Data Sheet - EnviroPlate™

Product Type: **Hot Rolled Plate - AS/NZS3678 : 2016**

General Description:

At Innovative Steel Solutions, our products are sourced and manufactured to meet strict sustainable protocols. Our products meet Australian standards and are ACRS accredited.

Our hot rolled plates come in various standards, grades, and sizes to meet your direct use, rolling, or fabricating requirements. Hot Rolled plates range from mild steel to high strength steel to suit all your project requirements.

Hot Rolled Plate Grades - Table 1.1

Available Hot Rolled Plate Grades					
Grade	L0	L15	L20	L40	SO
250	-	●	●	-	-
300	-	●	●	●	●
350	-	●	●	●	-
WR350	●	●	●	-	-
400	-	●	●	-	-

CNC-UT (Ultrasonic) Testing of all Plates

Standard Plate Sizes - Table 1.2

Width (mm)	Length (mm)
1200	2400
1219	2438
1500	6000
1520	6096
1800	6000
1830	6096
The maximum width is 3000 mm and length is 12000 mm, which Innovative is capable of supplying. Other-dimensional (custom) sizes are available upon agreement.	

Market Applications

- Structural Steel Construction
- Infrastructure
- Storage Tanks
- Fabrication & Erection
- Marine & Civil

Manufacturing Specifications

- AS/NZ 3678 : 2016
- ACRS CERTIFIED PRODUCT
- ISO 9001, ISO 14001 & ISO 18001
- Member Of WSA (World Steel Association) - Climate Action Member
- EPD (Environmental Product Declaration)
- ResponsibleSteel™ Member

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Product Details & Specifications: Gr. 250, 250 L15 & 250 L20

A. Standard Specification - Table 1.3

Specification & Grades	Applicable Thickness in (mm)	Thickness Range (mm)	Tensile Test (Transversal)		
			YS (N/mm²)	TS (N/mm²)	EL (%) (5.65√So)
			Min	Min	Min
AS/NZS 3678 :2016 Gr. 250, 250 L15, & 250 L20	≥ 5 - ≤ 100	≤ 8	280	410[A]	22[B]
		> 8 ≤ 12	260	410	22[B]
		> 12 ≤ 20	250	410	22[B]
		> 20 ≤ 50	250	410	22[B]
		> 50 ≤ 80	240	410	22[B]
		> 80 ≤ 150	230	410	22[B]

B. Typical Innovative Steel Mechanical Properties - Table 1.4

Mechanical Properties	≥8 - ≤16 mm	>16 - ≤40 mm	>40 - ≤60 mm	>60 - ≤100 mm
	Typical			
Yield Strength (Mpa)	328	313	313	308
Tensile Strength (Mpa)	465	467	466	489
Elongation (%) (5.65√So)	27	28	28	32
Impact (J) (-0 °C)	115	129	123	93
Impact (J) (-15°C)	90	112	117	86
Impact (J) (-20 °C)	88	126	102	122

Impact Properties - Table 1.5

Specification	Grades	Temp. (°C)	Minimum Absorbed Energy (J)
			Avg.
AS/NZS 3678 :2016	250	-	-
	250 L15	-15	27
	250 L20	-20	27

[A]Minimum tensile strength (TS) is not applicable for material with thickness < 6 mm.

[B]For cross sectional test piece area > 1000 mm2, minimum elongation decreased by 2%.

Chemical Composition - Table 1.6

Chemical Composition	Standard Specification (wt%)	Typical GRP (wt%)
Carbon (C)	≤0,22	0.16-0.20
Silica (Si)	≤0,50	0.20-0.30
Manganese (Mn)	≤1,70	0.4-0.9
Phosporus (P)	≤0,040	≤0.015
Sulphur (S)	≤0,030	≤0.010

Through Thickness (Z Test) - Table 1.7

Through Thickness (AS/NZS 3678:2016)				
Grade	Certified Thickness in (mm)	Z 15	Z 25	Z 35
250	5-100	(Average 3 tests)		

Fabricating Performance - Table 1.8

1 = Limited	10 = Excellent
Method	Rating
Bending	8
Welding	9

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Product Details & Specifications: Gr. 300, 300 L15, 300 L20, 300 L40 & 300 SO

