

Sample preparation for XRF analysis of cement and building materials

Contact us for more information

The cement industry has been relying on X-ray fluorescence (XRF) for the elemental analysis of cement and related raw materials for many years. Sample preparation by pressing powders into pellets has been widely used for decades. More recently, the [borate fusion](#) technique has gained popularity because of its higher accuracy and repeatability.

Crushing

Crushing of the material is required to reduce its size and allow further processing such as representative sub-sampling, homogenization and grinding.

Fusion

For applications where accuracy and reproducibility play a significant role, you can dissolve the sample into a molten glass-forming flux at high temperatures. This ultimately results in a completely homogeneous glass disk. The particle size and matrix effects are then eliminated.

It is difficult to obtain suitable standards that have the same particle size, mineralogy, surface roughness and segregation characteristics as the production samples.

Therefore, the role of glass disks is extremely important in setting up reference calibrations for determining in-house standards for the production of control calibrations. This can be achieved by using [Malvern Panalytical fusion instruments](#).

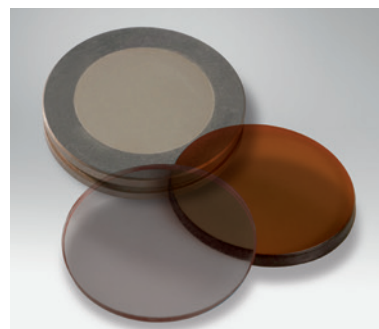
Grinding

It is necessary to grind the material into a fine powder to minimize undesired particle size effects and allow further processing like pressing or fusion.

Pressing

Pressed pellets are often used in production control, especially if the calibration ranges are narrow.

You can press pellets into Al cups or steel rings. The use of binders is usually required to achieve the necessary mechanical stability and robustness. Malvern Panalytical also offers the [ultra-wax binder](#) to prepare high-quality pellets for the most demanding applications. This binder (and other consumable products) is available from [the eStore](#) for some countries.



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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.

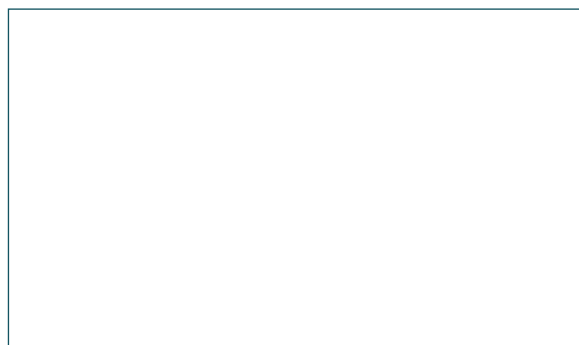
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