

ISO 15614-7:2016-10 (E)

Specification and qualification of welding procedures for metallic materials - Welding procedure test - Part 7: Overlay welding

Contents		Page
Foreword		v
Introduction		vii
1	Scope	1
2	Normative references	1
3	Terms and definitions	2
4	Preliminary welding procedure specification (pWPS)	3
4.1	Corrosion resistant overlay welding	3
4.2	Hardfacing	3
5	Welding procedure qualification test	3
6	Test piece	3
6.1	Shape and dimensions of test pieces	3
6.1.1	General	3
6.1.2	Corrosion resistant overlay welding and hardfacing	3
6.1.3	Intermediate layer	3
6.2	Welding of test pieces	5
7	Examination and testing	5
7.1	Extent of examination and testing	5
7.2	Non-destructive testing (NDT)	6
7.3	Location and taking of test specimens	6
7.4	Destructive testing	8
7.4.1	General	8
7.4.2	Macroscopic examination	9
7.4.3	Hardness testing	9
7.4.4	Side bend testing	9
7.4.5	Chemical analysis	10
7.4.6	Delta ferrite content/ferrite number (FN)	10
7.5	Acceptance criteria	11
7.5.1	Acceptance criteria for non-destructive testing (NDT)	11
7.5.2	Destructive testing	11
7.6	Re-testing	12
8	Range of qualification	12
8.1	General	12
8.2	Qualification related to the manufacturer	12
8.3	Qualification related to the material	13
8.3.1	Parent metal	13
8.3.2	Parent metal thickness	13
8.4	Qualification related to the filler material/overlay	13
8.4.1	Filler material designation	13
8.4.2	Thickness of the overlay	13
8.5	Common to welding procedures	14
8.5.1	Welding process	14
8.5.2	Welding position	14

8.5.3	Type of current	14
8.5.4	Arc energy	14
8.5.5	Preheating temperature	14
8.5.6	Interpass temperature	14
8.5.7	Post-heating for hydrogen release	15
8.5.8	Post-weld heat-treatment (PWHT)	15
8.5.9	Number of layers	15
8.6	Specific to welding processes	15
8.6.1	Process 111 [manual metal arc welding (metal arc welding with covered electrode).....	15
8.6.2	Processes 12 (submerged arc welding) and 72 (electroslag overlay welding)	15
8.6.3	Processes 13 [gas-shielded metal arc welding and 14 (gas-shielded arc welding with non-consumable tungsten electrode)]	16
8.6.4	Process 15 (plasma arc welding)	16
8.6.5	Process 153 (plasma transferred arc)	16
8.6.6	Process 311 (oxy-acetylene welding)	16
9	Welding procedure qualification record (WPQR)	17
	Annex A (informative) Welding procedure qualification record form (WPQR)	18
	Bibliography	22