

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 normalised rolling

AUSTRALIAN STANDARDS

AS/NZS 1548: 2008
AS/NZS 1365: 1996

FEATURES & BENEFITS

- Guaranteed tensile strength levels
- Grades with elevated temperature properties available
- Grades with guaranteed low temperature properties available.
- Excellent weldability and formability
- NR grades may be ordered mechanically tested in the normalised condition. This is designated NRA. See PT490NRA datasheet.
- This grade is recognised in the ASME material code

WARNINGS

- This material should be used in conjunction with the appropriate design and welding standards
- Guidelines for cold bending, where fracture toughness is important are given in AS 4100 and AS1210

NORMAL / OPTIONAL SUPPLY CONDITIONS

	Normal	Optional
Thickness Range	10mm – 60mm	
Availability	Enquiry only	
Edge Condition	Trimmed	
Tolerances	Thickness: AS 1548: 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

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CHEMICAL COMPOSITION

Element	Guaranteed Maximum %	Typical % Thickness (mm)
		10 ≤ t ≤ 60
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	0.010	0.015
CEQ (IIW)	0.42	0.41

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

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

Copper + Chrome + Molybdenum ≤ 0.45 %

MECHANICAL PROPERTIES

Tensile Properties (Transverse)		Thickness (mm)		
		t ≤ 16	16 < t ≤ 40	40 < t ≤ 60
Yield Strength (MPa)	Guaranteed Min	360	340	330
	Typical	470 - 495	410 - 490	400 - 460
Tensile Strength (MPa)	Required	490 - 610	490 - 610	490 - 610
	Typical	550 - 600	530 - 590	530 - 580
Elong. On 5.65√S ₀ (%)	Guaranteed Min	20	20	20
	Typical	22 - 26	26 - 40	30 - 40

Charpy Impact Properties	Longitudinal on 10 x 10mm specimen	Test Temp °C	Absorbed Energy (joules)	
			Av. Of 3	Ind.
Guaranteed Min	PT490NR	-20	55	43
Typical			100 - 230	60 - 240
Guaranteed Min	PT490NRL20	-20	55	43
Typical			100 - 230	60 - 240

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



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PT490NRH– 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 ≤ 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

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

Recommended min. inside radii

HARDNESS

Typical
140 – 180 BHN

WELDABILITY

Group
5

Refer to WTIA Technical Note 1 or AS/NZS 1554.1