

# ISO 21400:2018 (E)

## Pulp — Determination of cellulose nanocrystal sulfur and sulfate half-ester content

---

### Contents

	Foreword
	Introduction
1	Scope
2	Normative references
3	Terms and definitions
4	Symbols and abbreviated terms
5	Total elemental sulfur content — ICP-OES method
5.1	Principle
5.2	Reagents and apparatus
5.3	Sample purification by dialysis
5.4	Microwave-assisted sample digestion and sample preparation
5.5	Preparation of calibration solutions and blanks
5.6	Analysis of standards and samples by ICP-OES
5.7	Calculation of dry CNC total elemental sulfur content and CNC surface charge
5.8	Test report
6	Sulfate half-ester content — Conductometric titration method
6.1	Principle
6.2	Reagents and apparatus
6.3	Sample purification by dialysis
6.4	Sample protonation by ion exchange
6.5	Sample analysis by conductometric titration
6.6	Calculation of dry CNC sulfate half-ester content and CNC surface charge
6.7	Test report
Annex A	(normative) Sample digestion by wet ashing
A.1	Reagents and apparatus
A.2	Digestion procedure
Annex B	(normative) Sample protonation by batch treatment with ion exchange resin
Annex C	(informative) Precision
C.1	General
C.2	Repeatability
C.3	Reproducibility

Page count: 26