AS 1548 - PT540T (L20, L40, L50) XLERPLATE® steel

Revision 1 November 2013

This literature supersedes all previous issues

Plate – PL **Pressure Vessel – PV**

GENERAL DESCRIPTION

A fully killed, fine grained, carbon-manganese steel for boiler and pressure vessel applications, with a guaranteed minimum tensile strength of 540MPa. Produced by thermo-mechanical controlled rolling

AUSTRALIAN STANDARDS

AS 1548: 2008
AS/NZS 1365: 1996

FEATURES & BENEFITS

- Grades available with guaranteed low temperature properties
- Superior weldability and formability
- Higher strength grade suitable for applications where good toughness is required (NOTE PT540 not available in 'N' or 'NR').

WARNINGS

- This material should be used in conjunctions with the appropriate pressure vessel design and welding standards
- Note this grade is not suitable for hot forming above 620°C
- Guidelines for cold bending, where fracture toughness is important are given in AS 4100 and AS1210
- This grade is not recognised in the ASME material code and does not carry the 'SA' prefix

NORMAL / OPTIONAL SUPPLY CONDITIONS

	Normal	Optional
Thickness Range	PT520T: 10mm – 40mm PT520TL20: 10mm – 40mm PT520TL40: 10mm – 40mm PT520TL50: 10mm – 40mm	
Availability	By enquiry only	
Edge Condition	Trimmed	
Tolerances	Thickness: AS1548: 2008 Others: AS/NZS 1365: 1996	
Ultrasonic Inspection		AS 1710: 2007 available
Surface Inspection	BlueScope Steel	Third party
Certification	BlueScope Steel	Third party endorsed

Optional supply conditions may be subject to dimensional restrictions

AS 1548 - PT540T (L20, L40, L50) XLERPLATE® steel

Revision 1 November 2013

This literature supersedes all previous issues

Plate – PL **Pressure Vessel – PV**

CHEMICAL COMPOSITION

Element	Guaranteed Maximum %	Typical %
Carbon	0.20	0.13
Silicon	0.60	0.45
Manganese	1.70	1.50
Phosphorus	0.040	0.020
Sulfur	0.030	0.003
Chrome	0.25	0.023
Nickel	0.50	0.20
Copper	0.40	0.30
Molybdenum	0.10	0.002
Aluminium	0.100	0.035
Titanium	0.040	0.018
Niobium	0.050	0.015
CEQ (IIW)	0.46	0.41

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

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

Additional alloys 0.2Ni, 0.3Cu

MECHANICAL PROPERTIES

Tensile Properties (Transverse)		Thickness (mm)	
		t < 16	16 < t ≤ 40
Yield Strength (MPa)	Guaranteed Min	450	420
	Typical	470 - 530	450 – 475
Tensile Strength (MPa)	Required	540 - 670	540 - 670
	Typical	560 - 620	540 – 560
Elong. On 5.65√S_0 (%)	Guaranteed Min	18	18
	Typical	25 - 30	25 - 32

Charpy Impact Properties	Longitudinal on 10 x 10mm specimen	Test Temperature °C	Absorbed Energy (joules)	
			Av. of 3	Ind.
Guaranteed Min	PT540T	-20	55	43
Typical			180 – 240	160 – 260
Guaranteed Min	PT540TL20	-20	55	43
Typical			180 – 240	160 – 260
Guaranteed Min	PT540TL40	-40	45	33
Typical			130 – 190	90 – 210
Guaranteed Min	PT540TL50	-50	42	31
Typical			120 – 180	80 - 200

AS 1548 - PT540T (L20, L40, L50) XLERPLATE® steel

Revision 1 November 2013

This literature supersedes all previous issues

Plate – PL **Pressure Vessel – PV**

PT540TH– Elevated Temp. Tensile Properties - Guaranteed Min 0.2% Proof Stress (MPa)									
Thickness (mm)	50°C	100°C	150°C	200°C	250°C	300°C	350°C	400°C	450°C
t ≤ 16	436	409	379	348	319	296	271	256	245
16 < t ≤ 40	407	382	353	325	298	276	253	239	230

FORMABILITY

Thickness (mm)	Long	Trans
t < 20	4.5t	3.0t
t ≥ 20	Hot forming*	

* This product is not suitable for hot forming at temperature > 620°C
Recommended min. inside radii

HARDNESS

Typical
160 – 190 BHN

WELDABILITY

Group
5

Refer to WTIA Technical Note 1 or AS/NZS 1554.1