Q4 TASMAN Series 2

- Advanced Benchtop Spark-Optical Emission Spectrometer

OES

Innovation with Integrity

Q4 TASMAN Series 2 –
Ready-to-Use Benchtop Metals Analyzer

Continuous Development

For thousands of years, metals and alloys have played a prominent role in the evolutionary history of humanity and have given names to entire epochs. Nowadays, our world is still made of metals and the metals evolution continues. There are more than 3,500 different grades of steel available with 60% developed in the last four years. New applications like energy storage, additive manufacturing, and biomedical devices continuously drive the development of new alloys.

To keep pace in business where profitability is a major concern, foundries and metal processing companies rely on fast, accurate elemental analysis. Measurements are required at numerous points in the process, from incoming materials to in-process testing to final quality inspection. Traceability is another critical consideration. At every step, managers must be able to document elements in every product, from primary to final form. And since time always counts, rapid analysis is vital on today's fast-moving foundry floor.

For more than two decades, Bruker Optical Emission Spectrometry (OES) elemental analyzers have been applied by foundries and metal processors worldwide, exceeding the analytical requirements. Just as the development on the metals side progresses, Bruker continuously drives the improvement of innovative solutions that let you achieve your goals faster, more reliably, and more cost-effectively than before. The new Q4 TASMAN Series 2 is the latest result of our striving for perfection.

Solutions for a wide range of sample sizes and forms
A comprehensive set of adapter kits is available for the analysis of small pieces, tubes, wires and sheets. These adapters address the specific challenges of an optimal positioning over the electrode, while adjusting tightness to samples of different shapes and sizes.

Another option reduces the size of the spark stand opening by using ceramic inserts, allowing the direct measurement of samples with dimensions down to 6 mm.

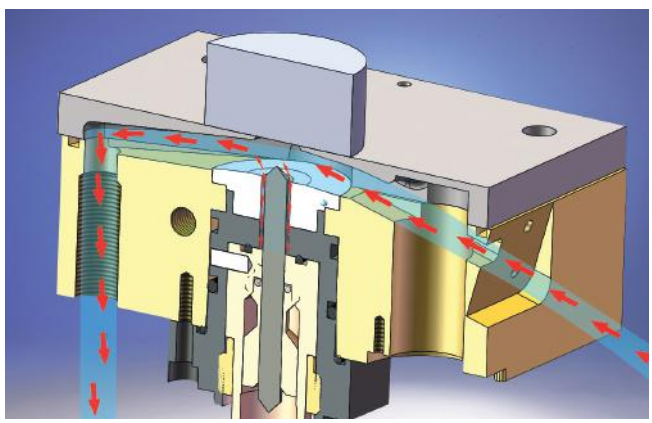
Q4 TASMAN Series 2 - All-Over Improvements

Analytical Performance
Our engineers took every opportunity to further improve the analytical performance in the new Q4 TASMAN Series 2. The analytical range of the Q4 TASMAN Series 2 has been extended for many elements, and new element sets enable the analysis of new alloy types. Addressing the entire metals market, dedicated Analytical Solution Packages (ASPs) are available for all ten common metal bases: Fe, Al, Cu, Ni, Co, Pb, Sn, Zn, Mg, and Ti. These ASPs include full element sets, calibrations, alloy groups, and standardization samples. ASPs provide analytical performance that's precisely tuned for the metals world – and its future demands.

SmartSpark™ – Advanced Digital Spark Source
The optimized digital spark source in the Q4 TASMAN Series 2 produces ultra-stable sparks with a frequency up to 1,000 Hz and variable discharge times from 10 µs to 2 ms. This contributes to improved analytical precision and shorter time-to-result. Additionally, SmartSpark™ allows spark parameter settings for application-specific fine tuning. Discharge shapes are tailored to the most efficient preparation of the sample surface, sample ablation and light emission. Matrix-optimized, high-energy pre-sparking is applied to homogenize the sample surface, reducing matrix effects and increasing accuracy. In conjunction with an optimized co-axial argon flow design in the spark stand, SmartSpark™ delivers improved long term stability with lower argon consumption.