A. Standard Specification - Table 1.9

Specification & Grades	Applicable Thickness in (mm)	Thickness Range (mm)	Tensile Test (Transversal)			
			YS (N/mm^2)	TS (N/mm^2)	EL (%) ($5.65\sqrt{So}$)	Yield to Tensile
			Min	Min	Min	Max
AS/NZS 3678 :2016 Gr. 300, 300 L15; 300 L20 300 L40	≥8 - ≤100	≤ 8	320	430	21	-
		> 8 ≤ 12	310	430	21	-
		> 12 ≤ 20	300	430	21	-
		> 20 ≤ 50	280	430	21	-
		> 50 ≤ 80	270	430	21	-
		> 80 ≤ 150	260	430	21	-
AS/NZS 3678 :2016 Gr. 300 S0	≥8 - ≤40	≤ 8	320	430	25	0.8
		> 8 ≤ 12	310	430	25	0.8
		> 12 ≤ 20	300	430	25	0.8
		> 20 ≤ 50	280	430	25	0.8

Engineers to design any buildings with safety considerations and to cover or control earthquake damages. AS/NZS 3678 Gr. 300 S0 is a seismic grade designation in which the engineer must carefully balance the steels' mechanical properties to get suitable joint sections.

B. Typical Innovative Steel Mechanical Properties - Table 1.10

Mechanical Properties	≥8 - ≤16 mm	>16 - ≤40 mm	>40 - ≤60 mm	>60 - ≤100 mm
	Typical			
Yield Strength (Mpa)	353	353	353	358
Tensile Strength (Mpa)	493	510	517	525
Elongation (%) ($5.65\sqrt{So}$)	26	28	29	30
Impact (J) (-0 °C)	124	159	163	82
Impact (J) (-15°C)	103	115	128	84
Impact (J) (-20 °C)	79	136	88	119

Impact Properties - Table 1.11

Specification	Grades	Temp. (°C)	Minimum Absorbed Energy (J)
			Avg.
AS/NZS 3678 :2016	300	-	-
	300 L15	-15	27
	300 L20	-20	27
	300 L40[A]	-40	27
	300 SO	0	70

[A]Supplied in normalized condition up to 100 mm thickness to guarantee impact value

Chemical Composition - Table 1.12

Chemical Composition	Standard Specification (wt%)	Typical Innovative (wt%)
Carbon (C)	≤0,22	0.17-0.20
Silica (Si)	≤0,50	0.20-0.30
Manganese (Mn)	≤1,70	0.8-1.20
Phosporus (P)	≤0,040	≤0.015
Sulphur (S)	≤0,030	≤0.010

Through Thickness (Z Test) - Table 1.13

Through Thickness (AS/NZS 3678:2016)				
Grade	Certified Thickness in (mm)	Z 15	Z 25	Z 35
300	5-100	(Average 3 tests)		
300	8-100	(Average 3 tests)		

Fabricating Performance - Table 1.14

1 = Limited	10 = Excellent
Method	Rating
Bending	8
Welding	9

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Product Details & Specifications: Gr. 350, 350 L15, 350 L20 & 350 L40

A. Standard Specification - Table 1.15

Specification & Grades	Applicable Thickness in (mm)	Thickness Range (mm)	Tensile Test (Transversal)		
			YS (N/mm^2)	TS (N/mm^2)	EL (%) ($5.65\sqrt{So}$)
			Min	Min	Min
AS/NZS 3678 :2016 Gr. 350, 350 L15, 350 L20 & 350 L40	≥ 8 - ≤ 100	> 8 ≤ 12	360	450	20
		> 20 ≤ 32	340	450	20
		> 32 ≤ 80	340	450	20
		> 80 ≤ 100	330	450	20

B. Typical Innovative Steel Mechanical Properties - Table 1.16

Mechanical Properties	≥8 - ≤16 mm	>16 - ≤40 mm	>40 - ≤60 mm	>60 - ≤100 mm
	Typical			
Yield Strength (Mpa)	380	370	370	380
Tensile Strength (Mpa)	551	547	547	547
Elongation (%) ($5.65\sqrt{So}$)	26	26	26	26
Impact (J) (-0 °C)	120	128	130	124
Impact (J) (-15°C)	117	119	126	120
Impact (J) (-20 °C)	141	119	120	93

Impact Properties - Table 1.17

Specification	Grades	Temp. (°C)	Minimum Absorbed Energy (J)
			Avg.
AS/NZS 3678 :2016	350	-	-
	350 L15	-15	27
	350 L20	-20	27
	350 L40[A]	-40	27

[A]For grade 350 L40 supplied in normalized condition up to 100 mm thickness or Thermo-Mechanical Control Process (TMCP) condition up to 40 mm thickness to guarantee impact value.

