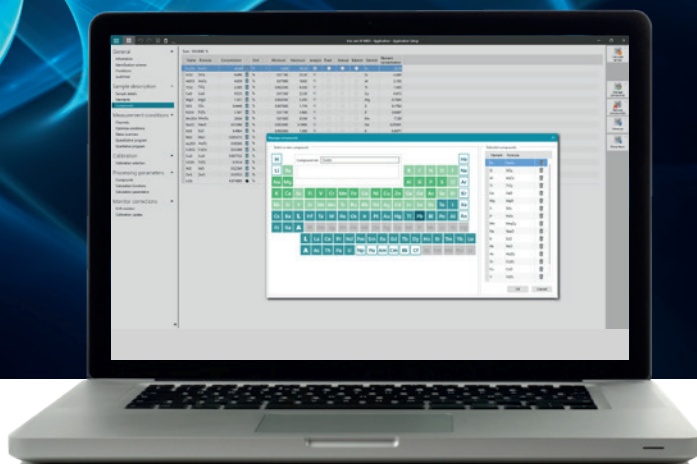


WROXI - Certified Reference Materials

**Perfect solution for the determination of oxides
in a wide range of materials**



PERFECT SOLUTION FOR THE DETERMINATION OF OXIDES IN A WIDE RANGE OF MATERIALS

Solve unavailability, incompatible mineralogy, or expensive CRMs

WROXI - CRM is a synthetic, high quality Certified Reference Materials (CRM) kit that covers a wide range of oxide materials such as ores, rocks, and geological materials. It is commonly used in mining, raw materials (cement, steel, metal), slags, service laboratories, R&D facilities, geological surveys, and has a dual purpose: either for primary fusion glass disks calibration or to develop secondary pressed powder calibrations.

The kit is shipped with monitors and templates suitable for the Axios-mAX, 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 SDS are also part of the kit.

Why use WROXI - CRM?

WROXI was developed by our XRF experts to solve the problem of finding suitable calibration material for WD and ED-XRF. It is the solution to the limited availability and elemental ranges of RM/CRMs from natural materials. Being synthetic, WROXI standards will be available forever, and that means there is no risk of the requested CRM being sold out or otherwise unavailable.

Guaranteed traceability

WROXI - 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.

Need to extend your WROXI oxides coverage?

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

WROXI - CRM value to XRF analysis:

- Traceability guaranteed (ISO 17034)
- Forever available: synthetic standards
- Extendable



Different sets of CRM covering wide range of elements and concentrations of many materials. Also includes XRF monitors.



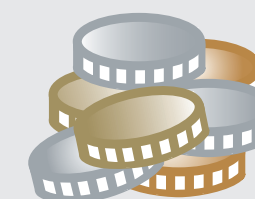
Full traceability - CRM
Certificate: Batch No. release date, period of validity, intended use, certified values and their uncertainty as well as traceability.



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



Extendable to include additional elements for concentration ranges.



Cost-effective solution compared to 'traditional' CRMs .



OUTSTANDING QUALITY STANDARDS ARE ESSENTIAL TO ENSURE HIGH QUALITY ANALYTICAL RESULTS FOR X-RAY FLUORESCENCE SPECTROMETRY (XRF)

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 pillars of XRF analysis.



Why should I use fusion in my laboratory?

This universal technique has numerous benefits when you compare it with other sample preparation methods such as pressed pellets or acid digestion.

	Fusion	Pressed pellets
Affected by mineralogy	No	Yes
Affected by particle size	No	Yes
Desirable size of powder (microns)	50-100 (easy)	50-30 (difficult)
Accuracy	≤1%	≤10%
Easy calibration with synthetic standards	Yes	No
Application of matrix correction	Yes	No

WROXI - CRM IS PART OF THE COMPLETE SOLUTION OFFERED BY MALVERN PANALYTICAL FOR ELEMENTAL ANALYSIS

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 metrological traceability.





Malvern Panalytical is the first manufacturer to be accredited under ISO 17034 to make synthetic XRF calibration CRMs

Certified Reference Material Producer

Malvern Panalytical is ISO 17034 accredited

Malvern Panalytical's facility in Nottingham has the prestigious accreditation as a Reference Material Producer, accredited to ISO 17034 for both synthetic and natural materials by the United Kingdom Accreditation Service (UKAS).