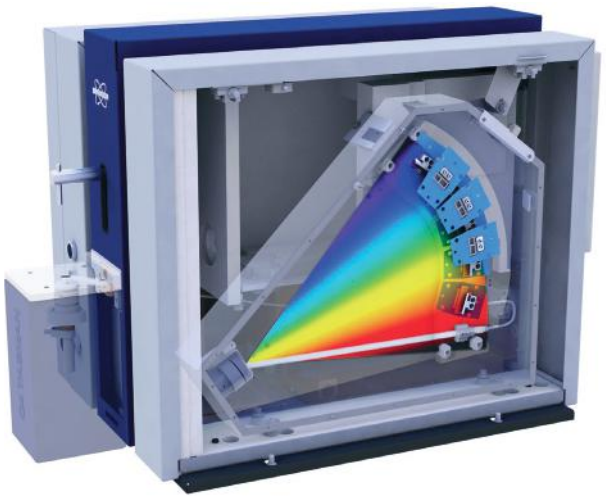
Stand with Flexibility Built In
The low-maintenance spark stand is freely accessible from three sides and equipped with a large and robust sample stage, making the correct positioning of even bulky samples easy. Co-axial argon flow directs the gas where it is needed: at the burn spot. This design eliminates the need for a standby gas flow and efficiently directs sample condensate away from the spark stand. At the same time, the analysis of small samples, wires, tubes and sheets by using adapters is simplified. The unique, pneumatically driven sample clamp supports sample heights of up to 120 mm while ensuring convenient sample handling with improved operational safety.

Q4 TASMAN Series 2 – Outstanding solution for all metal analysis needs

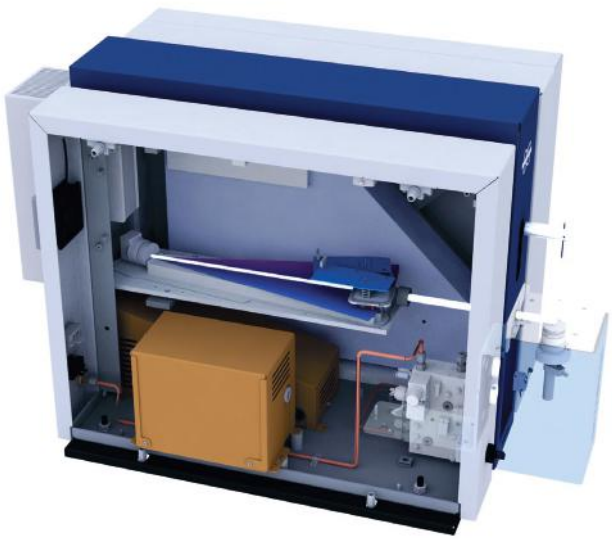


Co-axial argon flow: reduced consumption with minimized maintenance

MultiVision™ – The Optimal Solution for Your Applications



Transmission through an optical fiber transfers emitted light into the no-purge UV/VIS optics.



Superior, direct light coupling into the high efficiency VUV optics with small inner volume.

Many elements, especially those of high importance in the iron and steel matrix, have their most efficient emission lines in the far ultraviolet (FUV) region, running from 120 – 200 nm. Radiation below 200 nm, also referred to as vacuum UV (VUV), gets attenuated or even blocked by most atmospheric gases. Thus, any VUV optics needs either high vacuum or an effective purge by an optically transparent, high-purity gas like argon. Extreme cleanliness and careful material selection are mandatory when designing optics for the VUV range. Trace contamination (e.g. from materials outgassing volatile compounds) could immediately affect UV transparency, increase purge gas consumption, and permanently degrade performance in the long run.

The Q4 TASMAN Series 2 with its MultiVision™ design fulfills all these critical requirements. For optimal resolution of challenging analytical emission lines in respective ranges, MultiVision™ employs two dedicated optical systems:

- The no-purge UV/VIS-optics is connected by an optical fiber and covers wavelengths between 190 – 620 nm providing highest reliability.
- The VUV-optics is coupled via a superior short, and direct light path and precisely measures wavelengths from 130 to 200 nm at high resolution. Its small inner volume, an improved purge design and careful material selection ensures outstanding performance with reduced argon consumption and high reliability.

Both optics features temperature stabilization and an optional active thermal control system. The high-resolution CCDs employ a pixel pitch of 8 µm. The improved high-speed readout system ensures a high dynamic range, leading to very short measurement times.

