

Data sheet: D1.1

Billets & blooms

Hot rolled, semi-finished products

General description

Billets and blooms are semi-finished products intended for reworking and are sold in the as-rolled or as-cast condition.

Non-standard sizes and steel specifications not covered by this data sheet can be considered on an enquiry basis.

Manufacture

The steel is made via the basic oxygen route followed by continuous casting into blooms prior to rolling. Secondary treatment of steel may be applied, depending on end application. Treatment may include ladle furnace refining and/or vacuum degassing. Ladle furnace treatment may include calcium treatment, sulphur wire injection, inclusion control and slag manipulation. High carbon and low alloy steels are electro-magnetically stirred during casting. Cast blooms are reheated and hot rolled into billets and blooms followed by air-cooling.

End use after further processing

Agreement regarding the end use of all material on enquiry **must be** reached prior to the placing of orders, so as to establish the most suitable steel-making route. Billets and blooms are regarded as semi-finished products, therefore no guarantee can be given as to the mechanical properties of the final product.

Surface quality

Billets and blooms are supplied to a maximum surface defect depth of 3%, however better surface guarantees can be considered on enquiry.

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

Note: Defect depth levels less than 3% will only be considered for sizes $\leq 150\text{mm}$.

For further information, contact:

ArcelorMittal South Africa Limited, Newcastle Works, PO Box 2, Newcastle 2940. Tel (034) 314-8629 Fax (034) 314-8211
e-mail address: enquiries.newcastle@arcelormittal.com

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Sizes and tolerances for billets

	Billet size (mm)	Approximate nominal mass (kg/m)	Tolerances (mm)		
			Across flats	Max difference between diagonals	Corner radius (mm)
⊗	50	18,951	± 1,5	2,5	8 - 12
	60	27,586	± 1,5	2,5	8 - 12
⊗	63	30,483	± 1,5	2,5	8 - 12
	70	37,791	± 1,5	2,5	8 - 12
⊗	75	43,482	± 1,5	2,5	8 - 12
⊗	76	44,668	± 1,5	2,5	8 - 12
	80	49,566	± 2,0	2,5	8 - 14
	90	62,911	± 2,0	2,5	8 - 14
	92	65,769	± 2,0	2,5	8 - 14
	100	77,826	± 2,0	2,5	8 - 14
	101	79,404	± 2,0	2,5	8 - 14
	101,5	80,199	± 2,0	2,5	8 - 14
	102	80,998	± 2,0	2,5	8 - 14
	102,5	81,800	± 2,0	2,5	8 - 14
	105	85,872	± 2,0	2,5	8 - 14
	110	94,311	± 2,0	2,5	8 - 14
⊗	112,5	98,678	± 2,0	2,5	8 - 14
	115	103,142	± 2,0	2,5	8 - 14
	120	112,366	± 2,0	2,5	8 - 14
	121	114,258	± 2,0	2,5	8 - 14
	125	121,982	± 2,0	2,5	8 - 14
	130	131,991	± 2,0	2,5	8 - 14
	131	134,040	± 2,0	2,5	8 - 14

⊗ Non standard, available on enquiry only

Sizes and tolerances for round-edged blooms

Bloom size (mm)	Approximate nominal mass (kg/m)	Tolerances		
		Across flats (mm)	Max difference between diagonals	Corner radius (mm)
150 x 130	152,401	± 3	3,0	8 - 16
140	153,186	± 3	3,0	8 - 16
150	175,951	± 3	3,0	8 - 16
153	183,087	± 3	3,0	8 - 16
158	195,295	± 3	3,0	8 - 16
155	187,922	± 3	3,0	8 - 16
160	200,286	± 3	3,0	8 - 16
170	226,191	± 3	3,0	8 - 16
178	248,046	± 3	3,0	8 - 16
180	253,666	± 3	3,0	8 - 16
187	273,833	± 3	3,0	8 - 16
191	285,702	± 3	3,0	8 - 16
192	288,709	± 3	3,0	8 - 16
200	313,326	± 3	3,0	8 - 16
200x100	156,326	± 3	3,0	8 - 16
207	335,691	± 3	3,0	8 - 16
210	345,511	± 3	3,0	8 - 16
260	531,336	± 5	6,0	n/a

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Lengths and tolerances

Standard length range

Billets:	4,5m – 17m (Increments of 0,5 meter) (<8.6m On enquiry only)
Blooms:	4,45 – 11,5m (Increments of 1 meter) (<6.1m & >11.5m On enquiry only) <i>Note: Except for sizes 140mm, 150mm & 210mm</i>
Cast Blooms 260mm x 260mm:	4,5 – 13m

