Brookes Bell

Laboratory Services
Material Identification

Material Identification

Overview

Metal alloys are created from a blend of different elements to produce materials of different mechanical properties and corrosion resistance. The proportions in which elements are blended vary from grade to grade and the purpose of chemical analysis is to verify the chemical composition of the material. Brookes Bell have a range of analysis techniques available, which include high accuracy laboratory methods and portable in situ techniques. Different methods which suit different situations.

Our laboratory techniques include ICP (Inductively Coupled Plasma) and EDX (Energy Dispersive X-ray). In situ techniques include LIBS (Laser Induced Breakdown) and PMI-OES (Positive Material Identification – Optical Emission Spectroscopy).

LIBS

LIBS is a portable method of chemical analysis for quick sorting metal alloys. LIBS is particularly good with magnesium and aluminium alloys.

LIBS was once a laboratory technique which has since been modified into a highly portable method of analysis which is not reliant on gases or power supplies for general testing. Making it suitable for hard to access areas on large scale engineering structures.

This analysis technique uses a highly focused laser which interacts with the sample surface and ablates a tiny amount of material, creating a plasma containing excited atoms of the sample. As the plasma loses energy, characteristic light information is emitted from each element present which is then detected by sensors. The software within the system quantifies the intensities of each element and determines alloy composition. This process occurs within seconds of starting the test, with minimal sample preparation and leaving only a

LIBS unit for chemical analysis

small witness mark on the surface of the metal.

LIBS is quick, simple to use and instantly recognises a wide library of alloy types.

PMI-OES

Portable PMI provides a higher level of accuracy over other portable methods and can deliver full chemistry of alloy materials down to low detection limits. OES is a common method of chemical analysis for metals and is typically used for mill certification of metals. Our PMI Master Smart OES allows for portable, laboratory quality assessment in situ.

The PMI unit includes UVTOUCH technology which can be used for low detection of carbon, phosphorous, sulphur, boron, arsenic and tin.

PMI can reliably analyse ferrous materials such as steels and stainless steel (including L grades) in addition to other alloy materials such as aluminium, nickel and copper.

Whatever your technical or scientific requirements Brookes Bell has a highly skilled and experienced team of experts ready to help you.

For more information please visit our website (**www.brookesbell.com**) or contact us on **+44 (0)151 236 0083**.

PMI unit displaying elemental data

PMI unit for chemical analysis