

DIN EN ISO 2360:2017-12 (E)

Non-conductive coatings on non-magnetic electrically conductive base metals - Measurement of coating thickness - Amplitude-sensitive eddy-current method (ISO 2360:2017)

Contents

| | Page |
|--|------|
| European foreword | 3 |
| Foreword | 4 |
| 1 Scope | 5 |
| 2 Normative references | 5 |
| 3 Terms and definitions | 5 |
| 4 Principle of measurement | 6 |
| 5 Factors affecting measurement uncertainty | 7 |
| 5.1 Basic influence of the coating thickness | 7 |
| 5.2 Electrical properties of the base metal | 7 |
| 5.3 Geometry: Base metal thickness | 8 |
| 5.4 Geometry: Edge effects | 8 |
| 5.5 Geometry: Surface curvature | 8 |
| 5.6 Surface roughness | 8 |
| 5.7 Cleanliness: Lift-off effect | 9 |
| 5.8 Probe pressure | 9 |
| 5.9 Probe tilt | 9 |
| 5.10 Temperature effects | 9 |
| 5.11 Intermediate coatings | 10 |
| 5.12 External electromagnetic fields | 10 |
| 6 Calibration and adjustment of the instrument | 10 |
| 6.1 General | 10 |
| 6.2 Thickness reference standards | 10 |
| 6.3 Methods of adjustment | 11 |
| 7 Measurement procedure and evaluation | 12 |
| 7.1 General | 12 |
| 7.2 Number of measurements and evaluation | 12 |
| 8 Uncertainty of the results | 12 |
| 8.1 General remarks | 12 |
| 8.2 Uncertainty of the calibration of the instrument | 13 |
| 8.3 Stochastic errors | 14 |
| 8.4 Uncertainties caused by factors summarized in Clause 5 | 14 |
| 8.5 Combined uncertainty, expanded uncertainty and final result | 15 |
| 9 Precision | 15 |
| 9.1 General | 15 |
| 9.2 Repeatability (r) | 15 |
| 9.3 Reproducibility limit (R) | 16 |
| 10 Test report | 16 |

| | |
|--|-----------|
| Annex A (informative) Eddy-current generation in a metallic conductor | 18 |
| Annex B (informative) Basics of the determination of the uncertainty of a measurement of the used measurement method corresponding to ISO/IEC Guide 98-3 | 22 |
| Annex C (informative) Basic performance requirements for coating thickness gauges which are based on the amplitude-sensitive eddy-current method described in this document .. | 24 |
| Annex D (informative) Examples for the experimental estimation of factors affecting the measurement accuracy | 26 |
| Annex E (informative) Table of the student factor | 31 |
| Annex F (informative) Example of uncertainty estimation (see Clause 8) | 32 |
| Annex G (informative) Details on precision | 34 |
| Bibliography | 38 |