



ARDEX CE 460

GRP Continuous Threaded Bar

High tensile and shear strength

Acid resistant & non-conductive

Light weight – $\frac{1}{4}$ weight of steel

High durability and corrosion resistant

Permanent applications – 100+ years design life

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GRP Continuous Threaded Bar

DESCRIPTION

ARDEX CE 460 is a high strength, durable threaded bar which provides a corrosion resistant, light weight alternative to traditional steel bar for soil nail and ground anchor applications. The product incorporates a unique manufacturing process and the highest quality glass fibres and vinyl ester resins for a strong and durable product.

ARDEX CE 460 is designed for use with our specialised ARDEX grout system for applications where additional durability is required including slope stabilisation, ground anchors and rock bolts.

USES

- Soil nails
- Soft eyes
- Face nails
- Spot bolts
- Ground anchors
- Slope stabilisation
- Rock reinforcement
- Concrete reinforcement

For other types of environments please contact ARDEX Technical Services (technicalservices@ardexaustralia.com).

INSTALLATION

Handling

Gloves must be used when handling the ARDEX CE 460 GRP bars.

Gloves, safety glasses, and dust mask (P2 rated) must be worn as a minimum when cutting ARDEX CE 460 GRP bars.

Installation of ARDEX CE 460 into bore holes

The bars must be inspected by the installer prior to the installation to ensure there is no damage to the bar or the thread; paying close attention to the ends as damaged bars can affect load capacity performance.

If the bar or thread is damaged, either replace the bar or cut out the damaged section and couple together with a new section of undamaged bar.

Installation of the nuts and couplers

- Ensure the correct nut and/or coupler has been selected in accordance with design requirements.
- Before the installation of the nut or coupler, the thread must be checked to ensure there is no damage.
- Ensure the thread is clean and free of contaminants such as grout, concrete, oils, grease etc.
- When installing the nuts, they must only be hand tightened to a 'snug' fit against the plate ensuring

there is no gap. If there is any angle compensation, an approved dome ball washer may be used to compensate for the angle.

- Do not apply any torsion or torque as the ARDEX CE 460 bars have a low torsion load rating.

TESTING PROCEDURES

Setting up testing frame

- When using timbers or steel walers or a test frame, ensure that they are secured to the slope or wall and the load is transferred to the soil, not to the grout or nail.
- The testing frame must be set up to ensure that everything is square, and the nail is being pulled in direct tension. The bar must not bend or twist in any direction.
- There must be a nominated free length when testing. Ensure the ARDEX CE 460 bar is not secured into the concrete facing or grout pad.

Testing equipment

Ensure the testing equipment has been calibrated.

Installation of the nuts

- Ensure the correct nut has been selected in accordance with design requirements.
- Before the installation of the nut, the thread must be checked to ensure there is no damage to the thread.
- Ensure the thread is clean and free of contaminants such as grout, concrete, oils, grease etc.
- When installing the nuts, they must only be hand tightened to a 'snug' fit against the plate ensuring there is no gap. If there is any angle compensation, an approved dome ball washer may be used to compensate for the angle.
- Be sure not to apply any torsion or torque as the ARDEX CE 460 bars have a low torsion load rating.
- When installing the nuts there must be a minimum of 3 threads (30mm) protruding from the nut.
- Do not test to loads above 90% of the rated load for the nut or coupler used for testing. The rated loads are outlined on the Technical Data Sheet.
- If you exceed the capacity of the nut or coupler the ARDEX CE 460 bar thread is likely to strip.
- The rate of load application must not exceed 5 kN/minute.