Maximum length of bloom sizes

Bloom sizes (mm)	Length
140 x 140	17,0m
150 x 150	17,0m
160 x 160	11,5m
170 x 170	11,5m
180 x 180	11,5m
187 x 187	11,5m
191 x 191	11,5m
200 x 200	11,5m
210 x 210	10,0m
260 x 260	13,0m

Note: 12 meter lengths on request only for bloom sizes 170mm to 200mm

Tolerances

=Billet sizes ≥50mm to <80mm	Standard tolerance	Special tolerance ^{Note} (Rolled to: SPE 222 Special)
Camber/straightness	7mm/m in any one meter up to a maximum of 50mm over the entire length	Equal to standard tolerance
Twist	1,5° per meter – maximum 10° over total length.	0,5° per meter – maximum 5° over total length.
Squareness	With regard to adjacent billet faces 90° ± 2,5°	Equal to standard tolerance
Cutting condition / Squareness of ends	Cold friction saw cut	Equal to standard tolerance
Length	-0 + 50mm	Equal to standard tolerance

Billet sizes ≥80mm to <130mm	Standard tolerance	Special tolerance ^{Note} (Rolled to: SPE 222 Special)
Camber/straightness	7mm/m in any one meter up to a maximum of 50mm over the entire length.	Equal to standard tolerance
Twist	1,5° per meter – maximum 10° over total length.	0,5° per meter, max 5° over total length
Shear spread	≤115mm : 10mm per side, >115mm and < 130mm : 20mm per side	Equal to standard tolerance
Shear drag	5,0mm maximum	Equal to standard tolerance
Squareness	With regard to adjacent billet faces 90° ± 2,5°	Equal to standard tolerance
Cutting condition / Squareness of ends	8.6m m and longer are shear cut, with the cut surfaces at 90° ± 3,0mm. Shorter lengths are shear cut in multiples and then flame cut to length. Flame cut surface at 90° ± 5,0mm.	Equal to standard tolerance
Length	± 100mm	Equal to standard tolerance
Shear deformation	10mm over 80mm from front end	Equal to standard tolerance
Bend end (distortion)	25mm maximum, measured over the first 500mm of the length	Equal to standard tolerance

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Billet sizes ≥140mm to ≤210mm	Standard tolerance	Special tolerance ^{Note} (Rolled to: SPE 222 Special)
Camber/straightness	7mm/m in any one meter up to a maximum of 50mm over the entire length. (200 and 210mm Bloom: 7mm/m in any one meter up to a maximum of 70mm over the entire length)	Equal to standard tolerance
Twist	1,0° per meter – maximum 5° over total length.	Equal to standard tolerance
Shear spread	≥ 140mm ≤ 210mm: 20mm/side	Equal to standard tolerance
Shear drag	5,0mm maximum	Equal to standard tolerance
Squareness	With regard to adjacent billet faces 90° ± 2,5°	Equal to standard tolerance
Cutting condition / Squareness of ends	6,1m and longer are shear cut, with the cut surfaces at 90° ± 3,0mm. Shorter lengths are shear cut in multiples and then flame cut to length. Flame cut surface at 90° ± 5,0mm.	Equal to standard tolerance
Length	± 150mm	Equal to standard tolerance
Shear deformation	15mm over 80mm from front end	Equal to standard tolerance
Bend end (distortion)	50mm maximum, measured over the first 800mm of the length	30mm maximum, measured over the first 800mm of the length

Note: A price premium will be added for the tighter tolerance range.

Special tolerance: The capacity is limited to 1200ton per month due the capacity limitations of the Jack Pres

