

## AS 1548 - PT490NR (L20, L40, L50)

AS 1548 - PT490NR, AS 1548 - PT490NRL20, AS 1548 - PT490NRL40, AS 1548 - PT490NRL50

### XLERPLATE® steel

**DATE:** AUGUST 2009

### PRODUCT DESCRIPTION

- A fully killed, micro alloyed, fine grained steel for boiler and pressure vessel applications
- Produced by normalised rolling
- Guaranteed minimum tensile strength of 490 MPa

### SUPPLY CONDITIONS

- Thickness Range: 10mm – 60mm
- Availability: Enquiry only.
- Edge Condition: Trimmed
- Tolerances: Thickness - AS 1548, others - AS/NZS 1365
- Ultrasonic Inspection: AS 1710 available
- Surface Inspection: BlueScope Steel (third party available)
- Certification: BlueScope Steel (third party endorsed available)

### FEATURES & BENEFITS

- Grades with elevated temperature properties available
- Grades with low temperature properties available
- Good weldability
- Good formability

### WARNINGS

- This material should be used in conjunction with the appropriate pressure vessel design and welding standards.
- Customers should satisfy themselves through their own quality systems that the heat treatment process employed for hot forming produces the mechanical properties described.
- Guidelines for cold bending, where fracture toughness is important, are given in AS 4100 and AS 1210.
- This grade is not recognised in the ASME material code and does not carry the 'SA' prefix.

### NEAREST OVERSEAS SPECIFICATIONS

EN 10028-3-P355

### AS 1548 - 1995 EQUIVALENT

AS 1548 - 7 - 490R (LO)

### For more information contact:

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CHEMICAL COMPOSITION		
Element	Guaranteed Maximum % <sup>(2)</sup>	Typical % / Thickness (mm)
		10 < t ≤ 60
Carbon	0.20	0.13
Silicon	0.60	0.45
Manganese	0.90 - 1.70	1.50
Phosphorus	0.040	0.020
Sulfur	0.030	0.003
Niobium	0.010 - 0.050	0.015
Aluminium	0.100	0.035
Titanium	0.040	0.018
CEQ (IIW) <sup>(1)</sup>	0.46	0.41

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

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

(3) Additional alloys 0.2 Ni, 0.3 Cu.

MECHANICAL PROPERTIES				
Tensile Properties (Transverse)		Thickness Range (mm)		
		≤ 16	> 16 ≤ 40	> 40 ≤ t ≤ 60
Guaranteed Min.	Yield Strength (MPa)	360	340	330
	Tensile Strength (MPa)	490 - 610	490 - 610	490 - 610
	Elong. on 5.65 √ So (%)	20	20	20
Typical	Yield Strength (MPa)	385 - 445	380 - 440	380 - 430
	Tensile Strength (MPa)	500 - 540	500 - 540	500 - 540
	Elong. on 5.65 √ So (%)	26 - 35	26 - 35	24 - 32
Charpy Impact Properties	Longitudinal on 10 x 10mm specimen	Test Temp. °C	Absorbed Energy (joules)	
			Ave. of 3	Ind.
Guaranteed Min.	PT490NR	-20	55	43
Typical			80 - 180	60 - 200
Guaranteed Min.	PT490NRL20	-20	55	43
Typical			80 - 180	60 - 200
Guaranteed Min.	PT490NRL40	-40	45	33
Typical			50 - 120	40 - 140
Guaranteed Min.	PT490NRL50	-50	42	31
Typical			45 - 100	40 - 120

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MECHANICAL PROPERTIES									
PT490NRH - Elevated Temp. Tensile Properties - Guaranteed Min. 0.2% Proof Stress (MPa)									
Thickness	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 ≤ 80	319	300	278	255	234	216	199	187	176
80 < t ≤ 100	310	291	269	248	227	210	193	182	172

Values correspond to the lower trend curve determined according to EN10314 with a confidence limit of around 98% (2 standard deviations below the mean)

FORMABILITY (recommended min. inside radii)		HARDNESS	WELDABILITY
t < 16mm	Long 3.0T, Trans 2.0T	Typical	Group 5 <sup>(4)</sup>
16 ≤ t ≤ 40mm	Long 6.0T, Trans 4.0T	140 - 180 BHN	
t > 40mm	Hot form		

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

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