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TECHNICAL DATA

ARDEX CE 460 bars

CHARACTERISTIC	TEST METHOD	NOMINAL VALUES		
Bar Thickness		25mm	32mm	40mm
Tensile Stress Area	ACI 440.3R-4	350mm ²	580mm ²	950mm ²
Ultimate Tensile Strength*	CSA-S806-02	350 kN	560 kN	860 kN
Shear @ 90°	DIN 21521	170 kN	245 kN	420 N/mm ²
Shear @ 50°	DIN 21521	345 kN	490 kN	
Tensile E-Modulus	ACI 440.3R-4	-	60 GPa	
Unit Weight		0.9kg/m	1.5kg/m	
Electical Resistance	FM 5-578	>1000 kΩ/cm		
Alkaline Resisyance **	CSA-S806-02 ACI 440.3R-4	UTS >90% retention E-Modulus >97% retention		
Creep Rupture Strength	CSA-S806-02 ACI 440.3R-4	10 th = 60% of UTS		
Bond Stress	CSA-S806-02 ACI 440.3R-4	>20MPa		

ARDEX CE 460 accessories

CHARACTERISTIC	TEST METHOD	NOMINAL VALUES		
Bar Thickness		25mm	32mm	40mm
GRP Dome Nut	ISO 10406-1	70 kN	90 kN	90 kN
GRP Power Nut		180 kN	180 kN	180 kN
Steel Nut 150mm		220 kN	320 kN	380 kN
Steel Coupler 300mm		220 kN	320 kN	380 kN
Steel Power Nut		300 kN	450 kN	800 kN

STANDARDS, APPROVALS AND SPECIFICATIONS

ACI 440.3	Guide Test Methods for Fiber-Reinforced Polymers (FRPs) for Reinforcing or Strengthening Concrete Structures
CSA S807-02	Specification for fibre-reinforced polymers
BS 8006	Code of practice for strengthened/reinforced soils
US FHWA	Geotechnical Engineering
EuroCode 7	Geotechnical Design
VicRoads Section 683	Soil Nail Works

PACKAGING

MODEL	BAR THICKNESS	BAR LENGTHS
ARDEX CE 460	25mm	6m / 8m / 10m / 11.8m
ARDEX CE 460	32mm	6m / 8m / 10m / 11.8m
ARDEX CE 460	40mm	11.8m

Note: ARDEX CE 460 40mm made to order only. Bars can be manufactured to any length up to 11.8m on request.

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GUARANTEE

ARDEX Australia Pty Ltd ("we" or "us") guarantees this product ("our goods") is free from manufacturing defects and will perform to any applicable specification published by us. Our liability under this guarantee is limited at our option to replacement of the product, repair of any damage to the immediate surface or area of application of the product, or compensation, in each case if we are satisfied loss or damage was due to a breach of this guarantee. This guarantee does not apply if damage or loss is due to failure to follow published instructions or any act or circumstance beyond our control, including shade variations and efflorescence. If you wish to make a claim under this guarantee you must notify us (ARDEX Australia Pty Ltd, 2 Buda Way, Kemps Creek, NSW 2178; Toll Free: 1800 224 070; Email: technicalservices@ardexaustralia.com) and provide evidence of your purchase of the product within 30 days of any alleged loss or damage occurring. We reserve the right to ask you for satisfactory evidence of any alleged loss or damage. Any claim under this guarantee is at your cost. This guarantee is in addition to any rights or remedies you may have as a "consumer" under the Australian Consumer Law and to that extent you need to be aware that: "Our goods come with guarantees that cannot be excluded under the Australian Consumer Law. You are entitled to a replacement or refund for a major failure and for compensation for any other reasonably foreseeable loss or damage. You are also entitled to have the goods repaired or replaced if the goods fail to be of acceptable quality and the failure does not amount to a major failure".

DISCLAIMER

The technical details, recommendations and other information contained in this data sheet are given in good faith and represent the best of our knowledge and experience at the time of printing. It is your responsibility to ensure that our products are used and handled correctly and in accordance with any applicable Australian Standards. Our instructions and recommendations are only for the uses they are intended. Users are advised to confirm that this product is suitable for their application and conforms with the specifications of the system. We also reserve the right to update information without prior notice to you to reflect our ongoing research and development program. Country specific recommendations, depending on local standards, codes of practice, building regulations or industry guidelines, may affect specific installation recommendations. The supply of our products and services is also subject to certain terms, warranties and exclusions, which may have already been disclosed to you in prior dealings or are otherwise available to you on request. You should make yourself familiar with them.

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