Chemical Composition - Table 1.18

Chemical Composition	Standard Specification (wt%)	Typical Innovative (wt%)
Carbon (C)	≤0,22	0.17-0.20
Silica (Si)	≤0,50	0.20-0.30
Manganese (Mn)	≤1,70	1.20-1.40
Phosporus (P)	≤0,040	≤0.015
Sulphur (S)	≤0,030	≤0.010

Through Thickness (Z Test) - Table 1.19

Through Thickness (AS/NZS 3678:2016)				
Grade	Certified Thickness in (mm)	Z 15	Z 25	Z 35
350	8-100	(Average 3 tests)		

Fabricating Performance - Table 1.20

1 = Limited	10 = Excellent
Method	**Rating**
Bending	8
Welding	9

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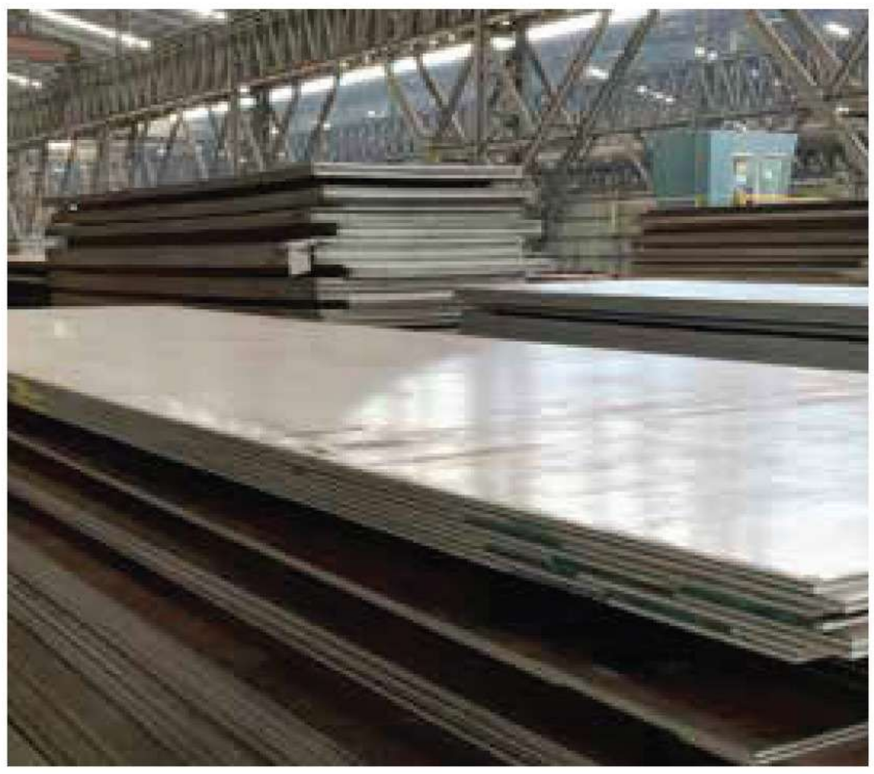
Product Details & Specifications: Gr. WR350, WR350 L0, WR350 L15 & WR350 L20

A. Standard Specification - Table 1.21

Specification	Grades	Applicable Thickness in (mm)	Thickness Range (mm)	Tensile Test (Transversal)			Impact Test (Longitudinal) (Minimum)		
				YS (N/mm²)	TS (N/mm²)	EL (%) (5.65√So)	0 °C	-15 °C	-20 °C
				Min	Min	Min	AVG	AVG	AVG
AS/NZS 3678 :2016	WR350	≥8 - ≤60	≥ 8 ≤ 12	340	450	20	27		
	WR350 L0		> 12 ≤ 20	340	450	20			
	WR350 L15		>20 ≤ 32	340	450	20			
	WR350 L20		>32 ≤ 60	340	450	20			

