

# Building Products

Information Sheets - Class 1



<b>Product name:</b>	Grade 300E Reinforcing Steel Bar and Coil		
<b>Product line:</b>	Pacific Steel Rolling Mill		
<b>Product description &amp; its intended use:</b>	<p>Manufactured to AS/NZS 4671, grade 300E steel is available as plain and deformed bars and coils for the reinforcement of concrete.</p> <p><b>Key Tensile Specifications (as per AS/NZS 4671):</b>  Yield Stress (Re): 300-380MPa  Tensile to Yield Strength Ratio (Rm/Re): 1.15-1.5  Minimum Uniform Elongation (Agt): 12% (R300E) and 15% (D300E)</p>		
<b>Product identifier:</b>	R300E/D300E Bar/Coil		
<b>Place of manufacture:</b>	<input checked="" type="checkbox"/> Aotearoa New Zealand <input type="checkbox"/> Overseas		
<b>Legal and trading name of the manufacturer(s):</b>	Pacific Steel (NZ) Ltd		
<b>Legal and trading name of the importer (if applicable):</b>	N/A		
<b>Address for service:</b>	21 Beach Road Otahuhu 2024 Auckland, New Zealand		
<b>Website:</b>	www.pacificsteel.co.nz		
<b>Email address:</b>	sales@pacificsteel.co.nz, technical@pacificsteel.co.nz		
<b>Phone No.</b>	0800 7227 8335		
<b>NZBN</b>	9429040549088		
<b>Relevant Building Code clauses:</b>	<table border="0"> <tr> <td style="vertical-align: top;"> <p><b>B1 Structure:</b></p> <ul style="list-style-type: none"> <li>• Functional requirements clause: <ul style="list-style-type: none"> <li>• B1.2</li> </ul> </li> <li>• Performance clauses: <ul style="list-style-type: none"> <li>• B1.3.1</li> <li>• B1.3.2</li> <li>• B1.3.3 (f)</li> <li>• B1.3.4 (d)</li> </ul> </li> </ul> </td> <td style="vertical-align: top; padding-left: 20px;"> <p><b>B2 Durability:</b></p> <ul style="list-style-type: none"> <li>• Functional requirements clause: <ul style="list-style-type: none"> <li>• B2.2</li> </ul> </li> </ul> </td> </tr> </table>	<p><b>B1 Structure:</b></p> <ul style="list-style-type: none"> <li>• Functional requirements clause: <ul style="list-style-type: none"> <li>• B1.2</li> </ul> </li> <li>• Performance clauses: <ul style="list-style-type: none"> <li>• B1.3.1</li> <li>• B1.3.2</li> <li>• B1.3.3 (f)</li> <li>• B1.3.4 (d)</li> </ul> </li> </ul>	<p><b>B2 Durability:</b></p> <ul style="list-style-type: none"> <li>• Functional requirements clause: <ul style="list-style-type: none"> <li>• B2.2</li> </ul> </li> </ul>
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### How our building products are expected to contribute to compliance:

As per Standards New Zealand, NZS 3101 sets out the minimum requirements for the design of reinforced and pre-stressed concrete structures. When read along with Verification Method B1/VM1, it provides a means of complying with the performance requirements of New Zealand Building Code clause B1 Structure. NZS 3101 specifies reinforcing bars are to comply with the Steel for the Reinforcement of Concrete Standard AS/NZS 4671 and Pacific Steel (PSNZ) manufactures 300E reinforcing steel in compliance with this Standard.

B1.2 and B1.3.1- Designers and engineers account for the combination of loads that structures are likely to experience. When design standards are calibrated against product standards, the use of suitable materials are specified so that the probability of failure is reduced to below acceptable limits. Clause 5.3.2.1 of NZS 3101:Part1:2006 specifies reinforcing bars are to comply with AS/NZS 4671. 300E reinforcing steel meets the minimum product and testing requirements specified in AS/NZS 4671 in order to satisfy these design requirements.

B1.3.2 and B1.3.3(f) - 300E bar and coil meet the AS/NZS 4671 requirements of the earthquake ductility class E reinforcing steel grade. This grade of reinforcing steel is intended to perform in seismic conditions and specifies a minimum yield stress of 300MPa, uniform elongation of 12% (R300E) and 15% (D300E), and tensile to yield strength ratio of 1.15.

1.3.4(d) - Appendix E of AS/NZS 4671 states that “all manufacturing facilities will produce reinforcing steel products with some variation in mechanical properties. This variation will occur across different batches but also within a single batch. Australian and NZ Standard Technical Committees have taken this into account in the development of Australian and NZ design standards.” As such, AS/NZS 4671 emphasises the importance of long term quality to ensure the conformance of the many tonnes of steel produced by a manufacturer rather than just a few sampled batches. 300E products conform to these LTQ requirements.

