Certified Reference Standards NMC-CRM

For battery materials elemental analysis

XRF calibration standards for high accuracy and precision analysis

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Malvern Panalytical
a spectris company

NMC-CRM: the perfect solution for elemental analysis of battery materials

The ideal solution for elemental analysis using XRF

NMC – CRM is a synthetic, high-quality Certified Reference Materials (CRM) kit, containing 12 CRMs that cover the major and minor elements in Nickel, Manganese, Cobalt (NMC) battery precursor and cathode materials. The CRM kit can be used for the calibration of XRF with primary fused glass beads or to develop secondary pressed powder pellet calibrations.

Why use NMC - CRM?

NMC – CRM has been developed in our accredited laboratory at Nottingham, UK, as calibration standards for WD and ED-XRF analysis of NMC cathode and precursor materials. It is the solution to the lack of readily available RM/CRMs. These calibration standards can enable elemental analysis with an XRF with similar accuracy and precision as obtained with ICP

Guaranteed traceability

NMC-CRM is manufactured under ISO 17034 accreditation which means the traceability is guaranteed. The synthetic CRMs are traceable to pure compounds and are shipped with certificates stating certified values and their uncertainties.

What you get

The kit is shipped with monitors and templates suitable for the Zetium and Epsilon 4 spectrometers. The methods and fusion recipes are provided for each Malvern Panalytical fusion instrument. Borate flux and additives, instructions on use, and full sample data sheets (SDS) are also part of the kit.

Compability

Compatible XRF	Part Number
Zetium	9430 043 63061
Epsilon 4	9430 043 63071

Concentration ranges covered by the CRMs

	NiO	Co_3O_4	Mn_3O_4	Li_2O*	Al_2O_3	CaO	ZrO_2	Na_2O	SO_3
Conc.range (wt.%)	19 - 70	4 - 36	4 - 37	12 - 19	1 - 3	0.04 - 0.14	0.8 - 2	0.4 - 1.3	0.3 - 1

Need to extend your elemental coverage?

Our specialised team of CRM manufacturing experts can customize the synthetic CRMs for you based on your needs.

Complete XRF calibration in a box

A set of CRMs covering wide range of elements and concentrations of Nickel, Manganese and Cobalt (NMC) battery materials. Also includes XRF monitors.

Extendable to include additional elements or concentration ranges. Customization on demand.

A CRM ISO certificate detailing: Batch number, release date, period of validity, intended use, certified values with uncertainty values and traceability information.

Sample preparation instructions, borate flux, XRF application templates and instrument concentration files.

A cost-effective solution compared to ICP for similar accuracy and precision.

Making XRF work for you

Simplifying chemical composition and impurity analysis

Deviations in chemical composition or impurities in electrode materials can significantly affect final battery performance. For this reason, chemical composition and elemental impurity analysis are an integral part of the battery manufacturing process.

Why XRF

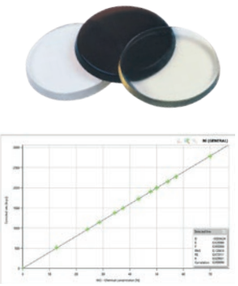
To provide a simpler way to analyze elemental composition and detect impurities down to ppm level, we offer X-ray fluorescence (XRF) solutions that require no sample digestion or frequent calibration and are up to three times cheaper per sample than wet chemistry methods such as ICP. The chemical composition of cathode materials from ppm to 100% is more reliably measured with X-ray fluorescence, leaving ICP for very low-level impurity detection or for light element (like Li) analysis.

Why use CRMs?

XRF is a comparative technique. Standards of known composition are used to build a calibration curve. The compositions of the routine samples are determined by comparing their intensity with the calibration curve.The standards are one of the main pillars of XRF for accurate and precise analysis.

Epilson 4 XRF

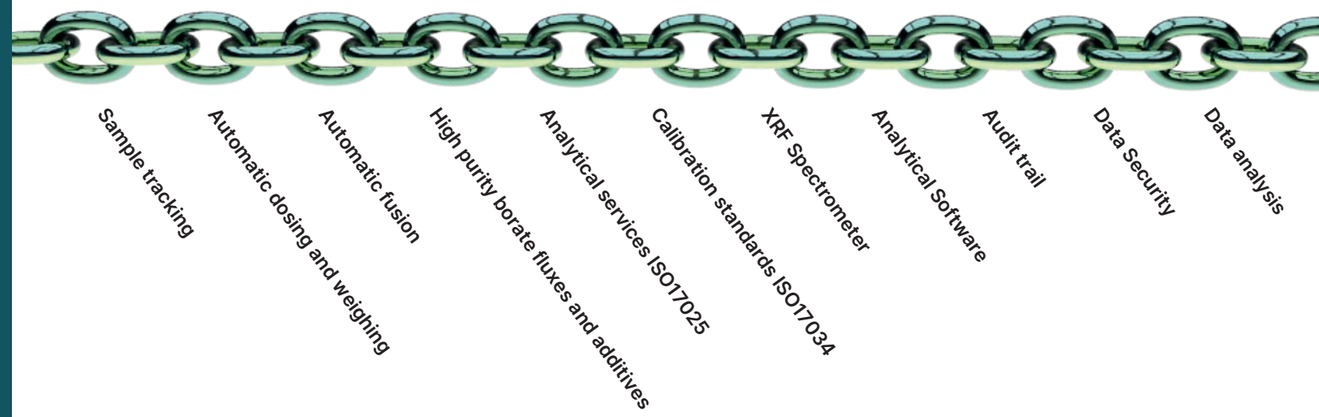
Zetium XRF



FORJ Fusion

Traceability along the analytical chain

The traceability can be ensured all along the analytical chain by combining the data security audit trailing on our spectrometer, the sample monitoring options on our sample preparation equipment, and the CRMs produced with ISO certified values and traceability information.



ABOUT MALVERN PANALYTICAL

We draw on the power of our analytical instruments and services to make the invisible visible and the impossible possible.

Through the chemical, physical and structural analysis of materials, our high precision analytical systems and top-notch services support our customers in creating a better world. We help them improve everything from the energies that power us and the materials we build with, to the medicines that cure us and the foods we enjoy.

We partner with many of the world's biggest companies, universities and research organizations. They value us not only for the power of our solutions, but also for the depth of our expertise, collaboration and integrity.

We are committed to Net Zero in our own operations by 2030 and in our total value chain by 2040. This is woven into the fabric of our business, and we help our employees and customers think about their part in creating a healthier, cleaner, and more productive world. With over 2300 employees, we serve the world, and we are part of Spectris plc, the world-leading precision measurement group.

SERVICE SUPPORT

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Malvern Panalytical provides the global training, service and support you need to continuously drive your analytical processes at the highest level. We help you increase the return on your investment with us, and ensure that as your laboratory and analytical needs grow, we are there to support you.

Our worldwide team of specialists adds value to your business processes by ensuring applications expertise, rapid response and maximum instrument uptime.

- Local and remote support
- Full and flexible range of support agreements
- Compliance and validation support
- Onsite or classroom-based training courses
- e-Learning training courses and web seminars
- Sample and application consultancy

SCAN QR CODE FOR MORE INFORMATION

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