± 0.15	111.1 ± 3
Zn	1.76 ± 0.12	108.3 ± 5	621 ± 19	Outside calibration range

The flexibility to handle diverse elemental analysis needs

From environmental, food and pharmaceuticals to materials and petrochemicals, the iCAP MSX ICP-MS confidently delivers high-quality results whatever the sample source. And with simplified method development and analysis tools, it can be easily integrated into any laboratory workflow.



Efficient workflows for environmental analysis

Measure both trace and major elements with an efficient and powerful high-throughput workflow, without comprising regulatory compliance.

- Pre-defined AGD modes combined with He KED collision cell interference removal ensures reliable results.
- Integrated toolset for automated monitoring of analytical quality and corrective actions.
- Visual flagging of results for simple and efficient data review.

Powerful sensitivity for food and beverage testing

Powerful analytical capabilities ensure the rapid, robust measurement of both toxic and essential elements in food samples, regardless of concentration or matrix.

- Comprehensive set of QC features to produce accurate, reliability results to meet and exceed compliance of global food safety legislation and regulations.
- Instrument monitoring ensures consistent performance for accredited laboratories.
- Couple with ion chromatography (IC) or high-performance liquid chromatography (HPLC) for the speciation of critical elements to provide in-depth analytical insights.

Save time on data review: Clear flagging of data within Qtegra ISDS Software highlights data falling outside user defined criteria

Concentrations													
No	Date / Time	Sample Type	Label	24Mg (M-Level 25)	27Al (M-Level 25)	39K (M-Level 25)	45Sc (M-Level 25)	48Ti (M-Level 25)	51V (M-Level 25)	52Cr (M-Level 25)	53Cr (M-Level 25)	54Fe (M-Level 25)	
28	11/8/2023 2:43:31 PM	UNKNOWN	Ground water 1	4,108.135	0.718	1,661.063	108.4%	62.364	0.060	-0.005	0.003	7.300	
29	11/8/2023 2:44:58 PM	UNKNOWN	Ground water 1	4,085.270	1.256	1,709.449	104.8%	64.199	0.080	0.018	-0.145	7.073	
30	11/8/2023 2:46:26 PM	UNKNOWN	Ground water 1	4,147.520	1.260	1,729.738	104.7%	64.472	0.045	-0.027	-0.004	7.814	
31	11/8/2023 2:47:54 PM	UNKNOWN	Ground water 1	4,280.943	0.636	1,715.690	105.3%	63.794	0.051	0.004	-0.029	7.157	
32	11/8/2023 2:50:47 PM	QC - MXS	Ground water 1 spike	6,610.350 (93.2%)	2,437.647 (97.5%)	3,489.068 (70.9%)	105.2%	111.506 (95.4%)	49.071 (98.0%)	48.428 (96.8%)	47.367 (94.8%)	2,471.397 (98.6%)	
33	11/8/2023 2:53:51 PM	QC - MXS	Ground water 1 spike	6,852.989 (102.8%)	2,487.110 (99.5%)	3,520.060 (72.2%)	103.8%	112.724 (97.9%)	50.038 (100.0%)	50.717 (101.4%)	49.985 (100.0%)	2,551.346 (101.8%)	
34	11/8/2023 2:55:19 PM	QC - MXS	Ground water 1 spike	6,726.627 (97.8%)	2,564.787 (102.6%)	3,596.804 (75.2%)	103.6%	113.286 (99.0%)	50.661 (101.2%)	50.391 (100.8%)	50.669 (101.4%)	2,578.523 (102.9%)	
35	11/8/2023 2:56:47 PM	QC - MXS	Ground water 1 spike	6,819.685 (101.5%)	2,590.468 (103.6%)	3,636.953 (76.9%)	101.1%	117.629 (107.7%)	51.901 (103.7%)	53.388 (106.8%)	52.330 (104.7%)	2,667.649 (106.4%)	
36	11/8/2023 2:58:15 PM	QC - MXS	Ground water 1 spike	7,120.173 (113.6%)	2,618.279 (104.7%)	3,634.828 (76.8%)	100.7%	121.439 (115.3%)	53.298 (106.5%)	53.367 (106.7%)	53.500 (107.1%)	2,708.564 (108.1%)	
37	11/8/2023 2:59:43 PM	QC - MXS	Ground water 1 spike	7,011.288 (109.2%)	2,665.354 (106.2%)	3,733.227 (80.7%)	102.6%	119.683 (111.8%)	53.234 (106.4%)	54.907 (109.8%)	54.075 (108.2%)	2,716.083 (108.4%)	