B2.2 - 300E steel meets the chemical, geometric, and mechanical requirements specified in AS/NZS 4671 to ensure the steel is fit for the reinforcement of durable concrete structures.

### Limitations on the use of the building product:

- AS/NZS 1554.3 clause 3.3.1 does not permit tack welding to any reinforcing steel used for structural/ seismic purposes.
- Recertification is required on 300E reinforcing coils that have been straightened. It is prohibited to pass on the original test certificate for hot rolled product that has been subsequently processed as the mechanical properties are altered through cold working. The exception to this is if the processor started with straight bar and only cut and/or bent the bar in accordance with NZS 3101.

### Design requirements that would support the use of the building product:

- NZS 3101 states “where significant ductility is required then Grade 300E reinforcement is recommended. Grade 300E reinforcement typically has greater ductility and toughness, compared with Grade 500E reinforcement.” The Agt has been reduced from 15% to 12% for R300E as “R300E produced off coil, is used solely for fitments and stirrups and does not have as high ductility demand” as per AS/NZS 4671.
- Seismic grade 300E bars and coils manufactured by PSNZ are rolled with unique mill and grade bar markings for easy identification on site. These bar markings assist builders, specifiers and inspectors in identifying products as being produced by PSNZ to AS/NZS 4671.
- Deformed 300E products have ‘300E’ rolled into the bar surface and two longitudinal ribs before PSNZ’s trademark product brand ‘SEISMIC’. Plain 300E products have two dots rolled into the bar surface.
- PSNZ’s 300E reinforcing steel products are tested as specified by AS/NZS 4671 by PSNZ’s IANZ accredited laboratory. Test certificates are available for every production batch for verification.
- PSNZ’s 300E reinforcing bar and coil products are certified by the Australasian Certification Authority for Reinforcing and Structural Steels (ACRS). This serves as an independent, third-party product certification that PSNZ’s 300E products meet the requirements of AS/NZS 4671.

### Installation requirements:

- All activities performed on reinforcing steel (such as bending/welding/galvanising) shall comply with the relevant standards, primarily NZS 3101 and NZS 3109.
- NZS 3101 specifies that “due to the low carbon metallurgy of reinforcing steel manufactured to AS/NZS 4671, the steel is considered readily weldable.” Refer to AS/NZS 1554.3 for details of appropriate welding techniques.
- NZS 3109 specifies “concrete construction requires that hooks and bends are formed in accordance with the bend requirements of Table 3.1. The minimum diameter of the bend is measured on the inside of the bar”. PSNZ’s bendometer tool is a helpful guide for measuring this minimum bend diameter. For full details of standard hooks, bends, stirrups or ties, for mesh bend diameter requirements and for galvanised bar bend requirements, refer to clause 3.3 of NZS 3109.
- Reinforcing steel is often very heavy and difficult to handle. It is recommended that suitable gloves be worn at all times when handling reinforcing steel and suitable lifting equipment is utilised to minimize manual handling injuries. If suitable lifting equipment is not available the full load of the bars should be shared and balanced to ensure load strain is minimized.
- Cut and bent reinforcing steel is often sharp. Safety caps on the end of bars are recommended to reduce the risk of abrasions or injury.
- PSNZ’s grade 300E steel can be galvanised.

### Maintenance requirements:

- When considering the surface condition of reinforcing steel, some rust should be considered normal. Clause 3.4 of NZS 3109 indicates “tightly adhering mill scale or surface rust do not have a detrimental effect” and AS/NZS 4671 specifies “rust shall not be cause for rejection of reinforcing steel provided that a cleaned sample meets the minimum requirements of the AS/NZS 4671 Standard” Endeavours should still be made to minimise exposure to moisture particularly if the steel is in coil form and due to be subsequently processed.
- Avoid damage to the surface of reinforcing steel (say by sudden impacts or by introducing sharp notches) and excessive cold working (say by over straightening/bending) as this may detrimentally affect the steels localised ductility thereby raising the risk of brittle failure.

