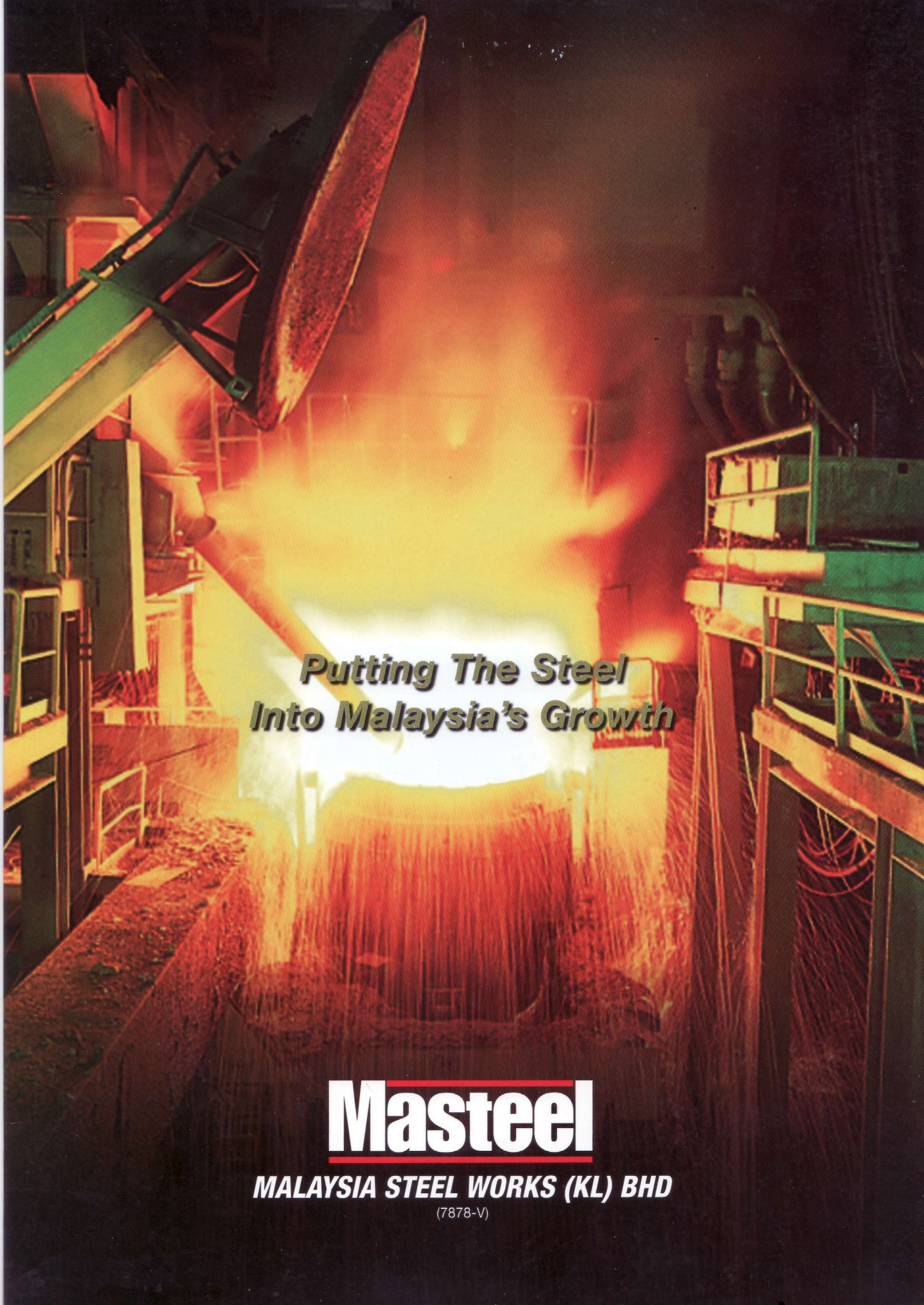

Putting The Steel
Into Malaysia's Growth
Masteel
MALAYSIA STEEL WORKS (KL) BHD
(7878-V)