Advanced matrix robustness for industrial samples

Achieve consistent results even when analysing the most challenging samples including complex organic chemicals, metals and alloys and novel samples associated with the lithium battery and clean energy sectors.

- Robust plasma-generation capability for high-quality results even when analyzing complex sample matrices.
- Flexible sample introduction configurations to support variable sample matrixes and achieve precise results.
- Eliminate polyatomic interferences to achieve accurate results with the unique Qcell collision reaction technology.

Ensure traceability for pharmaceutical compliance

Simple method validation, data security and traceability to meet global regulatory standards, including FDA, U.S. Pharmacopeia <232> and <233>, and ICH Q3D

- Full system qualification including installation and operational qualification.
- Integrated audit trails for the tracking and control of electronic records.
- Customizable access control to facilitate high-level data security for regulatory compliance.

Tools to support regulatory compliance: The Qtegra ISDS Software has an extensive range of features to support compliance including customizable access control

Access Control								
Save History Save As PDF Expand All Collapse All								
	USER GROUPS							
User Action	System Administrator	Administrator	Data Administrator	Manager	Supervisor	Analyst	User	
> Audit Trails								
History								
Export	Prohibited	Allowed	Prohibited	Allowed	Allowed	Allowed	Prohibited	
View	Prohibited	Allowed	Prohibited	Allowed	Prohibited	Allowed	Prohibited	
System Log								
File Manager								
LabBooks								

Thermo Scientific iCAP MX Series ICP-MS



Ignite your productivity

Thermo Scientific iCAP MSX ICP-MS

The Thermo Scientific™ iCAP™ MSX single quadrupole ICP-MS will ignite your productivity, transforming your workflow for the ultimate ICP-MS experience.



Ignite your confidence

Thermo Scientific iCAP MTX ICP-MS

The Thermo Scientific™ iCAP™ MTX triple quadrupole ICP-MS will ignite your analysis, transforming complex analysis for the ultimate ICP-MS experience.

Learn more at thermofisher.com/icp-ms

thermo scientific

Ignite your confidence

iCAP MTX triple quadrupole ICP-MS



Technology that delivers definitive results without operational complexity

The Thermo Scientific™ iCAP™ MTX Triple Quadrupole Inductively Coupled Plasma Mass Spectrometer (ICP-MS) is a high-performance instrument which can be integrated into any elemental analysis laboratory. From sample to result the iCAP MTX ICP-MS fulfils the most demanding application requirements with effortless efficiency.

When your analysis demands the highest levels of detection power and accuracy, you need to rely on more advanced analytical methods. Adding sophistication to your analysis should not come at the cost of unwanted and unnecessary complexity.

Uncompromised **confidence**

Matrix **robustness**

Ultimate **efficiency**



Consistent results and stability with unique matrix robustness

In demanding analytical laboratories, it is essential to produce the highest quality data with minimal down time, even with highly variable and complex samples. The iCAP MTX ICP-MS provides unique matrix robustness without compromising sensitivity, for right first-time results.

Intelligent Matrix Handling (IMH)

IMH reduces exposure of the instrument to the sample matrix when analyte detection is not taking place