### Is the building product/building product line subject to warning or ban under section 26?:

Yes  No

Date: 01/09/23

<b>Product name:</b>	Grade 500E Reinforcing Steel Bar and Coil		
<b>Product line:</b>	Pacific Steel Rolling Mill		
<b>Product description &amp; its intended use:</b>	<p>Manufactured to AS/NZS 4671, micro-alloyed grade 500E steel is available as plain and deformed bars and coils for the reinforcement of concrete.</p> <p><b>Key Tensile Specifications (as per AS/NZS 4671):</b>  Yield Stress (Re): 500-600MPa  Tensile to Yield Strength Ratio (Rm/Re): 1.15-1.4  Minimum Uniform Elongation (Agt): 10%</p>		
<b>Product identifier:</b>	R500E/D500E Bar/Coil		
<b>Place of manufacture:</b>	<input checked="" type="checkbox"/> Aotearoa New Zealand <input type="checkbox"/> Overseas		
<b>Legal and trading name of the manufacturer(s):</b>	Pacific Steel (NZ) Ltd		
<b>Legal and trading name of the importer (if applicable):</b>	N/A		
<b>Address for service:</b>	21 Beach Road Otahuhu 2024 Auckland, New Zealand		
<b>Website:</b>	www.pacificsteel.co.nz		
<b>Email address:</b>	sales@pacificsteel.co.nz, technical@pacificsteel.co.nz		
<b>Phone No.</b>	0800 7227 8335		
<b>NZBN</b>	9429040549088		
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### How our building products are expected to contribute to compliance:

As per Standards New Zealand, NZS 3101 sets out the minimum requirements for the design of reinforced and pre-stressed concrete structures. When read along with Verification Method B1/VM1, it provides a means of complying with the performance requirements of New Zealand Building Code clause B1 Structure. NZS 3101 specifies reinforcing bars are to comply with the Steel for the Reinforcement of Concrete Standard AS/NZS 4671 and Pacific Steel (PSNZ) manufactures 500E reinforcing steel in compliance with this Standard.

B1.2 and B1.3.1- Designers and engineers account for the combination of loads that structures are likely to experience. When design standards are calibrated against product standards, the use of suitable materials are specified so that the probability of failure is reduced to below acceptable limits. Clause 5.3.2.1 of NZS 3101:Part1:2006 specifies reinforcing bars are to comply with AS/NZS 4671. 500E reinforcing steel meets the minimum product and testing requirements specified in AS/NZS 4671 in order to satisfy these design requirements.

B1.3.2 and B1.3.3(f) - 500E bar and coil meet the AS/NZS 4671 requirements of the earthquake ductility class E reinforcing steel grade. This grade of reinforcing steel was specially developed to perform in seismic conditions and specifies a minimum yield stress of 500MPa, uniform elongation of 10%, and tensile to yield strength ratio of 1.15.

1.3.4(d) - Appendix E of AS/NZS 4671 states that “all manufacturing facilities will produce reinforcing steel products with some variation in mechanical properties. This variation will occur across different batches but also within a single batch. Australian and NZ Standard Technical Committees have taken this into account in the development of Australian and NZ design standards.” As such, AS/NZS 4671 emphasises the importance of long term quality to ensure the conformance of the many tonnes of steel produced by a manufacturer rather than just a few sampled batches. 500E products conform to these LTQ requirements.

B2.2 - 500E steel meets the chemical, geometric, and mechanical requirements specified in AS/NZS 4671 to ensure the steel is fit for the reinforcement of durable concrete structures.

### Limitations on the use of the building product:

- NZS 3109 clause 3.3.8 does not permit cold re-bending/straightening of micro alloyed Grade 500E steel that has been bent.
- AS/NZS 1554.3 clause 3.3.1 does not permit tack welding to any reinforcing steel used for structural/seismic purposes.
- Re certification is required on 500E reinforcing steel coils that have been straightened. It is prohibited to pass on the original test certificate for hot rolled product that has been subsequently processed as the mechanical properties are altered through cold working. The exception to this is if the processor started with straight bar and only cut and/or bent the bar in accordance with NZS 3101.

### Design requirements that would support the use of the building product:

- 500E bars and coils manufactured by PSNZ are rolled with unique mill and grade bar markings for easy identification on site. These bar markings assist builders, specifiers and inspectors in identifying products as being produced by PSNZ to AS/NZS 4671.
- Deformed 500E products have ‘500E’ rolled into the bar surface, two longitudinal ribs and a missing transverse rib before PSNZ’s trademark product brand ‘SEISMIC’. 500E Reidbar products by PSNZ are rolled with a short transverse rib on one side of the bar in accordance with AS/NZS 4671. Plain 500E bars/coils (as typically used by mesh manufacturers) have a dot and two dashes rolled into the bar surface.
- PSNZ’s 500E reinforcing steel products are tested as specified by AS/NZS 4671 by PSNZ’s IANZ accredited laboratory. Test certificates are available for every production batch for verification.
- PSNZ’s 500E reinforcing bar and coil products are certified by the Australasian Certification Authority for Reinforcing and Structural Steels (ACRS). This serves as an independent, third-party product certification that PSNZ’s 500E products meet the requirements of AS/NZS 4671.



