

# Proprietà meccaniche (direzione trasversale) di acciai a basso carbonio per formatura a freddo

Norma Europea UNI EN 10346 / 2009

Designazione		Composizione chimica % in massa max					
Tipo di acciaio		Simbolo relativo al tipo di rivestimento	Carico unitario snervamento	Carico unitario di rottura	Allungamento minimo	Anisotropia plastica	Modulo di incrudimento
Designazione simbolica	Designazione numerica		Re <sup>a</sup> Mpa	Rm MPa	A <sub>80</sub> (b) % min.	r <sub>90</sub> min.	n <sub>90</sub> min.
DX51D	1,0226	+ Z, + ZF, + ZA, + AZ, + AS	-	270 to 500	22	-	-
DX52D	1,0350	+ Z, + ZF, + ZA, + AZ, + AS	140 to 300 (c)	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	260 to 350	34	1,4 (d) (e)	0,18
DX55D (f)	1,0309	+ AS	140 to 240	270 to 370	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 point isn't pronounced, the values apply to the 0.2% proof strength R<sub>p0,2</sub>;  
If the yield strength is pronounced, the values apply to the lower yield point R<sub>eL</sub>.  
b) Decreased minimum elongation values apply for product thickness t ≤ 0,50mm (minus 4 units) and for 0,50mm < t ≤ 0,70mm (minus 2 units).  
c) This value applies to skin passed products only (surface qualities B and C).  
d) For t > 1,5mm, the minimum r<sub>90</sub> value reduced by 0,2 applies.  
e) For t ≤ 0,70mm, the minimum r<sub>90</sub> value reduced by 0,2 and the minimum n<sub>90</sub> value reduced by 0,1 apply.  
f) The minimum elongation of products made of DX55D + AS which doesn't follow the systematic order should be noted.  
DX55D + AS is characterized by the best heat resistance.

# Proprietà meccaniche (direzione longitudinale) di acciai da costruzione

Norma Europea UNI EN 10346 / 2009

Designazione			Composizione chimica % in massa max		
Tipo di acciaio		Simbolo relativo al tipo di rivestimento	Carico unitario di scostamento della proporzionalità  $R_{p0,2}$ (a) Mpa min.	Carico unitario di rottura  $R_m$ (b) Mpa min.	Allungamento minimo  $A_{80}$ (c) % min.
Designazione simbolica	Designazione numerica				
S220GD	1,0241	+ Z, + ZF, + ZA, + AZ	220	300	20
S250GD	1,0242	+ Z, + ZF, + ZA, + AZ, + AS	250	330	19
S280GD	1,0244	+ Z, + ZF, + ZA, + AZ, + AS	280	360	18
S320GD	1,0250	+ Z, + ZF, + ZA, + AZ, + AS	320	390	17
S350GD	1,0529	+ Z, + ZF, + ZA, + AZ, + AS	350	420	16
S550GD	1,0531	+ Z, + ZF, + ZA, + AZ	550	560	-

a) If the yeild point is pronounced, the value apply to the upper yield point  $R_{eH}$ .  
b) For all grades except S550GD, a range of 140MPa can be expected for tensile strenght.  
c) Decreased minimum elongation values apply for product thickness  $t \leq 0,50\text{mm}$  (minus 4 units) and for  $0,50\text{mm} < t \leq 0,70\text{mm}$  (minus 2 units).