



# **Specific Accreditation Guidance Materials**

## **Characterisation of Metallic Items by X-Ray Fluorescence and Atomic (Spark) Emission Techniques**

**January 2018**



**© Copyright National Association of Testing Authorities, Australia 2013**

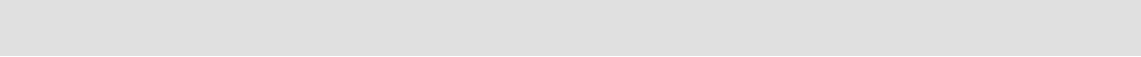
This publication is protected by copyright under the Commonwealth of Australia Copyright Act 1968.

NATA's accredited facilities or facilities seeking accreditation may use or copy this publication or print or email this publication internally for accreditation purposes.

Individuals may store a copy of this publication for private non-commercial use or copy a reasonable portion of this publication in accordance with the fair dealing provisions in Part III Division 3 of the Copyright Act 1968.

You must include this copyright notice in its complete form if you make a copy of this publication.

Apart from these permitted uses, you must not modify, copy, reproduce, republish, frame, upload to a third party, store in a retrieval system, post, transmit or distribute this content in any way or any form or by any means without express written authority from NATA.



## **Characterisation of Metallic Items by X-Ray Fluorescence and Atomic (Spark) Emission Techniques**

### **General**

Use of X-Ray fluorescence and atomic (spark) emission techniques for characterising metallic items is able to be accredited as a quantitative or qualitative (comparative) process.

Operation of equipment and interpretation of the readings obtained using either technique, necessitate involvement of appropriately trained and experienced personnel who:

- Have familiarity with the chemical composition of the various material types for which accreditation coverage is sought, and;
- Have an understanding of the requirements and limitations of the method, particularly that some elements are unsuitable for analysis by this method and others give poor responses and, following on from this;
- Recognise when alloys are encountered which may not be able to be unambiguously determined, notwithstanding comparison with a certified reference material, e.g., stainless steel grade 316L (low carbon grade of 316).

### **Quantitative testing**

Accreditation for elemental analysis of metals and alloys is indicated within scopes of accreditation by a listing of the elements recognised for quantitative analysis.

One of the applications of elemental analysis is the positive identification of material grade within an individual alloy type.

There are extensive technical requirements for facilities accredited for these techniques, including the need to have implemented an equipment calibration program, possession of documented validation or verification data, method accuracy, measurement uncertainty and to have sufficient certified reference materials to cover the full analytical range of the instrumentation.

### **Qualitative (comparative) testing**

Accreditation for comparative testing, typically involving the use of portable equipment in the field was previously offered under the general category of non-destructive Testing, but has since been re-classified as forming part of the Analysis of Metals and Alloys service category. This type of testing is indicated within scopes of accreditation by the term 'Comparative indication of material grade and alloy type'

For this type of testing, the material under test is directly compared with a certified reference material of the required material grade or alloy type and does not involve use of calibrated spectrophotometers. The results obtained by this testing are **indicative only** and this restriction must be stated on reports. Only results for materials for which the individual carrying out the testing has certified examples available for side-by-side comparison may be reported under the scope of accreditation. Use of this type of testing to 'positively' identify a material grade, alloy type or determination of specific elemental percentages **is not able to be accredited**.

## **AMENDMENTS**

The table below provides a summary of changes made to the document with this issue.

<b>Section</b>	<b>Amendment</b>
New document	This document combines the former Information Paper #13 and ISO/IEC 17025 Application Document Non-destructive testing Appendix G.