Q4 TASMAN Series 2

Outstanding analytical performance and reliability combined with low cost of ownership

- MultiVision™ – Superior optics concept
- SmartSpark™ – Advanced digital source
- Low Maintenance spark stand with co-axial argon flow
- Pneumatic sample clamp
- Superior ELEMENTAL.SUITE software

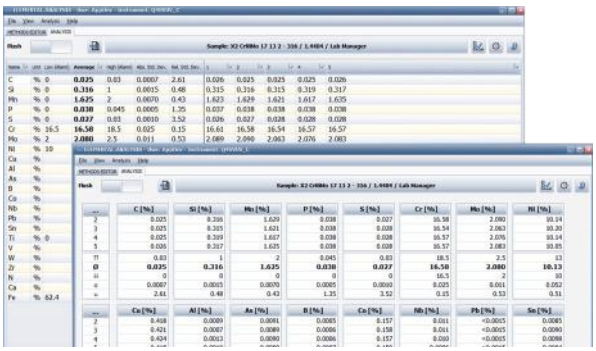
MultiVision allows the optimal choice between three variants to match your analytical needs in the most economical way.

- **Q4 TASMAN 200** – Ideally suited for all non-ferrous applications. Here, elements in the UV range are typically not required.
- **Q4 TASMAN 170** – The choice for ferrous applications with important elements in the UV range, like C, P, S, As, Sn, and B.
- **Q4 TASMAN 130** – The most powerful variant, capable of analyzing VUV elements, like nitrogen (N) in steel and oxygen (O) in copper.

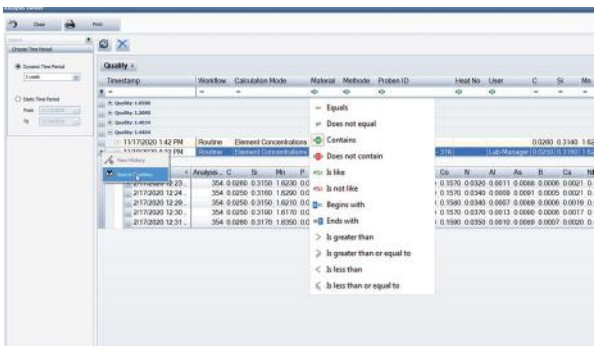
The Q4 TASMAN Series 2 provides the answers you need fast, using proven state-of-the-art technologies. Our engineers have designed innovative solutions that make the Q4 TASMAN Series 2 fully suitable not only for your dedicated applications, but also for many general-purpose applications.

Particularly in combination with the new version of ELEMENTAL.SUITE software, the Q4 TASMAN Series 2 lets you achieve results faster, easier, and more cost-effectively than ever before.

ELEMENTAL.SUITE™ – Metal Analysis Made Easy



Easy-to-use and read screens with scalable font size



Analysis Viewer with grouping and advanced filtering

History chart for a control sample

The new version of the next generation software ELEMENTAL.SUITE combines high functionality with ease-of-use. All Bruker OES systems are operated by ELEMENTAL.SUITE, covering the entire range of applications. Its plugin-based architecture provides maximum flexibility for your analytical requirements, now and in the future. Features include:

- Easy-to-use screens with customizable skins, layouts, and scalable font sizes
- Integrated, powerful Analysis Viewer with data mining and reporting functionalities
- Statistical Process Control (SPC) allows you to set upper and lower limits for each element to easily monitor your process
- Advanced features like Regression Plug-in, Single Spark Viewer, and QC relevant history chart for control samples and standardization
- Professional reporting system for customized analysis reports
- Data Publishing: easily configurable universal export to remote SQL databases, csv, txt, LIMS
- Positive Material Identification (PMI) or sorting with pass/fail workflow
- Grade Libraries: Full integration of Total Materia (optional) with export to internal grade library to customize your own alloy grades
- Multi-language capabilities with user and user-group management

Intuitive Productivity

ELEMENTAL.SUITE assists you in your daily work. Automated average and limit checks ensure safe operation. Workflows guide you through complex tasks, like standardization and type standardization, without restricting routine operation. Saving, printing, reporting, and exporting your results is only one mouse click away.

Analysis Viewer: Information at Your Fingertips

The new Analysis Viewer makes advanced data mining a snap. Queries to the database can be easily created, customized and stored. Powerful but easy-to-use grouping and filtering functionality on queries provide the flexibility of a pivot table. Queries to the Total Materia database, generation of SPC charts, reporting, printing, or exporting of selected results are always within easy reach. Exploring your data with different views becomes easy; filtering and grouping settings are saved for future use and can often be used in place of an expensive LIMS system.

