

DIN EN 12681-1:2018-02 (E)

Founding - Radiographic testing - Part 1: Film techniques

Contents		Page
European foreword		4
Introduction		5
1	Scope	6
2	Normative references	6
3	Terms and definitions	7
4	Symbols and abbreviations	8
5	Classification of radiographic techniques	9
6	General preparations and requirements	9
6.1	General preparations	9
6.1.1	Protection against ionizing radiation	9
6.1.2	Surface preparation and stage of manufacture	9
6.2	Agreements	9
6.3	Personnel qualification	10
7	Test arrangements	10
7.1	General	10
7.2	Single wall radiography of plane areas	10
7.3	Single wall radiography of curved areas	10
7.4	Double wall radiography of plane and curved areas	10
7.5	Choice of test arrangements for complex geometries	11
7.6	Acceptable test area dimensions	11
8	Choice of tube voltage and radiation source	16
8.1	X-ray devices up to 1 000 kV	16
8.2	Other radiation sources	17
9	Film systems and metal screens	18
10	Reduction of scattered radiation	20
10.1	Metal filters and collimators	20
10.2	Interception of backscattered radiation	20
11	Source-to-object distance	20
12	Optical density D of radiograph	23
13	Film processing and viewing	23
13.1	Processing	23
13.2	Film viewing conditions	23
14	Techniques for increasing the covered thickness range	23
14.1	General	23
14.2	Multiple film technique	24
14.3	Contrast decreasing by higher radiation energy	25
14.4	Contrast decreasing by beam hardening	25

14.5	Contrast decreasing by thickness equalization	26
15	Requirements on radiographs	26
15.1	Identification of radiograph, test area, film position plan	26
15.2	Marking of the test areas	26
15.3	Overlap of films	26
16	Verification of image quality	26
17	Influence of crystalline structure	27
18	Acceptance criteria	27
18.1	General	27
18.2	Severity levels	27
18.3	Wall section zones	27
19	Test report	28
Annex A (normative) Minimum image quality values		30
Annex B (normative) Severity levels for steel castings		33
Annex C (normative) Severity levels for cast iron castings		36
Annex D (normative) Severity levels for aluminium alloy and magnesium alloy castings		39
Annex E (normative) Severity levels for copper alloy castings		43
Annex F (normative) Severity levels for titanium and titanium alloy castings		45
Annex G (informative) Significant technical changes between this European Standard and the previous edition		47
Bibliography		48