

## Plate – PL

## Structural - S

### GENERAL DESCRIPTION

A high strength structural steel product with nominal yield strength of 350MPa

### AUSTRALIAN STANDARDS

AS/NZS 3678: 2011

AS/NZS 1365: 1996

### TYPICAL USES

- General fabrication
- Structural members
- High-rise buildings
- Bridges
- Storage tanks

### FEATURES & BENEFITS

- Guaranteed minimum strength levels
- Excellent weldability
- Good formability
- ACRS accreditation (ACRS Certificate No. 120802)

### WARNINGS

- This material should be used in conjunction with the appropriate structural design and welding standards
- Maximum recommended temperature for hot forming is 620°C. If heated above 620°C, mechanical properties may deteriorate
- An untrimmed (Mill) edge may contain surface discontinuities associated with the rolling process (refer to Clause 9 of AS/NZS 3678:2011). The plate supplied may include an amount outside of the nominal ordered width, in accordance with relevant Australian Standards. The area of the supplied plate which is outside of the nominal (customer ordered) width must not be used. Customers are advised to remove an equal width from each side of the plate when trimming

### NORMAL / OPTIONAL SUPPLY CONDITIONS

|                       | Normal                               | Optional   |
|-----------------------|--------------------------------------|--|
| Thickness Range       | 5mm – 80mm                           | >80 – 100 mm by enquiry only   |
| Availability          | Plate is available in standard sizes | For sizes outside standard offer refer to XLERPLATE® steel size schedule 2 |
| Edge Condition        | Untrimmed (Mill Edge)*               | Trimmed  |
| Tolerances            | AS/NZS 1365: 1996                    |  |
| Ultrasonic Inspection |                                      | AS 1710: 2007 available  |
| Surface Inspection    | BlueScope Steel                      | (third party available)  |
| Certification         | BlueScope Steel                      | (third party endorsed available)   |

Optional supply conditions may be subject to dimensional restrictions

\* Plates less than 8mm in thickness are supplied with trimmed edges

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## CHEMICAL COMPOSITION

| Element    | Guaranteed Maximum % | Typical % Thickness (mm) |           |            |             |              |
|------------|----------------------|--------------------------|-----------|------------|-------------|--------------|
|            |                      | t = 5                    | 5 < t ≤ 8 | 8 < t ≤ 25 | 25 < t ≤ 80 | 80 < t ≤ 100 |
| Carbon     | 0.22                 | 0.155                    | 0.14      | 0.15       | 0.09        | 0.13         |
| Silicon    | 0.55                 | 0.15                     | 0.20      | 0.30       | 0.35        | 0.45         |
| Manganese  | 1.70                 | 0.65                     | 1.10      | 1.20       | 1.50        | 1.50         |
| Phosphorus | 0.040                | 0.020                    | 0.020     | 0.020      | 0.020       | 0.020        |
| Sulfur     | 0.030                | 0.010                    | 0.010     | 0.010      | 0.010       | 0.003        |
| Chrome     | 0.25                 | 0.023                    | 0.023     | 0.023      | 0.027       | 0.023        |
| Nickel     | 0.50                 | 0.021                    | 0.021     | 0.021      | 0.027       | 0.20         |
| Copper     | 0.40                 | 0.017                    | 0.017     | 0.017      | 0.010       | 0.30         |
| Molybdenum | 0.35                 | 0.002                    | 0.002     | 0.002      | 0.002       | 0.002        |
| Aluminium  | 0.100                | 0.030                    | 0.035     | 0.030      | 0.035       | 0.035        |
| Niobium*   | 0.150                | -                        | -         | -          | 0.024       | 0.015        |
| Titanium   | 0.040                | -                        | 0.018     | 0.018      | 0.018       | 0.018        |
| CEQ (IIW)  | 0.48                 | 0.27                     | 0.33      | 0.36       | 0.35        | 0.41         |

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

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

\* Niobium + Vanadium + Titanium ≤ 0.15%

## MECHANICAL PROPERTIES

| Tensile Properties (Transverse)   |                | Thickness (mm) |            |             |             |             |              |
|-----------------------------------|----------------|----------------|------------|-------------|-------------|-------------|--------------|
|                                   |                | t ≤ 8          | 8 < t ≤ 12 | 12 < t ≤ 20 | 20 < t ≤ 25 | 25 < t ≤ 80 | 80 < t ≤ 100 |
| Yield Strength (MPa)              | Guaranteed Min | 360            | 360        | 350         | 340         | 340         | 330          |
|                                   | Typical        | 360 - 540      | 360 - 470  | 350 - 440   | 350 - 440   | 380 - 470   | 340 - 420    |
| Tensile Strength (MPa)            | Guaranteed Min | 450            | 450        | 450         | 450         | 450         | 450          |
|                                   | Typical        | 480 - 570      | 470 - 560  | 470 - 540   | 470 - 540   | 470 - 540   | 510 - 570    |
| Elong. On 5.65√S <sub>0</sub> (%) | Guaranteed Min | 20             | 20         | 20          | 20          | 20          | 20           |
|                                   | Typical        | 21 - 35        | 22 - 40    | 23 - 37     | 23 - 36     | 23 - 36     | 23 - 36      |

| Charpy Impact Properties | Longitudinal at 0°C on 10 x 10mm Specimen | Absorbed Energy (joules) |      |
|--------------------------|---|--------------------------|------|
|                          |   | Av. Of 3                 | Ind. |
|                          |   | Guaranteed Min           | 27   |
| Typical                  | 50 - 200                                  | 30 - 250                 |      |

## WELDABILITY

| Group   | Guaranteed Maximum | Typical Group Thickness (mm) |           |            |             |              |
|---------|--------------------|------------------------------|-----------|------------|-------------|--------------|
|         |                    | t = 5                        | 5 < t < 8 | 8 ≤ t ≤ 25 | 25 < t ≤ 80 | 80 < t ≤ 100 |
| Group 5 | 5                  | 1                            | 2         | 3          | 3           | 4            |

Refer to WTIA Technical Note 1 or AS/NZS 1554.1

## FORMABILITY

| Thickness (mm) | Long                 | Trans |
|----------------|----------------------|-------|
| t ≤ 6          | 2.25t                | 1.5t  |
| 6 < t ≤ 20     | 3.0t                 | 2.0t  |
| 20 < t ≤ 25    | 3.75t                | 2.5t  |
| t > 25         | Hot form (max 620°C) |       |

Recommended min. inside radii

## HARDNESS

| Typical       |
|---------------|
| 140 – 180 BHN |