

UNI EN 10346

LOW CARBON COLD FORMING STEELS CHEMICAL COMPOSITION OF CASTING

Designation			Chemical composition % by mass max.					
Quality		Symbols for the available coverings	C	Si	Mn	P	S	Ti
Steel Name	Numerical Designation							
DX51D	1.0226	+Z,+ ZF,+ZA,+AZ,+AS	0,18	0,50	1,20	0,12	0,045	0,30
DX52D	1.0350	+Z,+ ZF,+ZA,+AZ,+AS	0,12		0,60	0,10		
DX53D	1.0355	+Z,+ ZF,+ZA,+AZ,+AS						
DX54D	1.0306	+Z,+ ZF,+ZA,+AZ,+AS						
DX55D	1.0309	+AS						
DX56D	1.0322	+Z,+ ZF,+ZA,+AS						
DX57D	1.0853	+Z,+ ZF,+ZA,+AS						

a) By agreement at the time of request and order, the Ti content for the steel grades mentioned in this table may be lowered to < 0.05%, which means that the steel grade is not alloyed

MECHANICAL CHARACTERISTICS (TRANSVERSE DIRECTION)

Designation			Yield strength Re ^a MPa	Tensile strength Rm Mpa	Elongation A80 ^b % min.	Degree of plastic deformation r90 min.	Degree of curing n90 min.
Quality		Symbols for the available coverings					
Steel Name	Steel number						
DX51D	1.0226	+Z,+ ZF,+ZA,+AZ,+AS	-	270 to 500	22	-	-
DX52D	1.0350	+Z,+ ZF,+ZA,+AZ,+AS	140 to 360	270 to 420	26	-	-
DX53D	1.0355	+Z,+ ZF,+ZA,+AZ,+AS	140 to 260	270 to 380	30	-	-
DX54D	1.0306	+Z,+ZA	120 to 220	260 to 350	36	1,6 ^d	0,18
DX54D	1.0306	+ZF	120 to 220	260 to 350	34	1,4 ^d	0,18
DX54D	1.0306	+AZ	120 to 220	260 to 350	36	-	-
DX54D	1.0306	+AS	120 to 220	270 to 370	34	1,4 ^{d,e}	0,18 ^e
DX55D ^f	1.0309	+AS	140 to 240	260 to 350	30	-	-
DX56D	1.0322	+Z,+ZA	120 to 180	260 to 350	39	1,9 ^d	0,21
DX56D	1.0322	+ZF	120 to 180	260 to 350	37	1,7 ^{d,e}	0,20 ^e
DX56D	1.0322	+AS	120 to 180	260 to 350	39	1,7 ^{d,e}	0,20 ^e
DX57D	1.0853	+Z,+ZA	120 to 170	260 to 350	41	2,1 ^d	0,22
DX57D	1.0853	+ZF	120 to 170	260 to 350	39	1,9 ^{d,e}	0,21 ^e
DX57D	1.0853	+AS	120 to 170	260 to 350	41	1,9 ^{d,e}	0,21 ^e

a) If the yield strength is not displayed, the values apply to the resistance 0.2% Rp02; if the yield strength is displayed, the values apply to the lower yield strength ReL.

b) Decrease in minimum product thickness elongation values ≤ 0.50 mm. (minus 4 units) and for thickness > 0.50 mm. and ≤ 0.70 mm. (minus 2 units).

c) The value applies only to Skin-passed products (surface B and C).

d) For thicknesses > 1.50 mm the minimum value of r90 shall be reduced to 0.2.

e) For thicknesses \leq to 0.70 mm the minimum value of r90 reduced to 0.2 and a minimum value of n90 reduced by 0.01 shall apply.

f) The minimum elongation for products consisting of DX55D+AS which does not follow the systematic order should be observed. The DX55 is characterised by maximum thermal resistance.

MICRO-ALLOYED HIGH-STRENGTH STEELS CHEMICAL COMPOSITION OF CASTING

Designation			Chemical composition % by mass max.				
Quality		Symbols for the available coverings	C	Si	Mn	P	S
Steel Name	Steel Number						
522OGD	1.0241	+Z, ZF,+ZA,+ZM +AZ	0,20	0,60	1,70	0,10	0,045
S250GD	1.0242	+Z,+ZF,+ZA,+ZM, +AZ, +AS					
S280GD	1.0244	+Z ZF,+ZA,+ZM,+AZ, +AS					
S320GD	1.0250	+Z ZF,+ZA,+ZM, +AZ, +AS					
S350GD	1.0529	+Z,+ZF,+ZA,+ZM, +AZ, +AS					
S390GD	1.0238	+Z,+ZF,+ZA,+ZM,+AZ					
S420GD	1.0239	+Z, +ZF,+ZA,+ZM,+AZ					
S450GD	1.0233	+Z,+ZF,+ZA,+ZM,+AZ					
S550GD	1.0531	+Z,+ZF,+ZA,+ZM,+AZ					

Subject to agreement at the time of the request and order, if additional chemical elements are added, these must be mentioned on the control document, which may require a change of classification.

MECHANICAL CHARACTERISTICS

Designation			Mechanical characteristics		
Quality		Symbols for the available coverings	Strength test RRp _{0,2} ^a MPa ^d min.	Tensile strength Rm ^b MPa ^d min.	Elongation A ₈₀ ^c % min.
Steel Name	Steel Number				
S220GD	1.0241	+Z,+ZF,+ZA, +ZM, +AZ	220	300	20
S250GD	1.0242	+Z,+ZF,+ZA, +ZM, +AZ,+AS	250	330	19
S280GD	1.0244	+Z,+ZF,+ZA, +ZM, +AZ, +AS	280	360	18
S320GD	1.0250	+Z ZF,+ZA, +ZM, +AZ,+AS	320	390	17
S350GD	1.0529	+Z,+ZF,+VA, +ZM, +AZ,+AS	350	420	16
S390GD	1.0238	+Z,+ZF,+ZA, +ZM, +AZ	390	460	16
S420GD	1.0239	+Z,+ZF,+ZA, +ZM, +AZ	420	480	15
S450GD	1.0233	+Z,+ZF,+ZA, +ZM, +AZ	450	510	14
S550GD	1.0531	+Z,+ZF,+ZA,+Z , +AZ	550	560	-

a) If the yield point is displayed, the values apply to the upper yield point

b) For all grades, except S550GD, a range of 140 MPa for tensile strength can be provided.

c) For the thickness of the product, decreased values shall be applied:

0,50mm < t ≤ 0,70mm (less 2 units)

0,35mm < t ≤ 0,50mm (less 4 units)

and t ≤ 0,35mm (less 7 units)

^d 1 MPa= 1 N/mm².