ISO 14555:2006-10 (E)

Welding - Arc stud welding of metallic materials

Contents

Page

Foreword v

Introduction vi

1 Scope 1

2 Normative references 1

3 Terms and definitions 2

4 Symbols and abbreviated terms 4
4.1 Symbols 4
4.2 Abbreviated terms 4

5 Technical review 5

6 Welding personnel 5
6.1 Stud-welding operators 5
6.2 Welding coordination 5

7 Equipment 6
7.1 Production equipment 6
7.2 Description of the equipment 6
7.3 Maintenance 6

8 Production planning 7

9 Welding procedure specification (WPS) 7
9.1 General 7
9.2 Information related to the manufacturer 7
9.3 Information related to the parent material 7
9.4 Welding process 7
9.5 Joint 8
9.6 Studs 8
9.7 Auxiliaries 8
9.8 Power source 9
9.9 Movable fixtures 9
9.10 Welding variables 9
9.11 Thermal conditions 10
9.12 Post-weld heat-treatment 10
9.13 Non-thermal treatment after welding 10

10 Welding procedure qualification 10
10.1 Principles 10
10.2 Welding procedure tests 10
10.3 Pre-production tests 14
10.4 Previous experience 14
10.5 Welding procedure qualification record (WPQR) 15

11 Examination and testing 15
11.1 General 15
11.2 Visual examination 15

11.3 Bend testing 15
11.4 Tensile testing 18
11.5 Torque test 21
11.6 Macro examination 22
11.7 Radiographic examination 22

12 Acceptance criteria 22
12.1 General 22
12.2 Acceptance criteria for visual examination 23
12.3 Acceptance criteria for bend testing 23
12.4 Acceptance criteria for tensile testing 23
12.5 Acceptance criteria for torque testing 23
12.6 Acceptance criteria for macro examination 23
12.7 Acceptance criteria for radiographic examination 23
12.8 Acceptance criteria for additional tests 24

13 Workmanship 24

14 Process control 24
14.1 General 24
14.2 Production test 25
14.3 Simplified production test 25
14.4 Re-testing for production test or simplified production test 26
14.5 Production surveillance 26
14.6 Production surveillance record 26
14.7 Non-conformance and corrective actions 26
14.8 Calibration of the measuring and testing equipment 27

Annex A (informative) Processing of stud welding 28

Annex B (normative) Quality requirements for stud welding 48

Annex C (informative) Manufacturer's welding procedure specification (WPS) 49

Annex D (informative) Welding procedure qualification record form (WPQR) (for drawn-arc stud welding with ceramic ferrule or shielding gas and short-cycle drawn-arc stud welding) ... 50

Annex E (informative) Welding procedure qualification record form (WPQR) (for capacitor discharge stud welding with tip ignition and capacitor discharge drawn-arc stud welding) 54

Annex F (informative) Test results -- Production test (for drawn-arc stud welding with ceramic ferrule or shielding gas and short-cycle drawn-arc stud welding) 57

Annex G (informative) Test results -- Production test (for capacitor discharge stud welding with tip ignition and capacitor discharge drawn-arc stud welding) 59

Annex H (informative) Example for production surveillance record 61

Bibliography 62