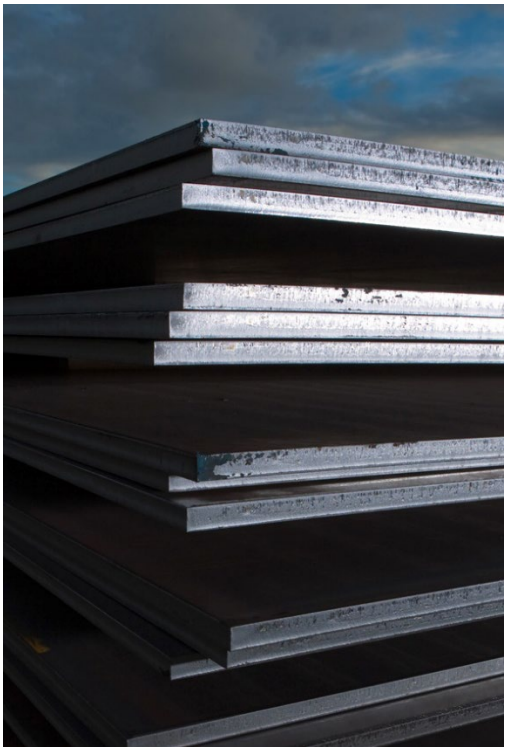
Uncoated Steel
Data Sheet

September 2019 - This literature supersedes all previous issues

XLERPLATE® steel

SA/AS 1548 – PT460NR (L0, L20)



General description

A fully killed, fine grained, carbon-manganese steel for boiler and pressure vessel applications, with a guaranteed minimum tensile strength of 460MPa. Produced by normalised rolling.

Features & benefits

Guaranteed minimum strength levels

Grades with elevated temperature properties available

Grades available with guaranteed low temperature properties

Excellent weldability

Excellent formability

This grade is recognised in the ASME material codes

NR grades may be ordered mechanically tested in the normalised condition. This is designated NRA. See PT460NRA datasheet

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 4100:2020 and AS 1210:2010.

Australian and International Standards

AS 1548:2008 (R2018)

AS/NZS 1365:1996 (R2016)

ISO 9001:2015 Quality System Certified

Normal / optional supply conditions

	Normal	Optional
Thickness Range	PT460NR: 8mm – 100mm PT460NRL20: 8mm – 40mm	-
Availability	Sizes outside standard plate offer – refer to XLERPLATE® size schedule 4	-
Edge Condition	Trimmed	-
Tolerances	Thickness: AS1548:2008 (R2018) Others: AS/NZS 1365:1996 (R2016)	-
Ultrasonic Inspection	-	AS 1710:2007
Surface Inspection	BlueScope	Third party
Certification	BlueScope	Third party endorsed

Optional supply conditions may be subject to dimensional restrictions

Chemical composition

Element	Guaranteed Maximum %
Carbon	0.20
Silicon	0.6
Manganese	1.70
Phosphorus	0.040
Sulfur	0.030
Chromium	0.25
Nickel	0.50
Copper	0.40
Molybdenum	0.10
Aluminium	0.10
Niobium**	0.010
Titanium	0.040
CEQ (IIW)	0.43

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

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

** Niobium up to 0.030% may be added for L20, L40 and L50 designations

Mechanical properties

Tensile Properties (Transverse)		Thickness (mm)			
		t ≤ 16	16 < t ≤ 40	40 < t ≤ 80	80 < t ≤ 100
Yield Strength (MPa)	Guaranteed Min	305	295	275	265
Tensile Strength (MPa)	Required	460 to 580	460 to 580	460 to 580	460 to 580
Elongation 5.65$\sqrt{S_0}$ (%)	Guaranteed Min	21	21	21	21

BlueScope

Charpy Impact Properties	Longitudinal on 10 x 10mm test piece	Test Temperature (ºC)	Absorbed Energy (joules)	
			Avg. of 3	Individual
Guaranteed Min	460NR	0	31	23
Guaranteed Min	460NRL0	0	51	38
Guaranteed Min	460NRL20	-20	47	35

Formability	Thickness (mm)	Longitudinal	Transverse
Recommended min inside Radius	t ≤ 20	1.5t	1.0t
	20 < t ≤ 50	6.0t	4.0t
	t > 50	Hot Forming	

This product is not suitable for hot forming above 620ºC

Fire hazard properties

Test & Evaluation Method	Result
Combustibility test for materials (AS 1530.1-1994 (R2016))	Not deemed combustible (steel substrate) #

These test results relate only to the behaviour of the test specimens of the material under the particular conditions of the test and they are not intended to be the sole criterion for assessing the potential fire hazard of the material in use.