# DIN EN 13148:2010-12 (E)

## Copper and copper alloys - Hot-dip tinned strip

## Contents

Page


Foreword ..... 4

Introduction ..... 5

1 Scope ..... 5

2 Normative references ..... 5

3 Terms and definitions ..... 7

4 Designations ..... 7
4.1 Material of the strip to be tinned ..... 7
4.2 Material for the coating ..... 7
4.3 Material condition of the hot-dip tinned strip ..... 8
4.4 Product ..... 8

5 Ordering information ..... 10

6 Requirements ..... 11
6.1 Composition ..... 11
6.2 Mechanical properties and grain size of the base material ..... 12
6.3 Dimensions and tolerances ..... 12
6.4 Edgewise curvature c ..... 12
6.5 Properties of the coating ..... 13

7 Sampling ..... 13
7.1 General ..... 13
7.2 Analysis of the base material ..... 13
7.3 Tensile, hardness, grain size and technological tests ..... 14

8 Test methods ..... 14
8.1 Analysis of the base material ..... 14
8.2 Tensile test of the base material ..... 14
8.3 Hardness test of the base material ..... 14
8.4 Estimation of average grain size of the base material ..... 14
8.5 Edgewise curvature c ..... 14
8.6 Solderability ..... 14
8.7 Adhesion ..... 14
8.8 Measurement of coating thickness ..... 15
8.9 Retests ..... 15
8.10 Rounding of results ..... 15

9 Declaration of conformity and inspection documentation ..... 15
9.1 Declaration of conformity ..... 15
9.2 Inspection documentation ..... 15

10 Marking, packaging, labelling ..... 15

Annex A (normative) Testing of solderability of hot-dip tinned strip by means of vertical dipping test ..... 38

Annex B (normative) Measuring of coating thickness with X-ray spectrometric method according to EN ISO 3497 ..... 41

Bibliography ..... 43

Tables Table 1 -- Composition of copper ..... 16

Table 2 -- Composition of copper alloys ..... 17

Table 3 -- Composition of Sn and Sn60Pb ..... 19

Table 4 -- Mechanical properties and grain size of strip before tinning or base material ..... 20

Table 5 -- Preferred thickness (mean values) and thickness ranges of coatings ..... 36

Table 6 -- Tolerance on thickness for strip before tinning ..... 36

Table 7 -- Tolerances on width for hot-dip tinned strip ..... 37

Table 8 -- Edgewise curvature c for hot-dip tinned strip ..... 37

Figures Figure 1 -- Edgewise curvature c ..... 12

Figure A.1 -- Acceptable ..... 40

Figure A.2 -- Borderline sample, acceptable ..... 40

Figure A.3 -- Borderline sample, unacceptable ..... 40

Figure A.4 -- Unacceptable ..... 40

Figure A.5 -- Unacceptable, no adequate coating ..... 40