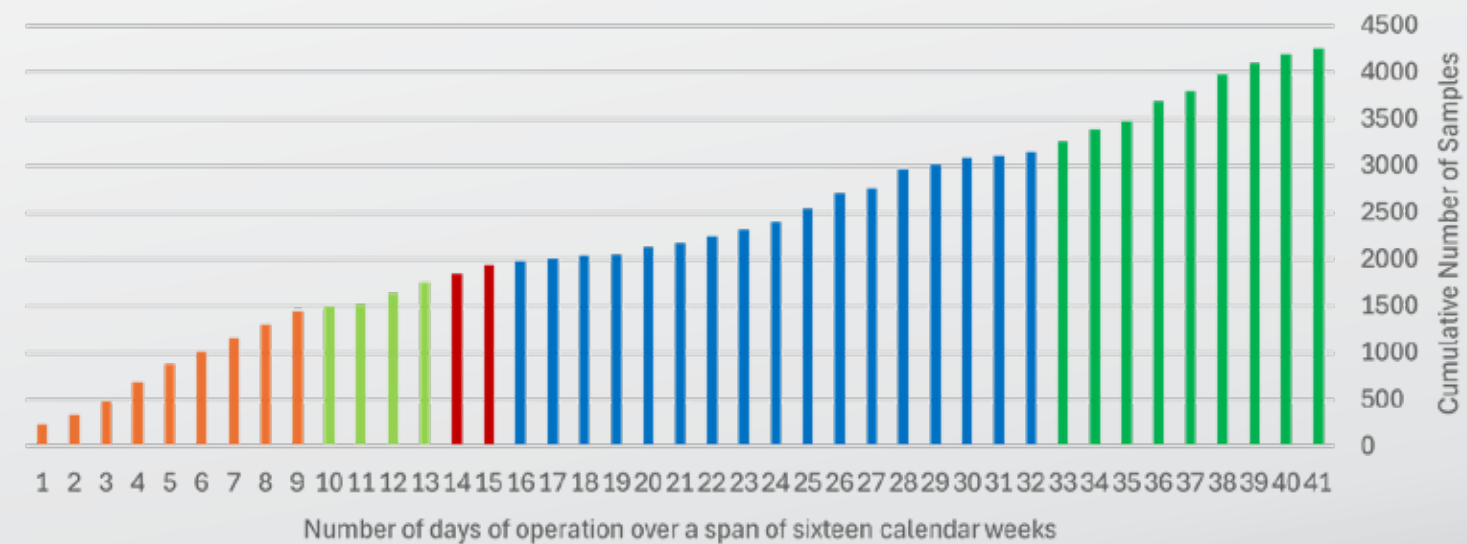
- Confidently analyze samples without QC failures
- Longer analytical runs with minimal interruptions
- Increased productivity and reduced maintenance

Seamless interface control

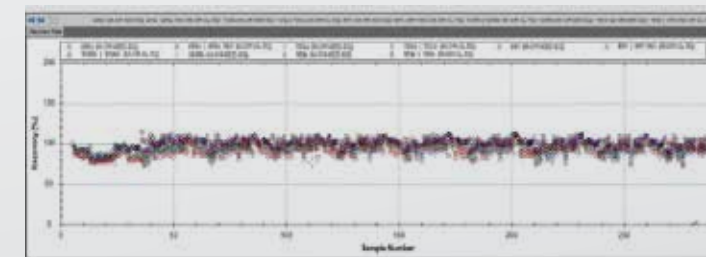
Achieve the optimal balance of sensitivity to matrix tolerance with control of skimmer potential and forevacuum pump

- Improved detection capability in challenging matrix
- Highest sensitivity for your sample type
- Simple instrument operation via a fully software-controlled system

Minimize cone cleaning even when analyzing a range of challenging sample types. More than 4000 samples of varying types were analyzed over a span of 16 weeks with no cone cleaning



Ensure consistent results when analyzing high matrix samples. Whole blood analysis over 15 hours using IMH and easyAGD



Easy Argon Gas Dilution (AGD)

Easy AGD reduces analytical drift and matrix deposits with a proprietary dilution gas introduction method

- Right first-time analysis to eliminate re-runs
- Prevents matrix deposits with high matrix samples
- Consistent internal standard recovery throughout the analytical run

Automated control of the argon humidifier located in the easy access sample introduction area



Integrated argon humidifier

Enhance productivity and robustness with a fully integrated argon humidifier

- Increase productivity with software switching between dry and humidified plasma
- Minimized analytical drift from prevention of salt build-up on nebulizer and torch
- Clear visual indicators for humidifier status

Ultimate analytical detection capabilities with uncompromised confidence

The iCAP MTX ICP-MS is powerful enough to analyze any sample at the lowest level – so no application is out of reach. Discover more in your samples with high sensitivity and triple quadrupole detection power. Open up new research possibilities and introduce the potential for scientific breakthroughs.

