

AS1548 - PT490T (L20, L40, L50) XLERPLATE® steel



Revision 1

September 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 490MPa. Produced by thermo-mechanical controlled rolling

AUSTRALIAN STANDARDS

AS 1548: 2008
AS/NZS 1365: 1996

FEATURES & BENEFITS

- Guaranteed design strength as per AS1210
- Grades available with guaranteed low temperature properties
- Superior weldability and formability
- Alternative to normalised grades where good toughness is required

WARNINGS

- This material should be used in conjunction with the appropriate pressure vessel design and welding standards
- This grade is not suitable for hot forming about 620°C. Where hot forming is required use AS 1548 – PT490NR/NRA/N
- 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	PT490T: 6mm – 60mm PT490TL20: 10mm – 60mm PT490TL40: 10mm – 40mm PT490TL50: 10mm – 40mm	
Availability	By enquiry only	
Edge Condition	Trimmed	
Tolerances	Thickness: AS 1548: 2008 Others: AS/NZS 1365: 1996	
Ultrasonic Inspection		AS 1710: 2007
Surface Inspection	BlueScope Steel	Third party
Certification	BlueScope Steel	Third party endorsed

Optional supply conditions may be subject to dimensional restrictions.

Australia 1800 800 789

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Please ensure you have the current data sheet for this product as displayed at www.steel.com.au



CHEMICAL COMPOSITION

Element	Guaranteed Maximum %	Typical % Thickness (mm)		
		T, TL20 (10 ≤ t < 16)	T, TL20 16 ≤ t ≤ 60	TL40, TL50 10 ≤ t ≤ 60
Carbon	0.20	0.09	0.13	0.13
Silicon	0.60	0.35	0.45	0.45
Manganese	1.70	1.50	1.50	1.50
Phosphorus	0.040	0.020	0.020	0.020
Sulfur	0.030	0.010	0.003	0.003
Chrome	0.25	0.027	0.023	0.023
Nickel	0.50	0.027	0.20	0.20
Copper	0.40	0.010	0.30	0.30
Molybdenum	0.10	0.003	0.002	0.002
Aluminium	0.100	0.035	0.035	0.035
Titanium	0.040	0.018	0.018	0.018
Niobium	0.050	0.024	0.015	0.015
CEQ (IIW)	0.46	0.34	0.41	0.41

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

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

MECHANICAL PROPERTIES

Tensile Properties (Transverse)		Thickness (mm)		
		t < 16	16 < t ≤ 40	40 < t ≤ 60
Yield Strength (MPa)	Guaranteed Min	360	340	330
	Typical	380 - 500	400 - 500	400 - 460
Tensile Strength (MPa)	Required	490 - 610		
	Typical	510 - 580	510 - 570	530 - 570
Elong. On 5.65√S ₀ (%)	Guaranteed Min	20		
	Typical	23 - 35	22 - 35	24 - 35

Charpy Impact Properties	Longitudinal on 10 x 10mm specimen	Test Temperature °C	Absorbed Energy (joules)	
			Av. Of 3	Ind.
Guaranteed Min	PT490T	-20	55	43
Typical			60 - 200	50 - 250
Guaranteed Min	PT490TL20	-20	55	43
Typical			60 - 200	50 - 250
Guaranteed Min	PT490TL40	-40	45	33
Typical			50 - 180	40 - 200
Guaranteed Min	PT490TL50	-50	42	31
Typical			50 - 150	40 - 180

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PT490TH– 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	348	327	303	278	255	236	217	204	192
16 < t ≤ 40	329	310	287	263	242	222	205	193	182
40 < t ≤ 60	319	300	278	255	234	216	199	187	176

FORMABILITY

Thickness (mm)	Long	Trans
t < 16	3.0t	2.0t
16 ≤ t ≤ 40	6.0t	4.0t
> 40	Hot forming**	

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

HARDNESS

Typical
140 – 180 BHN

WELDABILITY

Group
5

Refer to WTIA Technical Note 1 or AS/NZS 1554.1

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