

ISO/TS 22451:2021 (E)

Recycling of rare earth elements — Methods for the measurement of rare earth elements in industrial waste and end-of-life products

Contents

	Foreword
	Introduction
1	Scope
2	Normative references
3	Terms, definitions and abbreviated terms
3.1	Terms and definitions
3.2	Abbreviated terms
4	Sampling
4.1	Industrial waste
4.1.1	Processing waste
4.1.2	Scrap
4.2	End-of-life products
4.2.1	Magnets
4.2.2	NIMH batteries
4.2.3	Phosphors
5	Selection of measurement methods
6	Measurement methods
6.1	X-ray fluorescence spectrometry (XRF)
6.1.1	General
6.1.2	Sample preparation
6.1.2.1	General
6.1.2.2	Pressed pellet sample
6.1.2.3	Fused beads
6.1.2.4	Bulk sample
6.1.3	Calibration
6.1.3.1	General
6.1.3.2	Drift correction
6.1.3.3	Matrix correction
6.1.3.4	Standard calibration using CRM
6.1.4	Analysis and calculation
6.2	ICP-OES
6.2.1	General
6.2.2	Sample preparation
6.2.3	Calibration
6.2.4	Analysis and calculation
6.3	ICP-MS
6.3.1	General
6.3.2	Sample preparation
6.3.3	Calibration
6.3.4	Analysis and calculation
Annex A	(informative) Example measurement report