Ladle Furnace

Continuous billet casting

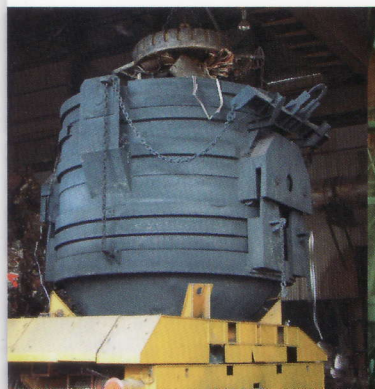
MALAYSIA STEEL WORKS (KL) BHD

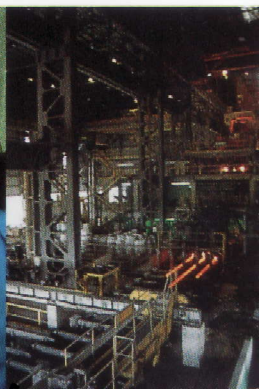
Malaysia Steel Works (KL) Bhd factories are located strategically at Petaling Jaya and Bukit Raja, Klang in the state of Selangor.

The Bukit Raja factory produces billets which are the feed stock for the rolling mill in Petaling Jaya. Both the manufacturing plants are equipped with modern equipment and are fully computerised to produce precision quality products from both the mills.

The principal activities of Masteel is in the manufacturing and marketing of high tensile deformed bars, mild steel bars and prime steel billets. Masteel has a wide network of customers domestically as well as internationally.

The finished products manufactured by Masteel conforms to those required by SIRIM (MS 146 : 2014) as well as the ISO 9001 standards.



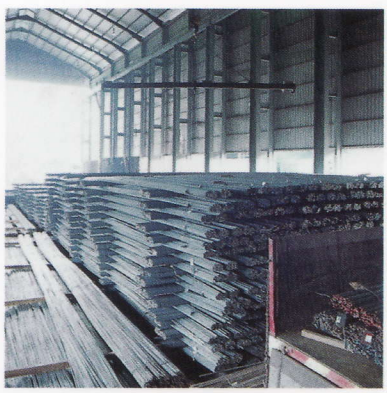


18 Stand continuous rolling mill

Malaysia Steel Works (KL) Bhd began its operations in 1971, producing commercial grade mild steel round bars at its rolling mill in Petaling Jaya, Selangor.

In 1989, the company embarked on an extensive upgrading programme, which saw the entire old mill being replaced with a modern semi-continuous mill utilising the latest technology in DC drives and computerised control from Schloemann of Germany and Britain. The capacity of the mill improved to 120,000mt per year. This upgrade was in line with our concept of offering high quality products to our valued customers.

In 1997, the mill was further upgraded to become a fully continuous mill together with the addition of a new reheating furnace that could utilise 1 ton billets. The capacity of the mill was further increased to 350,000mt per year. A thermo quenching line to produce grade 500 deformed bars to meet the ever increasing demand of our customers was also added. In December 1997, the mill obtained the ISO 9002 certification in recognition of its commitment and dedication to quality management system.



In 1998, a new milestone in the history of Masteel was realised when its Meltshop in Bukit Raja went into commercial production. The billet production plant supplied by Danieli became one of the most modern meltshop in operation in the region. The electric arc furnace is featured with ultra-high power [UHP] transformers, eccentric bottom tapping (EBT) configuration and fully automated furnace process control and alloy additive plant. A refining ladle furnace was also added to increase the output & quality of steel billets produced.

A multi-stand large curvature continuous casting machine which could cast high-grade billets up to 160mm x 160mm was also installed. The installed capacity of the Meltshop is 450,000mt of billets per year.

The quality control laboratory of the Meltshop is equip with state of the art testing equipments such as computer controlled spectrometer.

The high consistency of the quality billets produced by the meltshop has further enhanced the position of the company as one of the premier steel producer in Malaysia.

