

Determination of metals in textiles —

Part 2: Analysis by atomic emission spectroscopy

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Committees responsible for this British Standard

The preparation of this British Standard was entrusted to Technical Committee TCI/80, Chemical testing of textiles, upon which the following bodies were represented:

- Association of Consulting Scientists
- British Apparel and Textile Confederation
- British Measurement and Testing Association
- British Retail Consortium
- British Textile Technology Group
- Co-operative Union
- Defence Procurement Agency
- LGC
- SATRA Technology Centre
- Society of Dyers and Colourists
- UK Cleaning Products Industry Association
- UK Textile Laboratory Forum
- Woolmark Company
- Co-opted members

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Foreword

This British Standard has been prepared by Technical Committee TCI/80.

BS 6810 has been prepared in the context of several available test methods for the determination of metals in textiles by different analytical techniques.

— Part 1 of this standard covers the determination of metals in textiles by the colorimetric and atomic absorption spectroscopy techniques.

— This Part of the standard describes the analysis of metals in textiles by atomic emission spectroscopy. It is applicable to a wide range of metals, being governed only by the wavelength range of the instrument being used at low levels of concentration. A concentration range down to the sub parts per million level (mg/kg) in the sample can be realised for most metals.

Methods of test for the determination of relatively large proportions of metals in textiles, such as may be introduced for proofing purposes, are covered by BS 2087-2, and BS 6F 100 also includes methods for the determination of traces of iron and copper.

Chemical names in accordance with BS 2474 have been used, but deprecated names or other names used in industry are given, where applicable, in brackets.

The presence of metallic elements in textile materials can arise in a variety of ways. Accidental or unforeseen contamination of textiles can occur, at any stage of manufacture or in use, by metals whose presence may pose a health hazard to humans or animals, particularly if the contamination is of such a nature that the metal is easily released. Some man-made fibres contain metals introduced in polymer manufacture (e.g. catalyst residues) or mass colouration (pigments). Animal fibres contain traces of copper, probably of biosynthetic origin. Metals can be deliberately introduced in subsequent processing (e.g. mordanting) or as components of metal-complex dyes. During textile processing, accidental contamination by materials of construction, notably copper and iron, is not uncommon, and can have a deleterious effect on quality.

Methods of test for metals in textiles might be required for a variety of reasons related to the origins detailed above, quality control, fault diagnosis or complaint investigation, textile research and development work, or hygienic considerations.

The methods for the determination of metals described in this standard are restricted to those that can be carried out in a well-equipped textile laboratory. Determination of metals in textile fibres, e.g. for general research purposes, for forensic investigations, and for the identification, through the presence of traces of metals deliberately introduced, of specific brands of man-made fibres, might not be covered by this standard.

Assessed capability. Users of this standard are advised to consider the desirability of quality system assessment and registration against a recognized quality scheme such as BS EN ISO/IEC 17025 by an accredited third-party certification body.

Warning This British Standard calls for the use of substances and/or procedures that may be injurious to health if adequate precautions are not taken. It refers only to technical suitability and does not absolve the user from legal obligations relating to health and safety at any stage. Particular sources of hazard that require attention include the use of compressed gases, the use of corrosive liquids at elevated temperatures, the handling of toxic substances, and the possibilities of explosive detonations in gases.

It has been assumed in the drafting of this British Standard that the execution of its provisions is entrusted to appropriately qualified and experienced people.

NOTE Good practice in relation to safety procedures is defined in *Hazards in the chemical laboratory* [1]. Practical guidance in the application of COSHH regulations and broader aspects of health and safety in chemical laboratories are given in *COSHH in laboratories* [2] and *Safe practices in chemical laboratories* [3].

A British Standard does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

Compliance with a British Standard does not of itself confer immunity from legal obligations.

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