

ICP-MS MassHunter Software

Intelligent Sequence quality control module

Benefits of Agilent ICP-MS MassHunter Intelligent Sequence software:

- Automates QA/QC checks and actions to ensure data complies with regulatory requirements.
- Performs preselected actions on failure.
- Generates QC reports in real-time.
- Supports customization of QC templates and reports to meet a lab's specific QA/QC needs.
- Complies with US EPA 200.8, EPA 6020B, and ISO 17294 in-run QC checks and reporting requirements.
- Is compatible with the simplified, browser-based ICP Go software interface for ICP-MS MassHunter.

Advanced QA/QC supports simple workflow

Quality Assurance (QA) and Quality Control (QC) checks are essential to ensure that laboratory procedures and analytical results comply with regulatory requirements. In the US, EPA methods 200.8 and 6020B define the requirements for the analysis of (trace) elements in environmental samples. Regulatory bodies in other countries and regions publish similar methods, such as ISO 17294 on Water Quality.

To support compliance with these environmental regulations, ICP-MS laboratories can use the optional Intelligent Sequence module for the Agilent ICP-MS MassHunter software. The software helps analysts manage run-time QA by evaluating ICP-MS data quality in real time, comparing measurement results to expected values, and taking appropriate QC actions. The software is delivered with preconfigured templates for US EPA 200.8, EPA 6020B, and ISO 17294. It can also be easily customized to meet specific QA requirements by adding laboratory-defined QC samples and criteria.

Sample Type	Full Name	Salt	IS/D	Count As	Units	Z	DR	Reference	Lab-QC	Filter Criteria1	Filter Criteria2	Main Criteria1	Main Criteria2
1	Blank	_BLNK	IS	IS	IS	IS	IS	IS	IS				
2	Blank	_BLNK	IS	IS	IS	IS	IS	IS	IS			[Cond] == [DL]* Upper Error Lim.	
3	Blank	_BLNK	IS	IS	IS	IS	IS	IS	IS				
4	CalIB	_CALIB	IS	IS	IS	IS	IS	IS	IS				
5	CalIB	_CALIB	IS	IS	IS	IS	IS	IS	IS				
6	CalIB	_CALIB	IS	IS	IS	IS	IS	IS	IS				
7	CalIB	_CALIB	IS	IS	IS	IS	IS	IS	IS				
8	CalIB	_CALIB	IS	IS	IS	IS	IS	IS	IS				
9	CalIB	_CALIB	IS	IS	IS	IS	IS	IS	IS				
10	CalIB	_CALIB	IS	IS	IS	IS	IS	IS	IS				
11	CalIB	_CALIB	IS	IS	IS	IS	IS	IS	IS				
12	CalIB	_CALIB	IS	IS	IS	IS	IS	IS	IS				
13	CalIB	_CALIB	IS	IS	IS	IS	IS	IS	IS				
14	CalIB	_CALIB	IS	IS	IS	IS	IS	IS	IS				
15	CalIB	_CALIB	IS	IS	IS	IS	IS	IS	IS				
16	CalIB	_CALIB	IS	IS	IS	IS	IS	IS	IS				
17	CalIB	_CALIB	IS	IS	IS	IS	IS	IS	IS				
18	CalIB	_CALIB	IS	IS	IS	IS	IS	IS	IS				
19	CalIB	_CALIB	IS	IS	IS	IS	IS	IS	IS				
20	CalIB	_CALIB	IS	IS	IS	IS	IS	IS	IS				
21	CalIB	_CALIB	IS	IS	IS	IS	IS	IS	IS				
22	CalIB	_CALIB	IS	IS	IS	IS	IS	IS	IS				
23	CalIB	_CALIB	IS	IS	IS	IS	IS	IS	IS				
24	CalIB	_CALIB	IS	IS	IS	IS	IS	IS	IS				
25	CalIB	_CALIB	IS	IS	IS	IS	IS	IS	IS				
26	CalIB	_CALIB	IS	IS	IS	IS	IS	IS	IS				
27	CalIB	_CALIB	IS	IS	IS	IS	IS	IS	IS				
28	CalIB	_CALIB	IS	IS	IS	IS	IS	IS	IS				
29	CalIB	_CALIB	IS	IS	IS	IS	IS	IS	IS				
30	CalIB	_CALIB	IS	IS	IS	IS	IS	IS	IS				
31	CalIB	_CALIB	IS	IS	IS	IS	IS	IS	IS				
32	CalIB	_CALIB	IS	IS	IS	IS	IS	IS	IS				
33	CalIB	_CALIB	IS	IS	IS	IS	IS	IS	IS				
34	CalIB	_CALIB	IS	IS	IS	IS	IS	IS	IS				
35	CalIB	_CALIB	IS	IS	IS	IS	IS	IS	IS				
36	CalIB	_CALIB	IS	IS	IS	IS	IS	IS	IS				
37	CalIB	_CALIB	IS	IS	IS	IS	IS	IS	IS				
38	CalIB	_CALIB	IS	IS	IS	IS	IS	IS	IS				
39	CalIB	_CALIB	IS	IS	IS	IS	IS	IS	IS				
40	CalIB	_CALIB	IS	IS	IS	IS	IS	IS	IS				
41	CalIB	_CALIB	IS	IS	IS	IS	IS	IS	IS				
42	CalIB	_CALIB	IS	IS	IS	IS	IS	IS	IS				
43	CalIB	_CALIB	IS	IS	IS	IS	IS	IS	IS				
44	CalIB	_CALIB	IS	IS	IS	IS	IS	IS	IS				
45	CalIB	_CALIB	IS	IS	IS	IS	IS	IS	IS				
46	CalIB	_CALIB	IS	IS	IS	IS	IS	IS	IS				
47	CalIB	_CALIB	IS	IS	IS	IS	IS	IS	IS				
48	CalIB	_CALIB	IS	IS	IS	IS	IS	IS	IS				
49	CalIB	_CALIB	IS	IS	IS	IS	IS	IS	IS				
50	CalIB	_CALIB	IS	IS	IS	IS	IS	IS	IS				

