

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 electromagnetically stirred during casting. Cast blooms are reheated and hot rolled into billets and blooms followed by air-cooling.

Quality assurance

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

End use after further processing

Agreement regarding the end use of all material on enquiry **must be** reached prior to the placing of orders, to establish the most suitable steel-making route. Billets and blooms are regarded a semi-finished product, 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 ≤ 150 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)
100x100	77.826	± 2.0	2.5	8 - 14
101x101	79.404	± 2.0	2.5	8 - 14
101.5x101.5	80.199	± 2.0	2.5	8 - 14
102x102	80.998	± 2.0	2.5	8 - 14
102.5x102.5	81.800	± 2.0	2.5	8 - 14
105x105	85.872	± 2.0	2.5	8 - 14
110x110	94.311	± 2.0	2.5	8 - 14
⊗ 112.5x112.5	98.678	± 2.0	2.5	8 - 14
115x115	103.142	± 2.0	2.5	8 - 14
120x120	112.366	± 2.0	2.5	8 - 14
121x121	114.258	± 2.0	2.5	8 - 14
125x125	121.982	± 2.0	2.5	8 - 14
130x130	131.991	± 2.0	2.5	8 - 14
131x131	134.040	± 2.0	2.5	8 - 14

Note: Rolling tolerance according to SPE 222

⊗ 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)
150x130	152.401	± 3	3.0	8 - 16
140x140	153.186	± 3	3.0	8 - 16
150x150	175.951	± 3	3.0	8 - 16
153x153	183.087	± 3	3.0	8 - 16
158x158	195.295	± 3	3.0	8 - 16
155x155	187.922	± 3	3.0	8 - 16
160x160	200.286	± 3	3.0	8 - 16
170x170	226.191	± 3	3.0	8 - 16
178x178	248.046	± 3	3.0	8 - 16
180x180	253.666	± 3	3.0	8 - 16
187x187	273.833	± 3	3.0	8 - 16
191x191	285.702	± 3	3.0	8 - 16
192x192	288.709	± 3	3.0	8 - 16
200x200	313.326	± 3	3.0	8 - 16
200x100	156.326	± 3	3.0	8 - 16
207x207	335.691	± 3	3.0	8 - 16
210x210	345.511	± 3	3.0	8 - 16

Note: Rolling tolerance according to SPE 220

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Lengths

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>

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

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

Tolerances

Billet sizes ≥100mm to <131mm	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 <131mm: 20mm per side	Equal to standard tolerance
Shear drag	5.0mm maximum	Equal to standard tolerance
Squareness	With regards to adjacent billet faces 90° ± 2.5°	Equal to standard tolerance
Cutting condition / Squareness of ends	8.6m 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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Tolerances continue:

Bloom 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 regards 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	C	Mn	P	S	Si	Note
SAE 1006	0,08x	0,40/0,60	0,025x	0,025x	0,15/0,30	A
SAE 1006	0,08x	0,30/0,50	0,025x	0,025x	0,15x	-
SAE 1008	0,10x	0,30/0,50	0,025x	0,025x	0,08/0,15	-
SAE 1008	0,10x	0,30/0,50	0,030x	0,030x	0,35x	A
SAE 1010	0,08/0,13	0,40/0,60	0,030x	0,030x	0,15/0,25	A
SAE 1015	0,13/0,18	0,40/0,60	0,030x	0,030x	0,15/0,35	A
SAE 1015	0,11/0,17	0,30/0,60	0,025x	0,025x	0,05x	A
SAE 1018	0,15/0,20	0,60/0,90	0,030x	0,030x	0,15/0,35	A
SAE 1020	0,18/0,23	0,30/0,60	0,030x	0,030x	0,15/0,35	A
SAE 1045	0,43/0,50	0,60/0,90	0,030x	0,030x	0,35x	A
SAE 1070	0,65/0,75	0,60/0,80	0,040x	0,050x	0,15/0,35	-
SS 10/200	0,40/0,55	0,60/1,00	0,060x	0,060x	0,10/0,35	-
SAE 15B36	0,32/0,37	1,20/1,50	0,030x	0,030x	0,10/0,30	C
ISO 16120-2:2011 C52D	0,50/0,54	0,60/0,80	0,025x	0,025x	0,15/0,30	-
ISO 16120-2:2011 C62D	0,60/0,64	0,60/0,80	0,030x	0,030x	0,15/0,35	-
ISO 16120-2:2011 C68D	0,65/0,69	0,60/0,80	0,020x	0,020x	0,15/0,30	-
EN 10025-2- S275JR +AR	0,18/0,22	1,05/1,20	0,030x	0,040x	0,15/0,25	A&B
DIN 17100/1980 RRST 52/3	0,18x	Al, 02/, 06; Nb, 003/, 10 & CE = 0,45max CE = C + Mn/6 + (Cr+Mo+V)/5 + (Ni+Cu)/15				
Commercial Quality	0,30x	CE = 0,51max CE = C + Mn/6 + (Cr+Mo+V)/5 + (Ni+Cu)/15				

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- 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 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

Actual mass as measured by Mittal Steel South Africa's weighing 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 ≥ 100 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 trademark

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