

European (international^b) standards for fusion welding

QUALITY REQUIREMENTS for welding^a

EN ISO 3834
Grouping of materials
Welder qualification
WPS
Welding procedure qualification
Welding operator qualification
NDT-personnel
Welding coordination
Inspection & testing during welding - Measurement of preheat and interpass temp. - Recommendations for welding - Comparison of methods for avoidance of cold cracks
Inspection & testing after welding - NDT – General rules - Visual testing - Radiographic testing - Ultrasonic testing - Magnetic particle testing - Macro- & microscopic testing - Penetrant testing (general)
Post-weld heat treatment
Calibration/validation

Arc welding	
Steel	Aluminium
CEN ISO/TR 15608, 20172, 20173, 20174	
EN ISO 9606-1	EN ISO 9606-2
EN ISO 15609-1	
EN ISO 15607, 15610, 15611, 15612, 15613	
EN ISO 15614-1	EN ISO 15614-2 & -4
EN ISO 14732	
EN ISO 9712	
EN ISO 14731	
EN ISO 13916	
EN 1011-2 & -3 (ISO/TR 17671-2 & -3)	EN 1011-4 (ISO/TR 17671-4)
CEN ISO/TR 17844	
EN ISO 17635	
EN ISO 17637	
EN ISO 17636-1 & -2	
EN ISO 17640	
EN ISO 17638	
EN ISO 17639	
EN ISO 3452-1	
EN ISO 17663	
EN ISO 17662	

Quality levels & Joint preparation	
Steel	Aluminium
EN ISO 5817	EN ISO 10042
EN ISO 13919-1	EN ISO 13919-2
EN ISO 9013	
EN ISO 9692-1 & -2	EN ISO 9692-3

Other	
Pressurized comp. / Steel constr.	EN 1708-1 & -3 / -2 (ISO 'missing')
Fusion welding / Pressure welding	EN ISO 6520-1 / -2
Thermal cuts	EN 12584 (ISO 'missing')
Designation system	CEN ISO/TS 17845

See continued

Copper	Nickel	Titanium & Zirconium
EN ISO 9606-3	EN ISO 9606-4	EN ISO 9606-5

Gas welding	Electron beam welding	Laser welding
EN ISO 15609-2	EN ISO 15609-3	EN ISO 15609-4

Cast iron	Titanium & Zirconium	Copper
EN ISO 15614-3	EN ISO 15614-5	EN ISO 15614-6

Overlay welding	Tube to tube plate	Beam welding
EN ISO 15614-7	EN ISO 15614-8	EN ISO 15614-11

Clad steel	Laser	Electron beam	Cast iron
EN 1011-5 (ISO/TR 17671-5)	EN 1011-6 (ISO/TR 17671-6)	EN 1011-7 (ISO/TR 17671-7)	EN 1011-8 (ISO/TR 17671-8)

	Environment, health & safety	Product
Fume sampling in laboratory	EN ISO 15011-1 till -4 & CEN ISO/TR 15011-5	Quality req. for manufacturing
Fume sampling in breathing zone	EN ISO 10882-1 & -2	Technical delivery conditions
Filters	EN ISO 15012-1 & -2	Procurement
Eye protection	EN 169, 170, 171, 175 & 379	Type testing
Protective clothing	EN ISO 11611, EN 12477	Testing
Welding curtains	EN 1598	TIG-electrodes
Environm. checklist	EN 14717	Hard facing

MMA
MIG/MAG
TIG
Electrodes etc for submerged arc
Fluxes for submerged arc
Cored wires
Gas welding
Shielding gas

Classification of welding consumables									
Steel					Other materials				
Non-alloy and fine grain	High strength	Creep resistant	Stainless and heat resisting		Nickel	Copper	Aluminium	Cast iron	Titanium
EN ISO 2560	EN ISO 18275	EN ISO 3580	EN ISO 3581		EN ISO 14172	prEN ISO 17777			
EN ISO 14341	EN ISO 16834	EN ISO 21952				EN ISO 24373	EN ISO 18273	EN ISO 1071	EN ISO 24034
EN ISO 636			EN ISO 14343		EN ISO 18274				
EN ISO 14171	EN ISO 26304	EN ISO 24598							
Fluxes for submerged arc					EN ISO 14174				
EN ISO 17632	EN ISO 18276	EN ISO 17634	EN ISO 17633		EN ISO 12153				
EN 12536 (ISO 'missing')		EN 12536 (ISO 'missing')						EN ISO 1071	
Shielding gas					EN ISO 14175				

Other continued	
Symbolic repr.	ISO 2553
Proc. numbers	EN ISO 4063
Terms & Def.	CEN/TR 14599 (ISO/TR 25901)
Def. weld proc.	EN 14610
Terms on joints & welds	EN ISO 17659
Tolerances	EN ISO 13920
Welding positions	EN ISO 6947, CEN/TR 14633
Reinforcing steel	EN ISO 17660

Welding consumables	
	EN 13479
	EN 12074
	EN ISO 544
	EN ISO 14344
	EN 14532-1, -2 & -3
	EN ISO 15792-1, -2 & -3, 6847, 14372, 8249, 3690 & ISO 2401
	EN ISO 6848
	EN 14700

Destructive testing	
Impact	EN ISO 9016
Tensile long.	EN ISO 5178
Tensile perp.	EN ISO 4136
Tensile cruc.	EN ISO 9018
Bend	EN ISO 5173
Fracture	EN ISO 9017
Hardness	EN ISO 9015-1 & -2
Macroscopic	EN ISO 17639, CR 12361 (ISO/TR 16060)
Hot crack	EN ISO 17641-1, -2 & -3
Cold crack	EN ISO 17642-1, -2 & -3
Delta ferrite	EN ISO 17655

Acceptance levels for NDT	
Radiography	EN ISO 10675-1 & -2
Ultrasonic	EN ISO 11666, EN ISO 23279
Magnetic particle	EN ISO 23278
Penetrant	EN ISO 23277
Visual testing (+ macro/micro etc)	For all imperfections EN ISO 5817 etc apply

^a References in fields with this colour are directly linked to EN ISO 3834
^b The ISO-reference in brackets is in most cases identical with or is based on corresponding EN