

# DIN EN ISO 15614-7:2017-03 (E)

## Specification and qualification of welding procedures for metallic materials - Welding procedure test - Part 7: Overlay welding (ISO 15614-7:2016)

---

### Contents

	Page
<b>European foreword</b> .....	<b>3</b>
<b>Annex ZA (informative) Relationship between this part of ISO 15614 and the Essential Requirements of EU Directive 2014/68/EU</b> .....	<b>5</b>
<b>Foreword</b> .....	<b>6</b>
<b>Introduction</b> .....	<b>8</b>
<b>1 Scope</b> .....	<b>9</b>
<b>2 Normative references</b> .....	<b>9</b>
<b>3 Terms and definitions</b> .....	<b>10</b>
<b>4 Preliminary welding procedure specification (pWPS)</b> .....	<b>11</b>
4.1 Corrosion resistant overlay welding .....	11
4.2 Hardfacing .....	11
<b>5 Welding procedure qualification test</b> .....	<b>11</b>
<b>6 Test piece</b> .....	<b>11</b>
6.1 Shape and dimensions of test pieces .....	11
6.1.1 General .....	11
6.1.2 Corrosion resistant overlay welding and hardfacing .....	11
6.1.3 Intermediate layer .....	11
6.2 Welding of test pieces .....	13
<b>7 Examination and testing</b> .....	<b>13</b>
7.1 Extent of examination and testing .....	13
7.2 Non-destructive testing (NDT) .....	14
7.3 Location and taking of test specimens .....	14
7.4 Destructive testing .....	16
7.4.1 General .....	16
7.4.2 Macroscopic examination .....	17
7.4.3 Hardness testing .....	17
7.4.4 Side bend testing .....	17
7.4.5 Chemical analysis .....	18
7.4.6 Delta ferrite content/ferrite number (FN) .....	18
7.5 Acceptance criteria .....	19
7.5.1 Acceptance criteria for non-destructive testing (NDT) .....	19
7.5.2 Destructive testing .....	19
7.6 Re-testing .....	20
<b>8 Range of qualification</b> .....	<b>20</b>
8.1 General .....	20
8.2 Qualification related to the manufacturer .....	20
8.3 Qualification related to the material .....	21
8.3.1 Parent metal .....	21
8.3.2 Parent metal thickness .....	21
8.4 Qualification related to the filler material/overlay .....	21
8.4.1 Filler material designation .....	21
8.4.2 Thickness of the overlay .....	21

8.5	Common to welding procedures.....	22
8.5.1	Welding process .....	22
8.5.2	Welding position .....	22
8.5.3	Type of current.....	22
8.5.4	Arc energy.....	22
8.5.5	Preheating temperature .....	22
8.5.6	Interpass temperature.....	22
8.5.7	Post-heating for hydrogen release.....	23
8.5.8	Post-weld heat-treatment (PWHT).....	23
8.5.9	Number of layers .....	23
8.6	Specific to welding processes.....	23
8.6.1	Process 111 [manual metal arc welding (metal arc welding with covered electrode)].....	23
8.6.2	Processes 12 (submerged arc welding) and 72 (electroslag overlay welding).....	23
8.6.3	Processes 13 [gas-shielded metal arc welding and 14 (gas-shielded arc welding with non-consumable tungsten electrode)].....	24
8.6.4	Process 15 (plasma arc welding).....	24
8.6.5	Process 153 (plasma transferred arc).....	24
8.6.6	Process 311 (oxy-acetylene welding).....	24
<b>9</b>	<b>Welding procedure qualification record (WPQR).....</b>	<b>25</b>
	<b>Annex A (informative) Welding procedure qualification record form (WPQR) .....</b>	<b>26</b>
	<b>Bibliography .....</b>	<b>30</b>