

GUIDE TO USING DATASHEETS

Xlerplate®

AS/NZS 3678 - 250

XLERPLATE® steel

DATE: AUGUST 2009

PRODUCT DESCRIPTION

- A medium strength structural steel plate product

SUPPLY CONDITIONS

- Thickness Range: 5mm – 150mm
- Availability: Plate is available in standard sizes
- Edge Condition: Trimmed / Untrimmed (Mill)
- Tolerances: AS1365
- Ultrasonic Inspection: AS1710 available
- Surface Inspection: BlueScope Steel (third party)
- Certification: BlueScope Steel (third party)

TYPICAL USES

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

FEATURES & BENEFITS

- Guaranteed minimum strength
- Excellent weldability
- Excellent formability

WARNINGS

- This material should be used in accordance with the relevant Australian Standard (refer Clause 7 AS/NZS 3678)
- Where impact testing is required, refer to the relevant Australian Standard (refer Clause 7 AS/NZS 3678)

NEAREST OVERSEAS STANDARDS

ASTM A36 ISO 630-Fe430

For more information contact
BlueScope Steel Direct
Phone: 1800 800 789
Email: steel@blue.com.au
Website: www.blue.com.au

Date Published: August 2009

You must seek specific advice

analysis and testing. BlueScope Steel

reliance on this datasheet. These datasheets will be updated

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Xlerplate®

DATASHEET

AS/NZS 3678 - 250

XLERPLATE® steel

CHEMICAL COMPOSITION					
Element	Guaranteed Maximum % ⁽¹⁾	Typical % / Thickness (mm)			
		5 ≤ t < 32	32 ≤ t < 50	50 ≤ t ≤ 115	115 < t ≤ 150
Carbon	0.22	0.155	0.14	0.15	0.15
Silicon	0.55	0.15	0.20	0.30	0.35
Manganese	1.70	0.65	1.10	1.20	1.35
Phosphorus	0.040	0.020	0.020	0.020	0.020
Sulfur	0.030	0.010	0.010	0.010	0.003
Aluminium	0.100	0.025	0.035	0.025	0.035
Titanium	0.040	—	0.018	0.018	0.018
CEQ (IIW) ⁽²⁾	0.43 ⁽³⁾	0.27	0.32	0.36	0.39

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

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

(3) This is lower than the AS/NZS 3678 maximum

MECHANICAL PROPERTIES							
Tensile Properties (Transverse)		Thickness Range (mm)					
		5 ≤ t ≤ 8	8 ≤ t ≤ 12	12 < t ≤ 50	50 ≤ t ≤ 80	80 ≤ t ≤ 115	115 < t ≤ 150
Guaranteed Min.	Yield Strength (MPa)	280	260	250	240	230	230
	Tensile Strength (MPa)	410	410	410	410	410	410
	Elong. on 5.65 √ So (%)	22	22	22	22	22	22
Typical	Yield Strength (MPa)	290 - 480	280 - 400	260 - 370	240 - 320	230 - 310	230 - 310
	Tensile Strength (MPa)	420 - 540	420 - 500	420 - 500	430 - 490	430 - 480	430 - 480
	Elong. on 5.65 √ So (%)	23 - 45	26 - 42	26 - 40	26 - 34	25 - 34	27 - 33

Charpy Impact Properties - Longitudinal at -15°C on 10 x 10mm specimen		Absorbed Energy (joules)	
		Avg. of 3	Ind.
Typical as rolled		50 - 200	30 - 250

WELDABILITY				
		Typical Group / Thickness (mm)		
		5 ≤ t < 32	32 ≤ t < 50	50 ≤ t ≤ 150
Group 4 ⁽⁴⁾		1	2	3

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

FORMABILITY (as annealed min. inside radii)			HARDNESS	
t ≤ 6mm	Long 1.5T	Trans 1.0T	Typical	
6 < t ≤ 10mm	Long 2.25T	Trans 1.5T	120 - 160 BHN	
10 < t ≤ 20mm	Long 3.0T	Trans 2.0T		
20 < t ≤ 50mm	Long 6.0T	Trans 4.0T		
t > 50mm	Hot form			

Date Published: August 2009. The information contained in this datasheet is provided by way of general information only and should not be relied upon by any person. You must seek specific advice as to the suitability of this product for the purpose for which, and the manner in which, you propose to use it. This may involve further independent analysis and testing. BlueScope Steel Limited and its related bodies corporate take no responsibility for any adverse consequences of any nature which arise as a result of reliance on this datasheet. These datasheets will be updated from time to time and the most up-to-date versions are available from www.xlerplate.com.au. XLERPLATE® is a registered trade mark of BlueScope Steel. BlueScope is a trade mark of BlueScope Steel Limited ABN 18 000 011 058.



1800 800 789

Using XLERPLATE® steel Datasheets

Datasheets are available for standard grades of XLERPLATE® steel. These datasheets contain important technical and application data required to support customers' use of these products.

