



ArcelorMittal

ArcelorMittal Sestao

Steels for Cold Forming

The excellent performance in deep drawing and forming processes of these steels permits the production of a wide range of complex parts.

Properties

Steels for cold forming and deep drawing applications are characterised by guaranteed maximum yield and tensile strength and minimum elongation.

Advantages

Steels for cold forming and deep drawing applications are available from basic (DD11) to very demanding (DD13).

Applications

This range of steel grades for cold forming is widely used for bending and drawing applications in general industry, building, automotive industry and related sectors.



Brand correspondence and norms

ArcelorMittal Sestao offer	EN 10111:1998	DIN 1614-2:1986	UNI 5867:1973	UNE 36093:1991	ASTM A1011-01a	BS 1449
DD11	DD11	StW22	Fe P 11	AP11	CS Type B	HR3
DD11 CL1						
DD12	DD12	RStW23				
DD13	DD13	StW24	Fe P 13	AP13	DS Type B	HR1

Available Qualities



Dimensions

Hot rolled black coil

Thickness (mm)	Min. width (mm)	DD 11	DD 12	DD 13	
		Max. width (mm)			
≥ 1,00 and ≤ 1,19	845	1020	-		
≥ 1,20 and ≤ 1,29		1250	1020		
≥ 1,30 and ≤ 1,34			1360	1350	
≥ 1,35 and ≤ 1,49		1550		1350	
≥ 1,50 and ≤ 1,79				1550	
≥ 1,80 and ≤ 12,7		1550			



Pickled coil

Thickness (mm)	Min. width (mm)	DD 11	DD 12	DD 13
		Max. width (mm)		
≥ 1,00 and ≤ 1,50	845	See UF Steel brochure		
≥ 1,51 and ≤ 1,79		1550	1350	
≥ 1,80 and ≤ 4,00		1550		
		1550		

- UF Steels range
- Thin Steels range
- Commercial Steels range
- Dimensions as per tables above

For other dimensions please contact consultastecnicas.sestao@arcelormittal.com

Chemical Properties

	≤ C (%)	≤ Mn (%)	≤ P (%)	≤ S (%)	≤ Si (%)	≥ Al (%)	Galvanised
DD 11	0,075	0,400	0,025	0,020	0,045	0,018	NO
DD11 CL1	0,075	0,400	0,025	0,020	0,030	0,018	Class 1
DD 12	0,070	0,350	0,025	0,020	0,030	0,018	Class 1
DD 13	0,060	0,300	0,025	0,020	0,030	0,018	Class 1

The chemical properties given are based on cast analysis data.

Mechanical properties (As per norm EN 10119)

	Direction	Thickness (mm)	R _e (MPa)	R _m (MPa)	A ₈₀ (%)	A _{5,65√S₀} (%)	Bending ratio (th.)	MP Guarantees (months)
DD 11	T	1,5 - 1,99	170 - 360	≤ 440	≥ 23	-	-	≥ 1
		2 - 5,99			≥ 24			
		6 - 7,99			-			
		8 - 12,7	≥ 28					
DD 11 CL 1	T	1,5 - 1,99	170 - 360	≤ 440	≥ 23	-	-	≥ 1
		2 - 5,99		≥ 24				
		6 - 7,99						
		8 - 12,7	<i>170 - 340</i>	≥ 28				
DD 12	T	1,5 - 1,99	170 - 340	≤ 420	≥ 25	-	-	≥ 3
		2 - 5,99	170 - 320		≥ 26			
		6 - 7,99						
		8 - 12,7	<i>170 - 320</i>		≥ 30			
DD 13	T	1,5 - 1,99	170 - 330	≤ 400	≥ 28	-	-	≥ 6
		2 - 5,99	170 - 310		≥ 29			
		6 - 7,99						
		8 - 12,7			-			

Grades in italics: not included in the standard.

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