

AS 1548 - PT460N (L20, L40)

AS 1548 - PT460N, AS 1548 - PT460NL20, AS 1548 - PT460NL40

XLERPLATE® steel

DATE: AUGUST 2009

PRODUCT DESCRIPTION

- A fully killed, fine grained, carbon-manganese steel for boiler and pressure vessel applications
- Produced by hot rolling and normalising
- Guaranteed minimum tensile strength of 460 MPa

SUPPLY CONDITIONS

- Thickness Range: 10mm – 100mm
- 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

- Guaranteed design strengths as per AS 1210
- Superior weldability and formability
- Grades available with guaranteed low temperature properties

WARNINGS

- This material should be used in conjunction with the appropriate structural 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 A662-Gr. B JISG 3118-SGV450 ISO 9328.2-P290 EN 10028-3-P275N EN 10028-2-P295GH

AS 1548 - 1995 EQUIVALENT

AS 1548 - 7 - 460N (L20, L40)

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CHEMICAL COMPOSITION			
Element	Guaranteed Maximum % ⁽²⁾	Typical % / Thickness (mm)	
		10 ≤ t ≤ 80	80 < t ≤ 100
Carbon	0.20	0.15	0.15
Silicon	0.60	0.35	0.35
Manganese	0.90 - 1.70	1.35	1.35
Phosphorus	0.040	0.020	0.020
Sulfur	0.030	0.010	0.003
Aluminium	0.100	0.035	0.035
Niobium	0.010 ⁽³⁾	-	-
CEQ (IIW) ⁽¹⁾	0.43	0.39	0.39

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

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

(3) Niobium (up to 0.030%) may be added for L20, L40, L50 designations

MECHANICAL PROPERTIES					
Tensile Properties (Transverse)		Thickness Range (mm)			
		10 < t ≤ 16	16 < t ≤ 40	40 < t < 80	80 < t ≤ 100
Guaranteed Min.	Yield Strength (MPa)	305	295	275	265
	Tensile Strength (MPa)	460 - 580	460 - 580	460 - 580	460 - 580
	Elong. on 5.65 √ S ₀ (%)	21	21	21	21
Typical	Yield Strength (MPa)	360 - 450	330 - 430	290 - 370	280 - 360
	Tensile Strength (MPa)	500 - 550	500 - 550	470 - 530	470 - 530
	Elong. on 5.65 √ S ₀ (%)	22 - 32	22 - 31	24 - 32	24 - 33
Charpy Impact Properties	Longitudinal on 10 x 10mm specimen	Test Temp. °C	Absorbed Energy (joules)		
			Ave. of 3	Ind.	
Guaranteed Min.	PT460N	0	31	23	
			50 - 150	40 - 180	
Guaranteed Min.	PT460NLO	0	51	38	
			55 - 150	40 - 180	
Guaranteed Min.	PT460NL20	-20	47	35	
			50 - 150	40 - 180	
Guaranteed Min.	PT460NL40	-40	45	33	
			50 - 120	40 - 150	

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MECHANICAL PROPERTIES									
PT460NH - 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	295	277	257	236	216	199	184	173	163
16 < t ≤ 40	285	268	249	228	209	192	178	167	157
40 < t ≤ 80	266	250	232	213	195	179	166	156	145
80 < t ≤ 100	256	241	223	206	188	173	160	150	141

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 < 20mm	Long 1.5T, Trans 1.0T	Typical	Group 4 ⁽⁴⁾
20 < t ≤ 50mm	Long 6.0T, Trans 4.0T	130 - 170 BHN	
t > 50mm	Hot form		

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

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