Each datasheet contains an overview of the general features of the XLERPLATE® steel grade, including typical uses, the general supply condition and features and benefits. In addition, datasheets highlight the precautions that should be considered when using a particular grade of XLERPLATE® steel.

Datasheets also contain detailed information relating to the chemical and mechanical properties of the steel. This information is of particular relevance to engineers and designers.

XLERPLATE® steel datasheets are supported by a team of experienced technical experts at BlueScope Steel and can be contacted on 1800 800 789.

Using XLERPLATE® steel and XLERPLATE LITE™ steel Datasheets

The front page of the datasheet presents an overview of the steel grade, providing customers with a guide to the supply conditions of the steel and how it can be used.

Overview of available size range. Relevant applicable Standards and supply condition.

Precautions to follow when using this material.

Xlerplate®

DATASHEET

AS/NZS 3678 - 250

XLERPLATE® steel

DATE: AUGUST 2009

PRODUCT DESCRIPTION

- A medium strength structural steel plate product with nominal yield strength of 250 MPa

SUPPLY CONDITIONS

- Thickness Range: 5mm – 150mm
- Availability: Plate is available in standard sizes. For sizes outside the standard plate offer refer to XLERPLATE® steel Size Schedule 1
- Edge Condition: Trimmed / Untrimmed (Mill Edge)
- 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
- Excellent formability

WARNINGS

- This material should be used in conjunction with the appropriate structural design and welding standards.
- An untrimmed (Mill) edge may contain minor surface discontinuities as a result of the rolling process (refer Clause 7 AS/NZS 3678). It is recommended that a minimum of 50mm be removed from each untrimmed edge.
- Where impact testing is required refer to AS/NZS 3678 - 250L15.

NEAREST OVERSEAS SPECIFICATIONS

ASTM A36 ISO 630-Fe430A/Fe430B JISG 3101-SS400 JISG 3106-SM400A EN 10025

For more information contact:

BlueScope Steel Direct

Phone: 1800 800 789

Email: steeldirect@bluescopesteel.com

Website: www.xlerplate.com.au

Guideline only. Customers should discuss grade equivalents with BlueScope Technical Services.

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Publication date and disclaimer. Users should ensure they have the most recent version of the datasheet by checking at www.xlerplate.com.au

The back page details the chemical and mechanical specifications for the XLERPLATE® steel grade, as well as outlining its typical properties. This detailed information is of particular importance to designers and engineers during the design phase of a project. Additionally, the information presented gives fabricators and manufacturers some confidence in how the product will perform during manufacture and when in service.

Xlerplate

DATASHEET

AS/NZS 3678 - 250

XLERPLATE® steel

CHEMICAL COMPOSITION

Element	Guaranteed Maximum % ⁽²⁾	Typical % / Thickness (mm)			
		5 ≤ t < 32	32 ≤ t < 50	50 ≤ t ≤ 115	115 < t ≤ 150
Carbon	0.22	0.155	0.14	0.15	0.15
Silicon	0.55	0.15	0.20	0.30	0.35
Manganese	1.70	0.65	1.10	1.20	1.35
Phosphorus	0.040	0.020	0.020	0.020	0.020
Sulfur	0.030	0.010	0.010	0.010	0.003
Aluminium	0.100	0.025	0.035	0.025	0.035
Titanium	0.040	—	0.018	0.018	0.018
CEQ (IIW) ⁽¹⁾	0.43 ⁽²⁾	0.27	0.32	0.36	0.39

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

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

(3) This is lower than the AS/NZS 3678 maximum

MECHANICAL PROPERTIES

Tensile Properties (Transverse)		Thickness Range (mm)					
		6 < t ≤ 8	8 < t ≤ 12	12 < t ≤ 50	50 < t ≤ 80	80 < t ≤ 115	115 < t ≤ 150
Guaranteed Min.	Yield Strength (MPa)	280	260	250	240	230	230
	Tensile Strength (MPa)	410	410	410	410	410	410
	Elong. on 5.65 √ So (%)	22	22	22	22	22	22
Typical	Yield Strength (MPa)	290 - 480	280 - 400	260 - 370	240 - 320	230 - 310	230 - 310
	Tensile Strength (MPa)	420 - 540	420 - 500	420 - 500	430 - 490	430 - 480	430 - 480
	Elong. on 5.65 √ So (%)	23 - 45	26 - 42	26 - 40	26 - 34	25 - 34	27 - 33

Charpy Impact Properties - Longitudinal at -15°C on 10 x 10mm specimen

Typical as rolled	Absorbed Energy (joules)	
	Avg. of 3	Ind.
	50 - 200	30 - 250

WELDABILITY

Group 4 ⁽⁴⁾	4	Typical Group / Thickness (mm)		
		5 ≤ t < 32	32 ≤ t < 50	50 ≤ t ≤ 150
		1	2	3

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

FORMABILITY (recommended min. inside radii)

t ≤ 6mm	Long 1.5T	Trans 1.0T
6 < t ≤ 10mm	Long 2.25T	Trans 1.5T
10 < t ≤ 20mm	Long 3.0T	Trans 2.0T
20 < t ≤ 50mm	Long 6.0T	Trans 4.0T
t > 50mm	Hot form	

HARDNESS

Typical
120 - 160 BHN

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Guide to typical steel analysis on a thickness range basis for assistance in welding design.