IntelliLens™ for optimal performance

The IntelliLens optimizes the optical lens settings per analyte to provide maximum sensitivity across the mass range

- Optimize sensitivity per analyte with intelligent tuning algorithms
- Integrated within autotunes for simplicity and ease-of-use
- Automated set-up without user instrument interaction

Reaction Finder Method Development Assistant

Develop methods that provide right first-time analysis with advanced interference removal

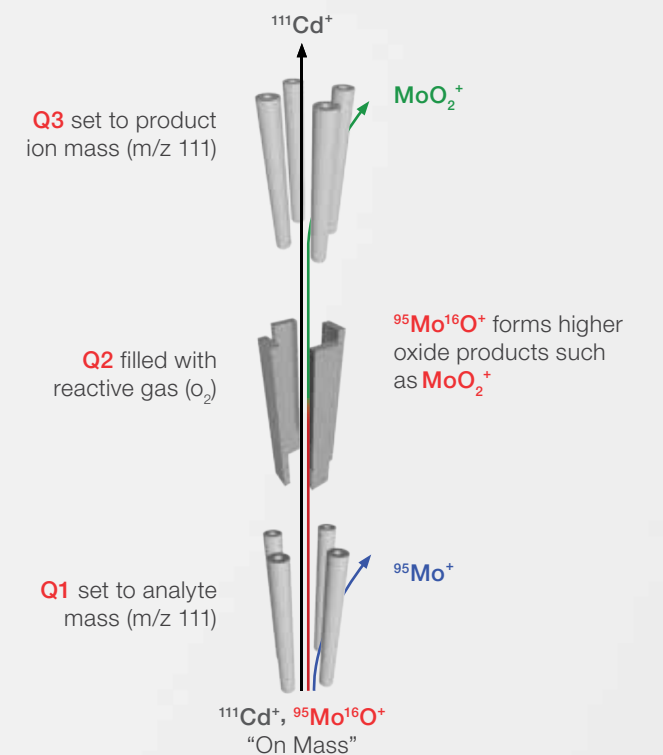
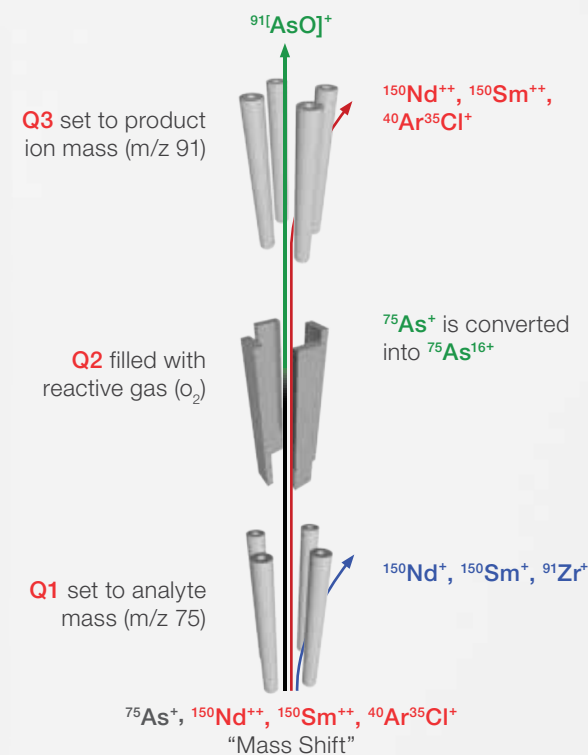
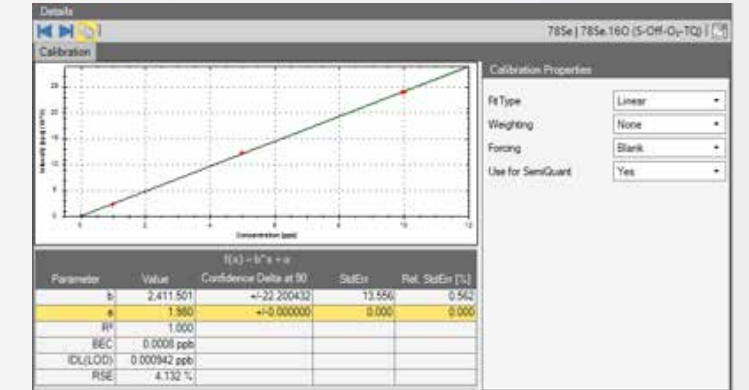
- Reduce method development time with intuitive automated mode selection according to your target analytes
- Simplify method development with built in intelligence, eliminating the requirement for advanced knowledge of complex reaction chemistry
- Ultimate accuracy with SQ and TQ modes for interference removal

