DIN EN ISO 21392:2022-02 (E)

Cosmetics - Analytical methods - Measurement of traces of heavy metals in cosmetic finished products using ICP/MS techique (ISO 21392:2021, Corrected version 2021-12)

Contents

Page

European foreword ... **3**

Foreword ... **4**

Introduction ... **5**

1 Scope ... **6**

2 Normative references ... **6**

3 Terms and definitions ... **6**

4 Principle ... **6**

5 Reagents ... **7**

6 Apparatus and equipment ... **7**

7 Preparation of standards solutions ... **8**
7.1 General ... 8
7.2 Diluted nitric acid ... 8
7.3 Diluting solution ... 9
7.4 Internal standard solutions ... 9
7.4.1 General ... 9
7.4.2 Rhodium standard solution, 1 mg/l ... 9
7.4.3 Lutetium standard solution, 1 mg/l ... 9
7.5 Standard solutions ... 9
7.5.1 General ... 9
7.5.2 High concentration mixed standard solution, 10 mg/l ... 10
7.5.3 Low concentration mixed standard solution, 0,1 mg/l ... 10
7.6 Calibration blank solution ... 10
7.7 Calibration solutions ... 10

8 Procedure ... **11**
8.1 Preparation of samples ... 11
8.2 Pressure assisted digestion ... 11
8.2.1 General ... 11
8.2.2 Preparation of sample by digestion — General case ... 11
8.2.3 Preparation of sample by digestion — Specific cases ... 12
8.2.4 Microwave digestion procedure ... 12
8.2.5 Preparation of measurement solutions ... 13
8.3 Inductively coupled plasma mass spectrometry ... 13
8.3.1 ICP-MS operating conditions ... 13
8.3.2 Quantification of the analytes by ICP-MS ... 13
8.4 Quality control of the analysis ... 14
8.4.1 General ... 14
8.4.2 During digestion ... 15
8.4.3 During analysis ... 16
8.4.4 Example of ICP-MS sequence ... 17

9 Calculation ... **18**

10 Method performance ... **18**

11 Test report ... **19**

Annex A (informative) **Performance of the method determined by the accuracy profile methodology** **20**

Annex B (informative) **Evaluation of the method via ISO 5725 statistical approach** **28**

Bibliography **36**