

SA/AS1548 - 7 - 460T (L20, L40, L50)

SA/AS1548 - 7 - 460T, SA/AS1548 - 7 - 460TL20, SA/AS1548 - 7 - 460TL40, SA/AS1548 - 7 - 460TL50

XLERPLATE®

DATE: January 2006

PRODUCT DESCRIPTION

- A fully killed, fine grained carbon-manganese steel for boiler and pressure vessel applications
- Produced by thermo-mechanical controlled rolling
- Guaranteed minimum tensile strength of 460 MPa
- Australian Standard AS1548-1995 pressure grades have been approved by ASME. To demonstrate compliance with ASME rules, grades require the addition of the "SA" prefix to the AS1548 grade name, consequently plate test certification and stencil are prefixed with "SA".

SUPPLY CONDITIONS

- Thickness Range: 10mm – 40mm
- Availability: By enquiry only
- Edge Condition: Trimmed
- Tolerances: Thickness - SA/AS1548, others - AS1365
- Ultrasonic Inspection: AS1710 available
- Surface Inspection: BlueScope Steel (third party available)
- Certification: BlueScope Steel (third party endorsed available)

FEATURES & BENEFITS

- Guaranteed design strengths as per AS1210
- Grades available with guaranteed low temperature properties
- Superior weldability and formability
- Alternative to normalised grades where good toughness is required

WARNINGS

- This material should be used in conjunction with the appropriate pressure vessel design and welding standards.
- Note this grade is not suitable for hot forming above 620°C. Where hot forming is required use SA/AS 1548-7-460R/A/N.
- Guidelines for cold bending, where fracture toughness is important, are given in AS4100 and AS1210.

NEAREST OVERSEAS SPECIFICATIONS

ASTM A662-Gr. B JISG 3118-SGV450 ISO 9328.2-P290 EN 10028-3-P275N

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| CHEMICAL COMPOSITION | | | |
|--------------------------|-------------------------------------|-----------|------------|
| Element | Guaranteed Maximum % ⁽²⁾ | Typical % | |
| | | T, TL20 | TL40, TL50 |
| Carbon | 0.20 | 0.15 | 0.09 |
| Silicon | 0.60 | 0.35 | 0.35 |
| Manganese | 0.80-1.70 | 1.35 | 1.50 |
| Phosphorus | 0.040 | 0.020 | 0.020 |
| Sulfur | 0.030 | 0.010 | 0.010 |
| Aluminium | 0.100 | 0.035 | 0.035 |
| Niobium | 0.010 ⁽⁴⁾ | - | 0.020 |
| CEQ (IIW) ⁽¹⁾ | 0.44 ⁽³⁾ | 0.39 | 0.34 |

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

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

(3) Values shown refer to the BlueScope Steel internal standard, where the AS/NZS 1548 guaranteed maximum % is 0.45

(4) Niobium up to 0.025% may be added for L20, L40 and L50 designations.

| MECHANICAL PROPERTIES | | | |
|---------------------------------|------------------------------------|--------------------------|-------------|
| Tensile Properties (Transverse) | | Thickness Range (mm) | |
| | | t ≤ 16 | 16 < t ≤ 40 |
| Guaranteed Min. | Yield Strength (MPa) | 305 | 295 |
| | Tensile Strength (MPa) | 460 - 580 | 460 - 580 |
| | Elong. on 5.65 √ So (%) | 21 | 21 |
| Typical | Yield Strength (MPa) | 360 - 450 | 330 - 430 |
| | Tensile Strength (MPa) | 500 - 550 | 500 - 550 |
| | Elong. on 5.65 √ So (%) | 22 - 32 | 22 - 31 |
| Charpy Impact Properties | Longitudinal on 10 x 10mm specimen | Absorbed Energy (joules) | |
| | | Ave. of 3 | Ind. |
| Guaranteed Min. | 7 - 460TL20 (10-40mm) | 47 | 35 |
| | | 50 - 150 | 40 - 180 |
| Guaranteed Min. | 7 - 460TL40 (10-40mm) | 31 | 23 |
| | | 80 - 120 | 60 - 150 |
| Guaranteed Min. | 7 - 460TL50 (10-40mm) | 27 | 20 |
| | | 40 - 100 | 35 - 120 |



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| MECHANICAL PROPERTIES | | | | | | | | | |
|---|------|-------|-------|-------|-------|-------|-------|-------|-------|
| 7 - 460TH - 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 |
| 10 ≤ t ≤ 16 | 276 | 266 | 246 | 222 | 198 | 176 | 168 | 158 | 148 |
| 16 < t ≤ 40 | 268 | 260 | 242 | 220 | 198 | 176 | 168 | 158 | 148 |

| FORMABILITY (Recommended min. inside radii) | | HARDNESS | WELDABILITY |
|---|-----------------------|---------------|------------------------|
| t ≤ 20mm | Long 2.5T, Trans 2.0T | Typical | Group 4 ⁽⁴⁾ |
| 20 < t ≤ 40mm | Long 6.0T, Trans 4.0T | 130 - 170 BHN | |

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



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