### Installation requirements:

- All activities performed on reinforcing steel (such as bending/welding/galvanising) shall comply with the relevant standards, primarily NZS 3101 and NZS 3109.
- Micro-alloyed 500E steel can be hot or cold bent, and can be hot rebent (for procedures refer to 3.3.8 of NZS 3109).
- NZS 3101 specifies that “due to the low carbon metallurgy of reinforcing steel manufactured to AS/NZS 4671, the steel is considered readily weldable.” Refer to AS/NZS 1554.3 for details of appropriate welding techniques.
- NZS 3109 specifies “concrete construction requires that hooks and bends are formed in accordance with the bend requirements of Table 3.1. The minimum diameter of the bend is measured on the inside of the bar”. PSNZ’s bendometer tool is a helpful guide for measuring this minimum bend diameter for 500E reinforcement. For full details of standard hooks, bends, stirrups or ties, for mesh bend diameter requirements and for galvanised bar bend requirements, refer to clause 3.3 of NZS 3109.
- Micro-alloyed bar has the same strength and ductility properties across its cross section so the loss in strength of the bar is proportional to the amount of steel lost during cutting or threading operations (opposed to QT bar which gains its strength from the hard quenched casing, so cutting a thread into this outer casing will mean that the loss in strength is not proportional to the amount of steel which is removed).
- Reinforcing steel is often very heavy and difficult to handle. It is recommended that suitable gloves be worn at all times when handling reinforcing steel and suitable lifting equipment is utilised to minimize manual handling injuries. If suitable lifting equipment is not available the full load of the bars should be shared and balanced to ensure load strain is minimized.
- Cut and bent reinforcing steel is often sharp. Safety caps on the end of bars are recommended to reduce the risk of abrasions or injury.
- PSNZ’s Grade 500E reinforcing steel can be galvanised.

### Maintenance requirements:

- When considering the surface condition of reinforcing steel, some rust should be considered normal. Clause 3.4 of NZS 3109 indicates “tightly adhering mill scale or surface rust do not have a detrimental effect” and AS/NZS 4671 specifies “rust shall not be cause for rejection of reinforcing steel provided that a cleaned sample meets the minimum requirements of the AS/NZS 4671 Standard.” Endeavours should still be made to minimise exposure to moisture particularly if the steel is in coil form and due to be subsequently processed.
- Avoid damage to the surface of reinforcing steel (say by sudden impacts or by introducing sharp notches) and excessive cold working (say by over straightening/bending) as this may detrimentally affect the steels localised ductility thereby raising the risk of brittle failure.

Is the building product/building product line subject to warning or ban under section 26?:

Yes  No

Date: 01/09/23

<b>Product name:</b>	Grade 500L Coiled Reinforcing Steel Wire		
<b>Product line:</b>	Pacific Steel Wire Mill		
<b>Product description &amp; its intended use:</b>	<p>Manufactured to AS/NZS 4671, grade 500L steel is available as plain and indented coiled wire for the reinforcement of concrete.</p> <p><b>Key Tensile Specifications (as per AS/NZS 4671):</b>  Yield Stress (Re): 500-750MPa  Minimum Tensile to Yield Strength Ratio (Rm/Re): 1.03  Minimum Uniform Elongation (Agt): 1.5%</p>		
<b>Product identifier:</b>	I500L/R500L Coiled Wire		
<b>Place of manufacture:</b>	<input checked="" type="checkbox"/> Aotearoa New Zealand <input type="checkbox"/> Overseas		
<b>Legal and trading name of the manufacturer(s):</b>	Pacific Steel (NZ) Ltd		
<b>Legal and trading name of the importer (if applicable):</b>	N/A		
<b>Address for service:</b>	21 Beach Road Otahuhu 2024 Auckland, New Zealand		
<b>Website:</b>	www.pacificsteel.co.nz		
<b>Email address:</b>	sales@pacificsteel.co.nz, technical@pacificsteel.co.nz		
<b>Phone No.</b>	0800 7227 8335		
<b>NZBN</b>	9429040549088		
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### How our building products are expected to contribute to compliance:

B1.2 and B1.3.1- Designers and engineers account for the combination of loads that structures are likely to experience. When design standards are calibrated against product standards, the use of suitable materials are specified so that the probability of failure is reduced to below acceptable limits. Clause 5.3.2.1 of NZS 3101:Part1:2006 specifies reinforcement is to comply with AS/NZS 4671. 500L reinforcing steel meets the minimum product and testing requirements specified in AS/NZS 4671 in order to satisfy these design requirements.

