

AS 1548 - PT490N (L20, L40, L50)

AS 1548 - PT490N, AS 1548 - PT490NL20, AS 1548 - PT490NL40, AS 1548 - PT490NL50

XLERPLATE® steel

DATE: AUGUST 2009

PRODUCT DESCRIPTION

- A fully killed, micro-alloyed, fine grained steel for boiler and pressure vessel applications
- Produced by normalising, with stress relieved test pieces
- Guaranteed minimum tensile strength of 490 MPa

SUPPLY CONDITIONS

- Thickness Range: 10mm – 100mm
N, NL20: (10mm – 100mm)
NL40: (10mm – 80mm)
NL50: (10mm – 80mm)
- Availability: By 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.
- 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

ASTM A 537 Cl.1 ASTM A 737 Gr.B JISG 3126-SGV366 ISO 9328.2-P315 EN 10028-3-P355

AS 1548 - 1995 EQUIVALENT

SA/AS 1548 - 5 - 490N (L20, L40, L50)

SA/AS 1548 - 7 - 490N (L20, L40, L50)

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CHEMICAL COMPOSITION		
Element	Guaranteed Maximum % ⁽²⁾	Typical % / Thickness (mm)
		10 < t ≤ 8
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 - 00.50	0.015
Aluminium	0.100	0.035
Titanium	0.040	0.018
CEQ (IIW) ⁽¹⁾	0.46	0.41

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

(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 ≤ 80	> 80 ≤ 100
Guaranteed Min.	Yield Strength (MPa)	360	340	330	320
	Tensile Strength (MPa)	490 - 610	490 - 610	490 - 610	490 - 610
	Elong. on 5.65 √ So (%)	20	20	20	20
Typical	Yield Strength (MPa)	385 - 445	380 - 440	380 - 430	370 - 420
	Tensile Strength (MPa)	500 - 540	500 - 540	500 - 540	500 - 540
	Elong. on 5.65 √ So (%)	26 - 35	26 - 35	24 - 32	24 - 32
Charpy Impact Properties	Longitudinal on 10 x 10mm specimen	Test Temp °C	Absorbed Energy (joules)		
			Ave. of 3	Ind.	
Guaranteed Min.	PT490N	-20	55	43	
Typical			80 - 180	60 - 200	
Guaranteed Min.	PT490NL20	-20	55	43	
Typical			80 - 180	60 - 200	
Guaranteed Min.	PT490NL40	-40	45	33	
Typical			60 - 160	50 - 150	
Guaranteed Min.	PT490NL50	-50	42	31	
Typical			60 - 160	50 - 180	

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MECHANICAL PROPERTIES									
PT490NRAH - 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 ⁽⁴⁾
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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