High sensitivity with advanced Interface design and control

Optimal settings to maximize performance with intelligent interface

- Potential applied to skimmer cone, adjusted to optimize performance
- Raised interface vacuum further increases sensitivity
- Sensitivity tuning for maximum performance

Right first-time results with advanced interference removal. Comparison of SQ-KED and TQ-O₂ mode for ⁷⁸Se, highlighting how TQ-O₂ mode reduces BEC and IDL significantly with effective interference removal to increase method detection capability



Optimised productivity with ultimate efficiency



The iCAP MTX ICP-MS ensures the highest levels of analytical productivity combined with ease-of-use to significantly reduce your staff training time. The instrument requires minimal maintenance for operational efficiency. The Thermo Scientific™ Qtegra™ Intelligent Scientific Data Solution (ISDS) Software seamlessly controls your workflow from the initial instrument set-up, throughout daily operation to reporting results. Meet the demands of accurate analysis and traceable data with robust and reliable automated processes.



Qtegra ISDS Software

The intuitive Qtegra ISDS Software provides your laboratory with streamlined workflows, facilitating the fastest sample to results:

- Increase productivity with one software application, removing the need to navigate to different applications
- Reduce training with a common software platform across all ICP technologies from Thermo Fisher Scientific
- Get Ready workflows can pre-program the instrument for operation, and increasing productivity

The Thermo Scientific™ HAWK™ Consumable and Maintenance Assistant, Instrument Performance Monitoring

- Operational uptime is maximized with programmable alerts that notify the analyst when maintenance is required
- Manage consumable inventory to ensure your laboratory is equipped for incoming samples
- Instrument performance trends can be easily monitored supporting accreditation

easyClick Peristaltic Pump

- No manual pump tension arm required
- Auto-tensioning ensures consistent results regardless of the operator
- Extended peristaltic pump tubing lifetime

Unique user experience

- Clear visibility of instrument status from anywhere in the laboratory with comprehensive status LED
- Reduce time needed to carry out sample introduction maintenance with a system that is operator centric

Instrument view and plasma TV integrated with the Qtegra ISDS Software



Ensure instruments are operational and performance is maintained: The HAWK Consumable and Maintenance Assistant alerts the user to perform critical maintenance tasks



Close coupled easyClick Peristaltic Pump ensures shortest sample path for optimal uptake and wash



Elevate your element analysis

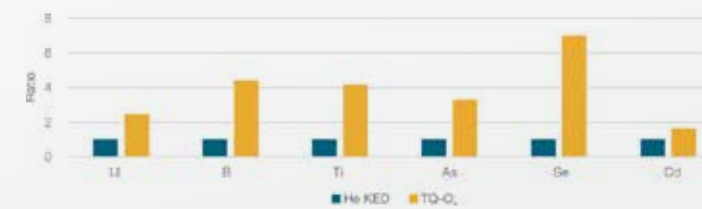


The iCAP MTX ICP-MS is a powerful tool for analyzing complex samples to support research and regulated analysis. The instrument is robust and easy to use, with a compact design and low maintenance requirements to ensure your workflows are fully optimized.

Clinical research

The iCAP MTX ICP-MS brings confidence to your clinical research, with the capability to analyze complex samples, such as blood and urine. Precise results are obtained with ease using the Reaction Finder to determine the appropriate measurement mode.

