

## AS/NZS 3678 - 450

### XLERPLATE® steel

**DATE:** AUGUST 2009

#### PRODUCT DESCRIPTION

- A high strength structural steel plate with nominal yield strength of 450 MPa

#### SUPPLY CONDITIONS

- Thickness Range: 10mm – 40mm
- Availability: By enquiry only
- Edge Condition: Trimmed
- Tolerances: AS1365
- Ultrasonic Inspection: AS1710 available
- Surface Inspection: BlueScope Steel (third party available)
- Certification: BlueScope Steel (third party endorsed available)

#### TYPICAL USES

- General fabrication
- Structural members
- High-rise buildings
- Bridges
- Storage tanks

#### FEATURES & BENEFITS

- Guaranteed minimum strength levels
- Excellent weldability
- Good formability

#### WARNINGS

- This material should be used in conjunction with the appropriate structural design and welding standards.
- Maximum recommended temperature for hot forming 620°C. If heated above 620°C, mechanical properties may deteriorate.

#### NEAREST OVERSEAS SPECIFICATIONS

ASTM A572M-415    JISG 3106-SM520

#### For more information contact:

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CHEMICAL COMPOSITION		
Element	Guaranteed Maximum % <sup>(2)</sup>	Typical %
Carbon	0.22	0.13
Silicon	0.55	0.45
Manganese	1.80	1.50
Phosphorus	0.040	0.020
Sulfur	0.030	0.003
Aluminium	0.100	0.035
Nickel	0.50	0.20
Copper	0.60	0.30
Micro alloys - Nb <sup>(3)</sup>	0.150	0.015
(when added) - Ti	0.040	0.018
CEQ (IIW) <sup>(1)</sup>	0.48	0.415

$$(1) \text{ CEQ (IIW)} = C + \frac{\text{Mn}}{6} + \frac{(\text{Cr} + \text{Mo} + \text{V})}{5} + \frac{(\text{Cu} + \text{Ni})}{15}$$

(2) All values shown refer to the relevant Australian Standard unless stated otherwise

(3) Niobium + Titanium + Vanadium ≤ 0.15%

MECHANICAL PROPERTIES					
Tensile Properties (Transverse)		Thickness Range (mm)			
		10 < t < 12	12 < t < 20	20 < t < 32	32 < t < 40
Guaranteed Min.	Yield Strength (MPa)	450	450	420	400
	Tensile Strength (MPa)	520	520	500	500
	Elong. on 5.65 √ So (%)	16	16	18	18
Typical	Yield Strength (MPa)	480 - 570	470 - 560	450 - 520	420 - 480
	Tensile Strength (MPa)	550 - 620	540 - 620	530 - 600	520 - 580
	Elong. on 5.65 √ So (%)	22 - 32	20 - 30	20 - 30	20 - 30
Typical Charpy Impact Properties	Longitudinal at -15°C on 10 x 10mm specimen	Absorbed Energy (joules)			
		Avg. of 3		Ind.	
		100 - 240		85 - 300	

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WELDABILITY		
	Guaranteed Maximum	Typical
Group 5 <sup>(4)</sup>	5	4

(4) Refer to WTIA Technical Note 1 or AS/NZS 1554.1

FORMABILITY (recommended min. inside radii)		HARDNESS
10 < t < 20mm	Long 4.5T    Trans 3.0T	Typical
t > 20mm	Hot form (max 620°C)	165 - 190 BHN

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