B1.3.2 - 500L coiled reinforcing wire meets the AS/NZS 4671 requirements of the ductility class L reinforcing steel grade. This grade of reinforcing steel specifies a minimum yield stress of 500MPa, uniform elongation of 1.5%, and tensile to yield strength ratio of 1.03.

1.3.4(d) - Appendix E of AS/NZS 4671 states that “all manufacturing facilities will produce reinforcing steel products with some variation in mechanical properties. This variation will occur across different batches but also within a single batch. Australian and NZ Standard Technical Committees have taken this into account in the development of Australian and NZ design standards.” As such, AS/NZS 4671 emphasises the importance of long term quality to ensure the conformance of the many tonnes of steel produced by a manufacturer rather than just a few sampled batches. PSNZ’s 500L products conform to these LTQ requirements.

B2.2 - PSNZ’s 500L steel products meet the chemical, geometric, and mechanical requirements specified in AS/NZS 4671 to ensure the steel is fit for the reinforcement of durable concrete structures.

### Limitations on the use of the building product:

- Recertification is required on 500L reinforcing coiled wire that has been straightened. It is prohibited to pass on the original test certificate of the steel manufacturer for product that has been subsequently processed as the mechanical properties are altered through cold working.

### Design requirements that would support the use of the building product:

- Grade 500L coiled reinforcing wire manufactured by PSNZ are rolled with unique mill and grade markings for easy identification on site. These markings assist builders, specifiers and inspectors in identifying products as being produced by PSNZ to AS/NZS 4671.
- Indented 500L products feature 3 horizontal indents on the wires surface, and 3 rows of transverse indentations with 1 row in the reverse direction to the other 2. Plain 500L steel has no particular identifying features as per AS/NZS 4671.
- PSNZ’s 500L reinforcing wire products are tested as specified by AS/NZS 4671 by PSNZ’s IANZ accredited laboratory. Test certificates are available for every production batch for verification.
- PSNZ’s 500L reinforcing wire products are certified by the Australasian Certification Authority for Reinforcing and Structural Steels (ACRS). This serves as an independent, third-party product certification that PSNZ’s 500L products meet the requirements of AS/NZS 4671.

### Installation requirements:

- All activities performed on reinforcing steel (such as bending/welding/galvanising) shall comply with the relevant standards, primarily NZS 3101 and NZS 3109.
- NZS 3101 specifies that “due to the low carbon metallurgy of reinforcing steel manufactured to AS/NZS 4671, the steel is considered readily weldable.” Refer to AS/NZS 1554.3 for details of appropriate welding techniques.
- Reinforcing steel is often very heavy and difficult to handle. It is recommended that suitable gloves be worn at all times when handling reinforcing steel and suitable lifting equipment is utilised to minimize manual handling injuries.

### Maintenance requirements:

- When considering the surface condition of reinforcing steel, some rust should be considered normal. Clause 3.4 of NZS 3109 indicates “tightly adhering mill scale or surface rust do not have a detrimental effect” and AS/NZS 4671 specifies “rust shall not be cause for rejection of reinforcing steel provided that a cleaned sample meets the minimum requirements of the AS/NZS 4671 Standard.” Endeavours should still be made to minimise exposure to moisture especially as this steel is in coil form and due to be subsequently processed.
- Avoid damage to the surface of reinforcing steel (say by sudden impacts or by introducing sharp notches) and excessive cold working (say by over straightening/bending) as this may detrimentally affect the steels localised ductility thereby raising the risk of brittle failure.

**Is the building product/building product line subject to warning or ban under section 26?:**

Yes     No

**Date: 01/09/23**

NOTE: Buyers and users of Pacific Steel (NZ) Ltd products and services must make their own assessment of the products for their own conditions. All queries regarding product specification, purpose or application should be directed to Pacific Steel (NZ) Ltd, phone 0800 7227 8335. Pacific Steel (NZ) Ltd reserves the right to modify products, techniques, equipment and statements to reflect improvements in the manufacture and application of its products. The information contained in this brochure is supplied without prejudice to Pacific Steel (NZ) Ltd's standard terms and conditions of sale. In the event of conflict between this information and the standard terms and conditions, the standard terms and conditions prevail. SEISMIC® is a registered trademark of Pacific Steel (NZ) Ltd.

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