Improve method detection capability with advanced interface removal. Sensitivity comparison between He KED (normalized as 1) and TQ-O₂ mode for selected analytes.



Geochemistry

In the field of geochemistry, the accurate quantification of trace elements is essential for research and support of mining and prospecting. Matrix-based interferences are efficiently removed, ensuring measurement accuracy whilst uncovering valuable sample insights.

Pharmaceutical

The iCAP MTX ICP-MS provides simple method development tools to ensure fast analysis of pharmaceutical samples, to expedite research and development decisions. When products and processes transition to routine manufacturing, the technology supports compliance to global regulatory standards, including FDA, U.S. Pharmacopeia <232> and <233>, and ICH Q3D.

Environmental

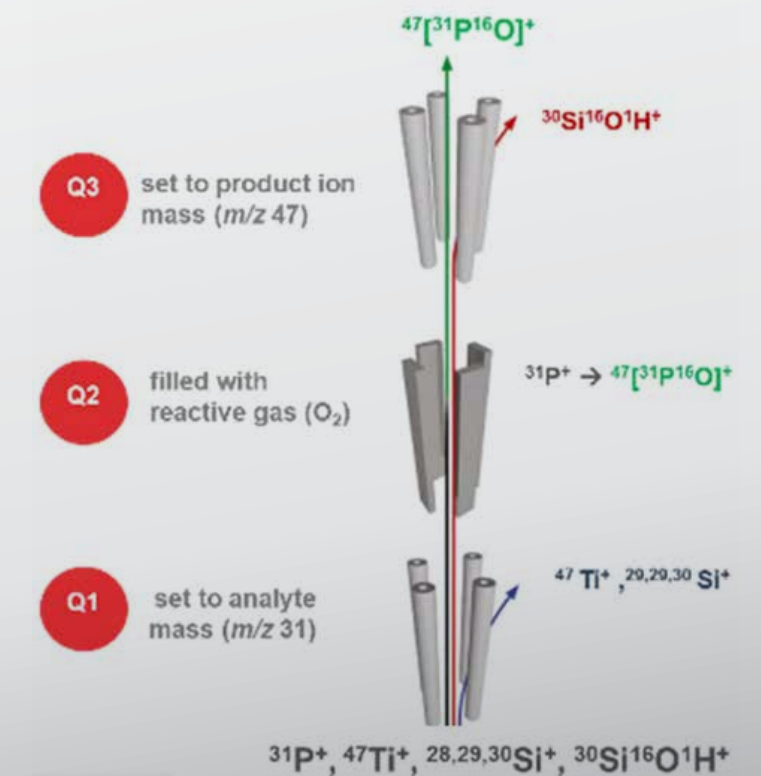
The iCAP MTX ICP-MS is the robust solution for accurately quantifying trace analytes in challenging environmental matrices. A choice of single or triple quadrupole interference removal modes ensures your laboratory can balance optimal productivity with advanced performance.

Food

When analysing the most challenging samples to support food safety and quality, the iCAP MTX ICP-MS easily produces precise and accurate result. For speciation or nanoparticle characterization, the iCAP MTX ICP-MS utilizes the relevant Qtegra ISDS Plugin to provide the tools required in a simple workflow.

Materials and metallurgy

For material science and metallurgy, the iCAP MTX ICP-MS supports rapid, accurate analysis of impurities in raw materials and finished products through its robust design and flexible workflows. The instrument's matrix robustness and interference removal capabilities make it the ideal solution for advanced material production and industrial applications, including the rapidly evolving field of energy storage.



Thermo Scientific iCAP MX Series ICP-MS



Ignite your productivity

Thermo Scientific iCAP MSX ICP-MS

The Thermo Scientific™ iCAP™ MSX single quadrupole ICP-MS will ignite your productivity, transforming your workflow for the ultimate ICP-MS experience.



Ignite your confidence

Thermo Scientific iCAP MTX ICP-MS

The Thermo Scientific™ iCAP™ MTX triple quadrupole ICP-MS will ignite your analysis, transforming complex analysis for the ultimate ICP-MS experience.

Learn more at thermofisher.com/icp-ms

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