

DIN EN 14681:2010-10 (E)

Safety of machinery - Safety requirements for machinery and equipment for production of steel by electric arc furnaces (includes Amendment A1:2010)

Contents		Page
Foreword		4
Introduction		5
1	Scope	6
2	Normative references	7
3	Terms, definitions and abbreviations	9
3.1	Terms and definitions	9
3.2	Abbreviations	10
4	List of significant hazards	11
5	Safety requirements and/or measures	11
5.1	General	11
5.1.1	General design requirements	11
5.1.2	Electrical melting power supply	12
5.1.3	Electrical low voltage supply	12
5.1.4	Grounding of mechanical furnace parts	12
5.1.5	Fluid systems	12
5.1.6	Linked equipment	13
5.1.7	Ergonomic principles	13
5.1.8	Leakage from hydraulic system and EAF-Transformer	14
5.1.9	Access	14
5.1.10	Safety control system	14
5.1.11	Harmful areas	14
5.1.12	Blocking device for tilting platform	15
5.1.13	Gantry movement	15
5.1.14	Loss of energy	15
5.1.15	Electrode clamp	15
5.1.16	Pulpit	15
5.1.17	Personal protective equipment (PPE)	16
5.1.18	Warning devices and safety signs"	16
5.1.19	Surface temperatures and heat radiation	16
5.1.20	Noise	16
5.1.21	Vibrations"	17
5.2	List of significant hazards, hazardous situations, safety requirements and/or measures ..	17
5.2.2	EAF including scrap pre-heating	19
5.3	Special requirements for explosion prevention and protection	21
5.4	Noise reduction as a safety requirement	22
5.4.1	Noise reduction at source by design	22
5.4.2	Noise reduction by protective measures	23
5.4.3	Noise reduction by information	23
6	Verification of the safety requirements and/or measures	23
7	Information for use	24
7.1	General	24
7.2	Warning devices and safety signs	24
7.3	Accompanying documents	24

7.3.1	Instruction handbook	24
7.3.2	Machine/equipment declaration	24
7.3.3	Instruction for transportation and assembly of the equipment	25
7.3.4	Information about commissioning and dismantling of the equipment	25
7.3.5	Operation instructions concerning the equipment	26
7.3.6	Maintenance manual	27
7.4	Minimum marking	27
7.5	Training of personnel	28
Annex A (normative)	Noise test code	29
Annex B (normative)	Equipment covered by this European Standard	33
Annex C (informative)	Examples of electric arc furnaces	35
Annex ZA (informative)	"Relationship between this European Standard and the Essential Requirements of EU Directive 2006/42/EC"	37
Annex ZB (informative)	"Relationship between this European Standard and the Essential Requirements of EU Directive 94/9/EC"	38
Bibliography		39
Figures	Figure B.1 -- Specification of equipment covered by this standard (solid line) and take over points of linked equipment (dashed line)	34
Figure C.1 -- Example of an EAF		35
Figure C.2 -- Example of an EAF: Single shaft furnace with scrap preheating system		36
Tables	Table 1 -- Significant hazards, hazardous situations, safety requirements and/or measures .	18
Table A.1 -- Example of declared dual-number noise emission values		32
Table B.1 -- EAF with AC technology		33
Table B.2 -- EAF with DC technology		33
Table B.3 -- Auxiliaries		33