EFFECTIVE CROSS SECTIONAL AREA OF DEFORMED BARS

The formula given in the standard is:
cross sectional area (in mm2)
= effective cross sectional area

$$= \frac{M}{0.00785\ L}$$

where,

M is the mass of the bar (in kg)
L is the length of the bar (in meter)

MILL CERTIFICATE

All customers are issued with a mill certificate for every purchase from Malaysia Steel Works. The mill certificate guarantees that the product is tested in accordance to MS146 : 2014 and shall carry all relevant information pertaining to the product.

TAGGING OF PRODUCT

All products are tagged with the following information, ie; heat number, date of manufacture, nominal weight and number of pieces per bundle.

ACRS
ABN: 40 096 692 545
Certificate Number: 80902

MS
SIRIM
PM012401

CIDB MALAYSIA
No. Pendaftaran: 1151218SL0069

TUV NORD
TÜV NORD CERT GmbH
ISO 9001
QMS No.: 44 100 18 92 0003

Hot Rolled Steel Bars

Product Specifications:
MS 146 : 2014 and BS 4449 : 2005
and ASNZ 4671 : 2001

Product Range:
High tensile deformed bar 10, 12, 16, 20, 24, 25, 28, 32, 40 mm diameter.

Standard Length:
High tensile deformed bars 12 meters.

Maximum Carbon Equivalent Value Is Calculated Using The Following Formula:

$$C + \frac{Mn}{6} + \frac{Cr + Mo + V}{5} + \frac{Ni + Cu}{15}$$

where,

C	=	% of Carbon content
Mn	=	% of Manganese content
Cr	=	% of Chromium content
V	=	% of Vanadium content
Mo	=	% of Molybdenum content
Cu	=	% of Copper content
Ni	=	% of Nickel content

Mechanical Properties

Standard	Grade	Normal Size of Bar mm	Yield Strength, Re N / mm²	Tensile/ Yield Strength Ratio Rm / Re	Total Elongation at Maximum Force Agt (%)	Bend Test	Rebend Test
MS 146 : 2014	B 500B	All Sizes	500 – 650	≥ 1.08	≥ 5.0	No Defect - Mandrel 4D of bar Bend Angle 90° (All Sizes)	No Defect - Mandrel 4D of ≤ 16 bar 7D of > 16 bar Age and bend back by at least 20°
ASNZ 4671 : 2001	500N					No Defect - Mandrel 4D of bar Bend Angle 90° (d ≤ 16) 180° (d ≥ 20)	No Defect - Mandrel 4D of bar Rebend Angle 90° (d ≤ 16) NA (d ≥ 20)

Chemical Compositions

	Deformed bars
Element	Grade 500% Max
Carbon	0.22
Sulphur	0.050
Phosphorous	0.050
Nitrogen	0.012
Copper	0.80
Carbon Equivalent Value	0.44

Fatigue Testing

Bar Size (mm)	Stress Range N / mm²	Cycles of Stress
≤ 16	200	Endure 5×10^6
> 16 ≤ 20	185	
> 20 ≥ 25	170	
> 25 ≤ 32	160	
> 32	150	

Nominal Cross Sectional Area and Mass

Normal Sizes	Cross Sectional Area	Mass Per Master Run	Normal Weight Per Bundle	Tolerance on Mass Per Master Run (%)
mm	mm²	kg	(MT)	M.S.
10	78.5	0.617	1.022	+4.5 to -4.5
12	113	0.888	1.023	+4.5 to -4.5
16	201	1.58	1.024	+4.5 to -4.5
20	314	2.47	1.008	+4.5 to -4.5
24	452	3.55	0.980	+4.5 to -4.5
25	491	3.85	1.016	+4.5 to -4.5
28	616	4.83	1.044	+4.5 to -4.5
32	804	6.31	1.060	+4.5 to -4.5
40	1257	9.86	1.065	+4.5 to -4.5

Masteel

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(7878-V)

Wisma Masteel, 29C, Off Jalan Tandang, Section 51,
46050 Petaling Jaya, Selangor Darul Ehsan, Malaysia
Tel: 603 - 7781 1611 Fax: 603 - 7781 5811, 603 - 7781 3679
e-mail: mswkl@masteel.com.my
website: www.masteel.com.my