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Jewellery and precious metals — Non destructive precious metal fineness confirmation by ED-XRF

Joaillerie, bijouterie et métaux précieux — Confirmation du titre de métal précieux par analyse non destructive ED-XRF

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ISO copyright office
CP 401 • Ch. de Blandonnet 8
CH-1214 Vernier, Geneva
Phone: +41 22 749 01 11
Email: copyright@iso.org
Website: www.iso.org

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Foreword

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This document was prepared by Technical Committee ISO/TC 174, *Jewellery and precious metals.*

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Introduction

This document describes a non-destructive method to verify (confirm) the fineness of finished and semifinished jewellery items considered homogeneous by ED-XRF (energy-dispersive X-ray fluorescence).

Multiple methods are available to determine the fineness of precious metal alloys. They however are all requiring the destruction of the sample and long analysis time; for example gold cupellation by ISO 11426. Under some circumstances, destruction of the sample is not an option. This method proposes a non-destructive alternative, which allows validating a declared fineness.

The standard is not suitable for the regulatory hallmarking application. Because of the inherent higher uncertainty associated with ED-XRF measurements, some results might be inconclusive.

The document gives guidelines on the

— instrumentation,

— number and composition of calibration standards needed for calibration,

— composition of reference material needed to verify the calibration,

— number of measurement and replicates on the sample whose fineness is to be verified

— uncertainty calculation, and

— interpretation of the results.