Standard steel specifications

Specification	Code	C	Mn	P	S	Si	Note
SAE 1006	285 135	0,08x	0,40/0,60	0,025x	0,025x	0,15/0,30	A
SAE 1006	285 250	0,08x	0,30/0,50	0,025x	0,025x	0,15x	-
SAE 1008	098 186	0,10x	0,30/0,50	0,025x	0,025x	0,08/0,15	-
SAE 1008	098 180	0,10x	0,30/0,50	0,030x	0,030x	0,35x	A
SAE 1010	758 140	0,08/0,13	0,40/0,60	0,030x	0,030x	0,15/0,25	A
SAE 1015	112 101	0,13/0,18	0,40/0,60	0,030x	0,030x	0,15/0,35	A
SAE 1015	112 487	0,11/0,17	0,30/0,60	0,025x	0,025x	0,05x	A
SAE 1018	747 219	0,15/0,20	0,60/0,90	0,030x	0,030x	0,15/0,35	A
SAE 1020	916 160	0,18/0,23	0,30/0,60	0,030x	0,030x	0,15/0,35	A
SAE 1045	521 500	0,43/0,50	0,60/0,90	0,030x	0,030x	0,35x	A
SAE 1070	591 487	0,65/0,75	0,60/0,80	0,040x	0,050x	0,15/0,35	-
SS 10/200	304 580	0,40/0,55	0,60/1,00	0,060x	0,060x	0,10/0,35	-
SAE/AISI 15B36	792 017	0,32/0,37	1,20/1,50	0,030x	0,030x	0,10/0,30	C
DIN 17140 D53-2	226 608	0,50/0,54	0,60/0,80	0,025x	0,025x	0,15/0,30	-
DIN 17140 D63-2	229 613	0,60/0,64	0,60/0,80	0,030x	0,030x	0,15/0,35	-
DIN 17140 D68-2	232 624	0,65/0,69	0,60/0,80	0,020x	0,020x	0,15/0,30	-
SABS 1431Gr 300WA	376 002	0,18/0,22	1,05/1,20	0,030x	0,040x	0,15/0,25	A&B
⊗ JIS G3101 SS400	309 160	0,14/0,18	0,50/0,70	0,030x	0,030x	0,20/0,30	-
JIS G3506 SWRH 62A	057 180	0,61/0,65	0,40/0,60	0,020x	0,020x	0,15/0,30	-
JIS G3506 SWRH 72B	022 550	0,70/0,74	0,60/0,80	0,020x	0,020x	0,15/0,30	-
JIS G3503 SWRY 11	568 001	0,05/0,09	0,40/0,60	0,025x	0,025x	0,10x	-
DIN 17100: RREST 52/3	474 008	0,18x	Al, 02/, 06; Nb, 003/, 10 & CE = 0,45max CE = C + Mn/6 + (Cr+Mo+V)/5 + (Ni+Cu)/15				
BS 4449/1988 460 MPA	434 210	0,20/0,24	N, 007/, 012; V, 05/, 07 & CE = 0,51 max CE = C + Mn/6 + (Cr+Mo+V)/5 + (Ni+Cu)/15				
Commercial Quality	250 555	0,30x	CE = 0,51max CE = C + Mn/6 + (Cr+Mo+V)/5 + (Ni+Cu)/15				

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- ⊗ Non-standard - only available on enquiry.
- A Steel will be suitable for galvanising.
- B Only an aim analysis and not a specification - specification analysis according to the international specification.
- C Al & Ti= 0.02/0.04 (aim), B=0.0005/0.003, Cr= 0.08/0.22

Certification

Steel will be certified to the above ladle analyses only. Product analyses are subject to deviations and will be in accordance with SAE/AISI standards. The mechanical and chemical laboratories of Mittal Steel South Africa, Newcastle Steel are SANAS accredited facilities.

Quantity

Minimum quantity per item is the yield of one cast (approximately 150 tons).

An item consists of all products of the same dimensions made of steel manufactured according to the same specifications.

Basis for invoicing

Gross mass as measured by Mittal Steel South Africa's assized mass measuring equipment.

Overage and underage

Orders may specify:

+0% -5% of ordered mass

(Provided mass of one bundle is less than 5% of ordered mass)

+5% -5% of ordered mass

(Provided mass of one bundle is less than 10% of ordered mass)

Random short lengths

Customers must be prepared to accept up to 5% of any item in random short lengths from 2 meter shorter up to the length ordered.

Bundling

- Billets in sizes of up to and including 78 mm can be tied in bundles of between 3 – 5 tons.
- Billets in sizes over 78 mm up to and including 120 mm can be strapped in bundles of 2 and 4 units.
- Billets in sizes over 120mm up to and including 130mm can be strapped in bundles of 2 and 4 units.
- Blooms in sizes of 140 mm and over are despatched unbundled.

Marking

Cast numbers

Cast numbers are machine stamped or stickers on one end of the billet or bloom.

Colour marking

On request, material may be ordered colour marked as follows:

- A maximum of three stripes per marking.

The following five colours are available: blue, green, pink, red and white.

Labelling

The following information will be provided on adhesive labels:

- Mittal Steel South Africa's order number
- Batch number if required, following directly on the customer's order no
- Cast number
- Mass
- Steel specification
- Dimensions
- Customer's mark (if required)
- Country of origin and trade mark

Quality assurance

Quality assurance systems based on the requirements of SANS ISO 9001: 2000 are in operation.

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