UKAS accreditation provides a level of confidence and assurance that international guidelines are followed in the production, labelling, and assignment of property values to reference materials, including stability and homogeneity determinations. This covers Certified Reference Materials (CRMs) as well as Reference Materials (RMs).



We can help you with the characterization of your sample as a RM

Malvern Panalytical's facility in Nottingham is a center of excellence for X-ray fluorescence analysis together with standards development and production. The laboratory offers ISO 17025 accredited analytical services (under UKAS) for a number of specific applications and can offer customized analysis of more diverse applications under the same infrastructure and protocols.

Analytical services



CATALOGUE OF REGULAR PRODUCTS

The certified reference materials are delivered as powders which are prepared on site as glass disks. The WROXI kits also include XRF application templates, calibration concentration files, methods and fusion recipes for Malvern Panalytical fusion instruments, borate flux and additives, instructions for use and full SDS.

WROXI - CRM Base

Contains 15 multi-element standards for the analysis of the 11 most common oxides in a variety of materials such as ores, minerals, slags and geological materials.

Oxide coverage and their concentration ranges (wt%):

Na₂O 0-50, MgO 0-80, Al₂O₃ 0-80, SiO₂ 0-90, P₂O₅ 0-50, SO₃ 0-59, K₂O 0-40, CaO 0-80, TiO₂ 0-80, Mn₃O₄ 0-80, Fe₂O₃ 0-80.

Product Name	Compatibility	Part Number
WROXI - CRM Base WD	Zetium, Axio-mAX	9430 043 63011
WROXI - CRM Base ED	Epsilon 4	9430 043 63021

WROXI - CRM Cement Extension

WROXI-CRM Cement is an extension to the WROXI Base set of CRMs. This extension set provides 9 multi-element standards for the analysis of 10 additional analytes in a variety of cements and the raw materials used in its manufacture, including limestone, clay/ shale, gypsum clinker, raw meal fly ash, slags and iron ore.

Analytes and their concentration ranges (wt%):

Al₂O₃ 0-10, SiO₂ 0-32, CaO 50-63, ZnO, 0-1, Cr₂O₃ 0-1, Fe₂O₃ 0 - 7, F 0-1, Cl 0-1, SrO 0-1, BaO 0-1, SO₃ 0-0.5

Product Name	Compatibility	Part Number
WROXI - CRM Cement Extension WD	Zetium, Axio-mAX	9430 043 63041
WROXI - CRM Cement Extension ED	Epsilon 4	9430 043 63051

WROXI - CRM Pro Extension

WROXI-Pro Extension is an add-on to the WROXI Base set of CRMs. This extension set provides 12 multi-element standards for the analysis of 10 additional oxides in a variety of materials such as ores, minerals, slags and geological material.

Oxide coverage and their concentration ranges (wt%):

V₂O₅ 0-10, Cr₂O₃ 0-10, NiO 0-10, CuO 0-10, ZnO 0-10, SrO 0-40, ZrO₂ 0-40, BaO 0-40, HfO₂ 0-10, PbO 0-10.

Product Name	Compatibility	Part Number
WROXI - CRM Pro Extension WD XRF	Zetium, Axio-mAX	9430 043 63031

WROXI CUSTOM EXTENSIONS:
45 POSSIBLE ADDITIONAL ELEMENTS!

Available by expertise request, contact our sales team for more details.

For each standard, a certificate containing the following information is provided:

- Batch No,
- release date,
- period of validity,
- intended use,
- certified values and their uncertainty as well as traceability,
- uncertainty,
- instructions for handling,
- stability,
- storage,
- homogeneity,
- commutability.

WHY CHOOSE US?

**When you make the invisible visible,
the impossible is possible.**

Our analytical systems and services help our customers to create a better world. Through chemical, physical and structural analysis of materials, they 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.

With over 2200 employees, we serve the world, and we are part of Spectris plc, the world-leading precision measurements group.

Malvern Panalytical. We're BIG on small™.

SERVICE & SUPPORT

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



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