Figure 1. Screenshot showing Agilent ICP-MS MassHunter Intelligent Sequence QC criteria setup pane.

Example of a real-time QC report

Calibration Blank Report

Sample Name blank
File Name 002CAB.d
Data Path Name C:\agilent\CPMH1\DATA\7000\batchtemplate EPA200.8_SPS4_IS8_IS_2322.b
Acq Time 3/22/2023 9:41:54 AM
Sample Type CalBK
Total Dilution 1.0000
Comment ---
ISTD Ref FileName 002CAB.d
Sample QC Pass/Fail Pass
ISTD QC Pass/Fail Pass

Name	Mass	ISTD	Tune Mode	CPS	CPS RSD
Al	27	45	NoGas	275.56	1.4
V	51	45	NoGas	1500.06	0.5
Cr	52	45	NoGas	14095.44	0.1
Mn	55	45	NoGas	168.67	0.0
Co	59	45	NoGas	148566.70	0.1
Ni	60	72	NoGas	1195.70	0.0
Cu	63	72	NoGas	1623.40	0.4
Zn	66	72	NoGas	666.68	0.0
As	75	72	NoGas	5253.36	0.2
Se	82	72	NoGas	504.79	0.2
Sb	123	115	NoGas	500.01	0.0
Tl	205	209	NoGas	161657.15	0.3
[Pb]	206	209	NoGas	666.68	0.0
[Pb]	207	209	NoGas	606.68	1.6
[Pb]	208	209	NoGas	1500.07	0.7

Name	Mass	Tune Mode	CPS	CPS RSD
Li	6	NoGas	5906.47	0.2
Ge	72	NoGas	263.34	4.4

Figure 5. QC reports are automatically generated after each sample measurement, eliminating time-consuming manual reporting and enabling analysts to review reports while the batch sequence is running.