Typical properties allowing customers to make informed decisions regarding special test requirements.

Information to assist in fabrication.

PRODUCT STANDARDS

Standard	Description
AS/NZS 3678 - Structural Steel	This Standard specifies requirements for the production and supply of hot rolled structural XLERPLATE® steel and XLERPLATE® steel floorplate.
AS/NZS 1594 - Hot Rolled Steel	This Standard specifies requirements for the production and supply of hot rolled XLERPLATE LITE™ steel and XLERPLATE LITE™ steel floorplate, rolled on a continuous mill.
AS 1548 - Pressure Vessel Steel	This Standard specifies requirements for hot rolled XLERPLATE® steel for use in boilers and pressure vessels in accordance with the 2008 version of the Standard.

XLERPLATE® STEEL

Datasheet	Description
AS/NZS 3678 - 250	A medium strength structural steel plate product with nominal yield strength of 250 MPa
AS/NZS 3678 - 250 floorplate	A hot rolled structural floorplate (raised pattern on one surface)
AS/NZS 3678 - 250L15	A structural steel plate product suitable for low temperature applications with nominal yield strength of 250 MPa and guaranteed impact properties at -15°C
AS/NZS 3678 - 300	A medium strength structural steel plate product with nominal yield strength of 300 MPa
AS/NZS 3678 - 300L15	A structural steel plate product suitable for low temperature applications with nominal yield strength of 300 MPa and guaranteed impact properties at -15°C
AS/NZS 3678 - 350	A high strength structural steel plate product with nominal yield strength of 350 MPa
AS/NZS 3678 - 350L15	A structural steel plate product suitable for low temperature applications with nominal yield strength of 350 MPa and guaranteed impact properties at -15°C
AS/NZS 3678 - 400	A high strength structural steel plate product with nominal yield strength of 400 MPa
AS/NZS 3678 - 400L15	A structural steel plate product suitable for low temperature applications with nominal yield strength of 400 MPa and guaranteed impact properties at -15°C
AS/NZS 3678 - 450	A high strength structural steel plate product with nominal yield strength of 450 MPa
AS/NZS 3678 - A1006	Low carbon and low strength structural steel plate product grade
AS/NZS 3678 - K1042	A heat treatable steel plate grade for general engineering applications
AS/NZS 3678 - WR350	Structural weather resistant steel plate product with nominal yield strength of 350 MPa
AS 1548 - PT430T (LO)	A fully killed, fine grained, Carbon-Manganese steel for boiler and pressure vessel applications
AS 1548 - PT460N (L20, L40)	A fully killed, fine grained, Carbon-Manganese steel for boiler and pressure vessel applications
AS 1548 - PT460NRA (LO, L20)	A fully killed, fine grained, Carbon-Manganese steel for boiler and pressure vessel applications
AS 1548 - PT460NR (LO, L20)	A fully killed, fine grained, Carbon-Manganese steel for boiler and pressure vessel applications
AS 1548 - PT460T (L20, L40, L50)	A fully killed, fine grained, Carbon-Manganese steel for boiler and pressure vessel applications
AS 1548 - PT490N (L20, L40, L50)	A fully killed, micro-alloyed, fine grained steel for boiler and pressure vessel applications
AS 1548 - PT490T (L20, L40, L50)	A fully killed, micro-alloyed, fine grained steel for boiler and pressure vessel applications
AS 1548 - PT490NRA (L20, L40, L50)	This grade may be used in situations where subsequent hot forming processes are carried out in a manner to replicate normalising (refer to AS 1548)
AS 1548 - PT490NR (L20, L40, L50)	A fully killed, micro alloyed, fine grained steel plate product for boiler and pressure vessel applications

XLERPLATE LITE™ STEEL

Standard	Description
AS/NZS 1594 - HA1	Hot rolled commercial forming steel product suitable for simple forming, welding and bending operations
AS/NZS 1594 - HA200	Hot rolled structural steel product with minimum yield strength of 200 MPa; good ductility and good weldability
AS/NZS 1594 - HA250	Hot rolled structural steel product with minimum yield strength of 250 MPa; good ductility and good weldability
AS/NZS 1594 - HA250 floorplate	A hot rolled structural steel floorplate (raised pattern on one surface) product with a minimum yield strength of 250 MPa and good weldability
AS/NZS 1594 - HA300	Hot rolled structural steel product with minimum yield strength of 300 MPa; good ductility and good weldability
AS/NZS 1594 - HA350	Hot rolled structural steel product with minimum yield strength of 350 MPa; good ductility and good weldability
AS/NZS 1594 - HW350	Hot rolled weather resistant steel structural product with minimum yield strength of 350 MPa; good ductility and good weldability

