

PMI analysis of metallic and non-metallic materials

Positive Material Identification (PMI) determines whether a material or a component has the required chemical composition. The focus is not on the exact chemical composition, but rather on proving that the material is the correct one. The analyses can be carried out either in the laboratory or in the field using a mobile device.

Optical spark emission spectrometer (OES) offers the possibility of quickly analyse the chemical composition of metals. Because the elements C, S, N and O can also be determined, this method allows a clear identification of carbon alloyed steels. The analysis is not completely non-destructive as an electric arc is generated in argon (inert gas). Material from the sample surface is vaporised and therefore, an approximately 5 mm deep hole with ca. 10 µm diameter is left (Fig. 1).

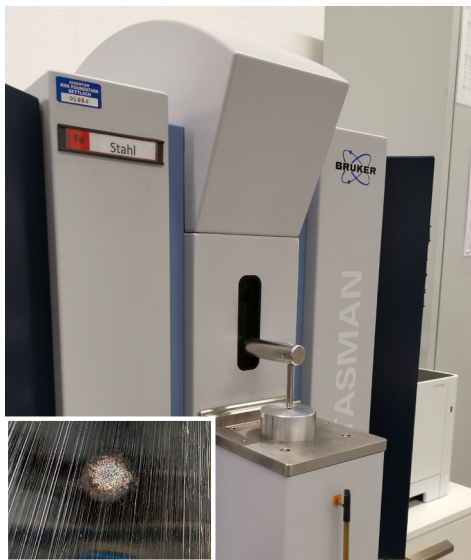


Figure 1: Spark emission spectrometer (OES measuring method) and a steel sample with a Ø 5 mm burnt spot.

The energy dispersive X-ray fluorescence spectrometer (ED-XRF) analyses metallic materials in the laboratory or at the customer's site. The analysis is non-destructive, i.e. the material surface is not damaged (Fig. 2).



Figure 2: Mobile handheld X-ray fluorescence spectrometer (ED-XRF measuring method).

Wavelength dispersive X-ray fluorescence (WD-XRF) allows precise, non-destructive analysis of metallic and non-metallic materials. Materials such as metals, ceramics, glass or cements in solid as well as in powder form can be analysed. The low detection limit allows for quantifying heavy metals such as lead, cadmium and mercury in metals, polymers, electronic components and costume jewellery in accordance with the RoHS guidelines (Fig. 3).



Figure 3: Stationary X-ray fluorescence spectrometer (WD-XRF measuring method).

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Applications:

- OES: Quantitative elemental analysis including the elements C, S, O and N on metallic materials
- ED-XRF: Stationary and mobile quantitative elemental analysis of metallic materials
- WD-XRF: Qualitative and quantitative elemental analysis of metallic and non-metallic materials

Equipment:

- OES Bruker Q4 Tasman
- ED-XRF Bruker Handheld S1 Titan LE
- WD-XRF Bruker S8 Tiger

Discuss your questions with us. We are happy to advise you!

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More information as well as our service catalogue can be found on our website.

RMS Foundation has been certified according to ISO 9001 and is an ISO/IEC 17025 (type C) accredited laboratory.

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