

# DIN EN 13603:2021-07 (English)

## Copper and copper alloys - Test methods for assessing protective tin coatings on drawn round copper wire for electrical purposes

---

<b>Contents</b>		<b>Page</b>
European foreword .....		3
1	Scope .....	4
2	Normative references .....	4
3	Terms and definitions .....	4
4	Thickness of the unalloyed tin coating .....	5
4.1	General .....	5
4.2	Principle of the method based on the electrolytic dissolution of the tin coating .....	5
4.2.1	General .....	5
4.2.2	Reagents and materials .....	5
4.2.3	Apparatus .....	5
4.2.4	Preparation of the test piece .....	7
4.2.5	Procedure for determining the thickness of unalloyed tin coatings .....	7
4.2.6	Expression of results .....	10
4.3	Principle of the method based on XRF .....	11
4.3.1	General .....	11
4.3.2	Devices with measuring spots larger than the wire diameter -- Overlap technique .....	11
4.3.3	Devices with measuring spots smaller than the wire diameter - Full-spot technique .....	12
4.3.4	Preparation of the test piece .....	12
4.3.5	Factors affecting the measuring accuracy .....	13
5	Continuity of the tin coating .....	17
5.1	Principle .....	17
5.2	Test solution .....	17
5.3	Reference solution .....	18
5.4	Preparation of the test piece .....	18
5.5	Cleaning of the test piece .....	18
5.6	Immersion for testing .....	18
5.7	Determination .....	19
5.7.1	General .....	19
5.7.2	Comparison by Nessler cylinders .....	19
5.7.3	Colorimetric method .....	19
6	Adherence of the tin coating .....	19
6.1	Principle .....	19
6.2	Stock solution .....	19
6.3	Test solution .....	19
6.4	Preparation of the test piece .....	19
6.5	Cleaning of the test piece .....	20
6.6	Immersion for testing .....	20
6.7	Examination .....	20
7	Test report .....	21
Bibliography .....		22