Universal Communication Talent

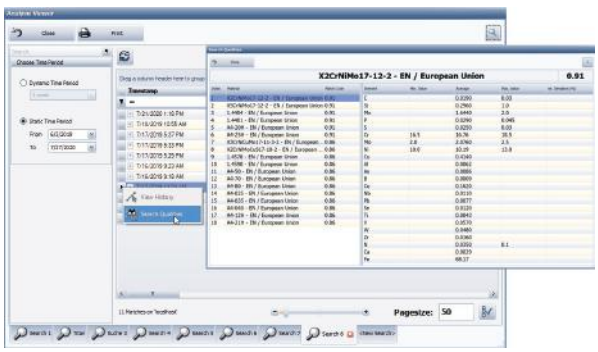
ELEMENTAL.SUITE comes with an advanced data publishing system. Beyond creation of reports or file-based data exchange, the new universal SQL-publishing module provides a flexible interface to L2 or LIMS systems. Your data is automatically, or manually on-demand, replicated to any SQL database, securely and in real time. Wizard-based creation of custom tables in the remote database makes setup of this interface easy: you just need to provide the logon credentials and define the data transformations you want.

Beyond Grade Libraries – Total Materia

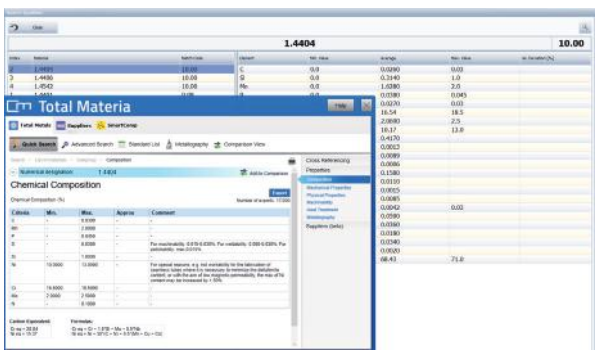
In addition to its internal library for material qualities, ELEMENTAL.SUITE optionally integrates today's most comprehensive materials database: Total Materia. It gives access to more than 350,000 alloys from more than 75 countries/standards and is queried by a patented search algorithm. Bruker's OEM version does not require any internet connection and allows you to export qualities (up to 200) to the internal library with a few clicks. Total Materia not only contains chemical compositions, but also more than 15 million properties, like physical, chemical, mechanical, and metallurgical data, including suppliers and proprietary data sheets. Since you can easily drill down and search for properties, Total Materia goes far beyond a normal grade library and provides expert knowledge to complex questions:

- Finding equivalents to foreign materials and comparing alternatives side by side
- Searching for materials worldwide by specific chemical composition or mechanical properties
- Deciphering material specifications and finding the correct grade for a specific application

ELEMENTAL.SUITE Regression Plug-in



Total Materia search results fully integrated in ELEMENTAL.SUITE



Equivalent search within Total Materia

Overview of Features and Benefits

	Specification	Benefit
Spark Stand	Low-maintenance spark stand with co-axial argon flow, large and robust sample stage, accessible from 3 sides	Minimized maintenance and argon consumption, easy analysis of wires and small pieces but also accepting bulky samples
Sample clamp	Pneumatically driven, 120 mm height	Hassle-free sample handling and improved operational safety
SmartSpark™	Optimized digital spark source for stable spark generation up to 1,000 Hz	Improved precision and stability
MultiVision™ Optical System	Dual optics concept with robust Paschen Runge mount, multi-chip systems with temperature stabilization	Optimal choice between 3 variants to fulfill individual analytical needs
VUV Optics	130 - 200 nm, Ar-purged	Outstanding performance with high resolution and low argon consumption
UV/VIS Optics	190 - 620 nm, no-purge	Reliability meets low cost of ownership
Models		
Q4 TASMAN 130	λ: 130 - 620 nm	Best performance for N and O
Q4 TASMAN 170	λ: 170 - 620 nm	Full capabilities with C, P, S, Sb, Te
Q4 TASMAN 200	λ: 200 - 620 nm	Mastering non-ferrous metals analysis
Electrical Data	100 – 204 V (± 10%), 50-60 Hz 16 A (240 V) or 25 A (100 V) slow blow fuse 600 W measurement, 50 W standby	Compatible with all worldwide power and current configurations

[1] With optional active thermal control system

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