

ISO/TS 25138:2010-12 (E)

Surface chemical analysis - Analysis of metal oxide films by glow-discharge optical-emission spectrometry

Contents		Page
Foreword		iv
1	Scope	1
2	Normative references	1
3	Principle	1
4	Apparatus	2
4.1	Glow-discharge optical-emission spectrometer	2
5	Adjusting the glow-discharge spectrometer system settings	3
5.1	General	3
5.2	Setting the parameters of a DC source	4
5.3	Setting the discharge parameters of an RF source	5
5.4	Minimum performance requirements	6
6	Sampling	8
7	Calibration	8
7.1	General	8
7.2	Calibration specimens	8
7.3	Validation specimens	10
7.4	Determination of the sputtering rate of calibration and validation specimens	11
7.5	Emission intensity measurements of calibration specimens	12
7.6	Calculation of calibration equations	12
7.7	Validation of the calibration	12
7.8	Verification and drift correction	14
8	Analysis of test specimens	14
8.1	Adjusting discharge parameters	14
8.2	Setting of measuring time and data acquisition rate	14
8.3	Quantifying depth profiles of test specimens	15
9	Expression of results	15
9.1	Expression of quantitative depth profile	15
9.2	Determination of metal oxide mass per unit area	15
9.3	Determination of the average mass fractions of the elements in the oxide	16
10	Precision	16
11	Test report	17
Annex A (normative)	Calculation of calibration constants and quantitative evaluation of depth profiles	18
Annex B (informative)	Suggested spectral lines for determination of given elements	29
Annex C (informative)	Examples of oxide density and the corresponding quantity O	30
Annex D (informative)	Report on interlaboratory testing of metal oxide films	31
Bibliography		36