

Data sheet: E2.1 rev 1

## Channel sections (Taper Flange)

### Hot rolled, weldable structural steel sections

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#### General description

ArcelorMittal South Africa, Newcastle Steel produces an extensive range of structural channel-sections (taper and parallel flanges).

Sections not listed in any mentioned specifications, are supplied as ArcelorMittal South Africa sections and rolled to SPE 230 tolerance.

Steel for structural sections is normally produced to EN 10025-2: 2019 standard, S235, S275, S355 & S460. Other grades are available on enquiry.

"The South African Steel Construction Handbook", published by the South African Institute of Steel Construction, should be consulted for section properties.

#### Quality assurance

Quality assurance systems based on the requirements of ISO 9001: 2015 are in operation.

#### Weldability

The above-mentioned structural steel grades may be welded using any of the standard metal arc and resistance welding processes, usually without any special precautions. However, when welding heavy sections, BS 5135: 1984 "Metal-arc welding of carbon and carbon manganese steels" should be consulted to determine preheat requirements at low heat inputs.

#### Surface quality

Surface defects up to a maximum depth of 3% of the nominal thickness shall not be considered as a reason for rejection.

Larger surface defects may be removed, providing the nominal thickness is not reduced by more than 7%.

#### Applications

Taper-flanged channel sections can be used for a wide range of structural elements, from lightweight purlins to columns and beams for industrial and multi-storey structures and bridges.

The sections listed may be ordered to conform to the mechanical requirements of any of the international specifications listed. Other sections, lengths, grades and tolerances may be available on enquiry.

For further information, contact:

ArcelorMittal South Africa Limited, Newcastle Works, PO Box 2, Newcastle 2940. Tel (034) 314-8629 Fax (034) 314-8211  
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### Steel specifications (mechanical properties)

Specification	Standard	Tensile Strength (MPa)	Yield Strength (MPa)	Elongation	Impact Test
EN 10025-2 - S235JR (Thickness: ≤25 mm)	Standard	340 - 470	235 min ≤ 16 mm	26% min on L <sub>0</sub> = 5D <sub>0</sub>	27J at 20°C
			225 min > 16 mm ≤ 40 mm		
EN 10025-2 - S275J0	Standard	410 - 560 (3 to 100mm)	min 275 ≤ 16mm	22% : 3 to 40mm	27J at 0°C
			min 265 > 16mm ≤ 40mm	21% : 41 to 63mm	
			min 255 > 40mm ≤ 63mm	20% : 64 to 100mm	
			min 245 > 63mm ≤ 100mm		
EN 10025-2 - S275JR	Standard	410 - 560 (3 to 100mm)	min 275 ≤ 16mm	22% : 3 to 40mm	27J at 20°C
			min 265 > 16mm ≤ 40mm	21% : 41 to 63mm	
			min 255 > 40mm ≤ 63mm	20% : 64 to 100mm	
			min 245 > 63mm ≤ 100mm		
EN 10025-2 - S355JR	Standard	490 - 630	min 355 ≤ 16mm	22% min on L <sub>0</sub> = 5D <sub>0</sub>	27J at 20°C
			min 345 > 16mm ≤ 30mm		
EN 10025-2 - S355J0	Standard	490 - 630	min 355 ≤ 16mm	22% min on L <sub>0</sub> = 5,65√S <sub>0</sub> <sup>1)</sup>	27J at 0°C
			min 345 > 16mm ≤ 63mm		
Commercial Quality	Standard	C,30x	with CE = 0,51max CE=C + Mn/6 + (Cr+Mo+V)/5 + (Ni+Cu)/15		

#### Notes:

1  $S_0$  = original cross-sectional area.

### Steel specifications to chemical analysis (mechanical properties as per international specifications)

Specification	Code	C	Mn	P	S	Si
EN 10025-2 - S235JR	C51 001	0,17	1,40	0,035	0,035	-
EN 10025-2 - S275J0	C50 957	0,18	1,50	0,030	0,030	-
EN 10025-2 - S275JR	C49 030	0,21	1,50	0,035	0,035	-
EN 10025-2 - S355J0	C53 008	0,20	1,60	0,030	0,030	0,55
EN 10025-2 - S355JR	C46 333	0,24	1,60	0,035	0,035	0,55
*Commercial quality	250 555	0,30	-	-	-	-

\* Supplied to chemical analyses only with CE = 0,51max

All values in this table is maximum unless otherwise stated

#### Certification:

Test and analysis certificates are supplied for all steel ordered to international specifications. The mechanical and chemical laboratories of ArcelorMittal South Africa, Newcastle Steel are SANAS accredited facilities.

Lower strength (for workability and weldability)
EN 10025 S235JR
Normal strength (for general use)
EN 10025 S275JR/J0
Higher strength micro-alloyed steel
EN 10025 S355JR/J0

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### Sizes and tolerances

The following sections can be ordered in lengths from 6m up to 13 metres in increments of 100 mm. The availability of lengths less than 6m will be considered on enquiry.

#### Channels taper flanged to BS 4 Part 1: 1993

Designation	Dimensions and tolerances (mm)								
	kg/m	Depth		Width #		Web #	Flange #	Root # radius	Toe # radius
		Nom.	var.	nom.	nom.	nom.			
127 x 64	14,9	127	-0,8 +3,2	63,5 ±2,5	6,4 ±0,6	9,2 ±1,5	10,7	2,4	
152 x 76	17,9	152,4	-0,8 +3,2	76,2 ±3,0	6,4 ±0,6	9,0 ±1,5	12,2	2,4	

# Typical values

#### Channels taper flanged to DIN 1026: 1963

Designation	Dimensions and tolerances (mm)										
	kg/m	Depth		Width		Web		Flange		Root # radius	Toe # radius
		nom.	var.	nom.	var.	nom.	var.	nom.	var.		
100 x 50	8,8	100	± 2	50	± 1,5	5,0	± 0,5	7,0	-0,5	8,5	4,5
100 x 50	10,6	100	± 2	50	± 1,5	6,0	± 0,5	8,5	-0,5	8,5	4,5
120 x 55	13,4	120	± 2	55	± 1,5	7,0	± 0,5	9,0	-0,5	9,0	4,5
140 x 60	16	140	± 2	60	± 1,5	7,0	± 0,5	10,0	-0,5	10,0	5,0
160 x 65	18,8	160	± 2	65	± 1,5	7,5	± 0,5	10,5	-1,0	10,5	5,5
180 x 70	22	180	± 2	70	± 1,5	8,0	± 0,5	11,0	-1,0	11,0	5,5

# Typical values

#### Channels taper flanged to SAISC: 1982

Designation	Dimensions and tolerances (mm)									
	kg/m	Depth		Width		Web #	Flange #	Root # radius	Toe # radius	
		nom.	var.	nom.	var.	nom.	nom.			
178 x 54	14,5	178	± 2	54	± 1,5	5,8 ±0,6	8,3 ±1,5	8,3	3,2	

# Typical values

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