B. Typical Innovative Steel Mechanical Properties - Table 1.22

Mechanical Properties	≥ 8 ≤ 12 mm	> 12 ≤ 20 mm	>20 ≤ 32 mm	>32 ≤ 60 mm
	Typical			
Yield Strength (Mpa)	424	409	399	392
Tensile Strength (Mpa)	541	541	540	546
Elongation (%) (5.65√So)	21	22	22	26
Impact (J) (0°C)	207	210	211	220
Impact (J) (-15 °C)	166	164	164	152
Impact (J) (-20 °C)	152	149	150	147



Chemical Composition - Table 1.23

Chemical Composition	Standard Specification (wt%)	Typical Innovative (wt%)	
	≤ 60 mm	≤ 20 mm	> 20 ≤ 60 mm
Carbon (C)	≤0,14	0.12 – 0.14	0.12 – 0.14
Silica (Si)	0,15 – 0.75	0.25 – 0.35	0.25 – 0.35
Manganese (Mn)	≤1,70	1.15 – 1.25	1.30 – 1.40
Phosporus (P)	≤0,160	≤ 0.025	≤ 0.025
Chrome (Cr)	0.35 – 1.05	0.40 – 0.50	0.40 – 0.50
Copper (Cu)	0.15 – 0.50	0.25 – 0.35	0.30 – 0.40
Nickel (Ni)	≤0.55	0.10 – 0.20	0.20 – 0.25

Through Thickness (Z Test) - Table 1.24

Through Thickness (AS/NZS 3678:2016)				
Grade	Certified Thickness in (mm)	Z 15	Z 25	Z 35
WR350	8-60	(Average 3 tests)		

Fabricating Performance - Table 1.25

1 = Limited	10 = Excellent
Method	Rating
Bending	8
Welding	8

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Product Details & Specifications: Gr. 400, 400 L15 & 400 L20

A. Standard Specification - Table 1.26

Specification & Grades	Applicable Thickness in (mm)	Thickness Range (mm)	Tensile Test (Transversal)		
			YS (N/mm^2)	TS (N/mm^2)	EL (%) ($5.65\sqrt{So}$)
			Min	Min	Min
AS/NZS 3678 :2016 Gr.400, 400 L15, & 400 L20	≥ 8 - ≤ 32	≤ 8	400	480	18[A]
		> 8 ≤ 12	400	480	18[A]
		> 12 ≤ 20	380	480	18[A]
		> 20 ≤ 50	360	480	18[A]
		> 50 ≤ 80	360	480	18[A]
		> 80 ≤ 150	360	480	18[A]

B. Typical Innovative Steel Mechanical Properties - Table 1.27

Mechanical Properties	≥8 - ≤16 mm	>16 - ≤32 mm
	Typical properties	
Yield Strength (Mpa)	469	471
Tensile Strength (Mpa)	590	592
Elongation (%) ($5.65\sqrt{So}$)	22	22
Impact (J) (-0 °C)	171	175
Impact (J) (-15°C)	110	111
Impact (J) (-20 °C)	120	136

Impact Properties - Table 1.28

Specification	Grades	Temp. (°C)	Minimum Absorbed Energy (J)
			Avg.
AS/NZS 3678 :2016	400	-	-
	400 L15	-15	27
	400 L20	-20	27

[A]For cross sectional test piece area > 1000 mm2, minimum elongation decreased by 2%.

Chemical Composition - Table 1.29

Chemical Composition	Standard Specification (wt%)	Typical Innovative (wt%)
Carbon (C)	≤0,22	0.12-0.20
Silica (Si)	≤0,50	0.20-0.30
Manganese (Mn)	≤1,70	1.25-1.35
Phosporus (P)	≤0,040	≤0.015
Sulphur (S)	≤0,030	≤0.010

Through Thickness (Z Test) - Table 1.30

Through Thickness (AS/NZS 3678:2016)				
Grade	Certified Thickness in (mm)	Z 15	Z 25	Z 35
400	8-32	(Average 3 tests)		

Fabricating Performance - Table 1.31

1 = Limited	10 = Excellent
Method	Rating
Bending	8
Welding	9

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