Customize to meet your QA/QC needs

All the functions in Intelligent Sequence are designed to meet regulatory requirements while providing good flexibility for customization. QC criteria, actions on failure, and report templates are all fully customizable.

QC managers can change existing criteria and limits, add new criteria, edit filters, and set the preferred action on failure for their preferred lab workflow. Also, the report templates provided can be edited to change the layout and displayed items for specific sample types, as required.

Analyte	Tune Mode	Mass	Name	QC Check	Report	Main Criteria1			
						Lower Exp. (Main 1)	Lower Error1 Lim. (Main 1)	Upper Exp. (Main 1)	Upper Error1 Lim. (Main 1)
7	1: NoGas	55	Mn	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	50	0.9	50	1.1
8	1: NoGas	59	Co	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	50	0.9	50	1.1
9	1: NoGas	60	Ni	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	50	0.9	50	1.1
10	1: NoGas	63	Cu	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	50	0.9	50	1.1

Figure 6. Intelligent Sequence QC criteria can easily be edited to suit the specific requirements of the laboratory.

Compliant with environmental methods

Agilent provides ICP-MS MassHunter preset batch templates that are fully compliant with EPA 200.8, EPA 6020B, and ISO 17294. Analysts can create a new analysis batch from the preset method template, avoiding the need for manual method setup and optimization, which can be time-consuming and laborious. If the lab has created customized templates, these can be used to create the new batch, simplifying setup and ensuring consistent operation.

Compatible with ICP Go

Intelligent Sequence is typically used in routine labs that must demonstrate compliance with regulatory requirements. The high-throughput analysis run in these types of laboratories can be repetitive and is often run by busy, non-specialist analysts. ICP-MS MassHunter with Intelligent Sequence is compatible with ICP Go, which provides a simplified user interface that analysts can use to load and run sample batches using predefined methods.

The underlying ICP-MS MassHunter method is not accessible or editable through ICP Go. So, importantly, lab managers can be sure that critical settings cannot be modified, ensuring compliant methods are not accidentally modified or deleted.

ICP Go is browser-based, so if the ICP-MS workstation is connected to a network, analysts and lab managers can check the sample results, QC flags, and reports remotely from a separate PC or mobile device.

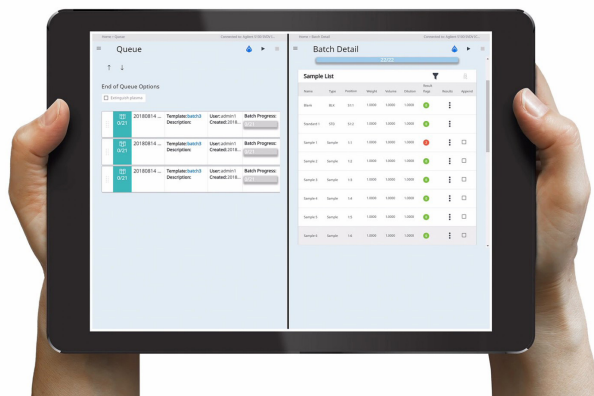


Figure 7. ICP Go is a simplified, browser-based user interface for ICP-MS MassHunter that allows predefined analysis batches to be run and monitored remotely.

QA/QC Method Setting

- Method Development → Fully compliant US EPA 200.8, 6020B, and ISO 17294 templates
- Flexibility → Fully customizable and configurable

In-Run QA/QC Controls

- QC Checks → Fully automated, scheduled QA/QC checks
- Action on Failure → Automated, predefined, multilevel action on failure

Reporting

- QC Reports → Automatically generate real-time QC reports from built-in templates
- Remote Access → Monitor and control remotely using optional ICP Go software

Learn more:

www.agilent.com/chem/icp-ms-is

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