Composite Infrastructure Solutions

TRUST IN PULTRON BECAUSE THE WORLD DOES

pultron® COMPOSITES

PULTRON COMPOSITES

PULTRON COMPOSITES are the global specialists in the development and manufacture of high-performance, glass fibre-reinforced polymer (GFRP) composites using the pultrusion process.

Our infrastructure product range are designed for engineers and government agencies looking to achieve the best economic, performance and environmental outcomes on their projects.

Fibreglass Composites for Stronger Structures

The drive to deliver sustainable and lasting infrastructure has seen more and more engineers look to fibreglass-reinforced composites products to deliver an alternative to traditional materials such as steel and timber.

Tried, Tested and Ready for your Project

- High performance at a competitive price point
- Lightweight for easier handling and economic to transport
- Tried, tested and quality assured
- Compliant with engineering standards

Developed and Manufactured in New Zealand

All our products are developed and manufactured at Pultron Composites in New Zealand.

Mateenbar™ concrete reinforcement is manufactured in Gisborne, New Zealand (for NZ, Australia and the Pacific Islands) in North Carolina, USA, (for North America) and Dammam, Saudi Arabia (for the Middle East).

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GFRP COMPOSITES

The material solution for long-lasting infrastructure

GLASS FIBRE-REINFORCED POLYMER COMPOSITES (GFRP) are corrosion-resistant, lightweight, and are designed to deliver long life cycles. They are used in projects where materials such as steel and timber often fail.

Why are GFRP Composites replacing traditional materials?

GFRP composites have a unique combination of mechanical properties. Even in the most challenging and corrosive environments, GFRP composites can provide exceptional resilience and performance.

Our composite solutions are used in infrastructure projects across the globe from bridges and tunnels, to ports and seawalls.

Potash Plant Concrete Slab Replacement, Jordan

Advantages of using GFRP Composite Products

Whole of Life Savings
- Design life cycle is 100+ years
- Zero maintenance cost

High Tensile Strength
- Twice the strength of steel

Corrosion Free
- Exceptional resistance in salt water environments
- Does not rust or leach

Highly Chemical Resistant
- Exceptionally resistant to a wide range of chemicals

Non-electromagnetic
- Non-conductive and electro-magnetically neutral

Non-magnetic
- No interference with sensitive enquipment

Sustainable Infrastructure Solutions (GFRP compared to steel)

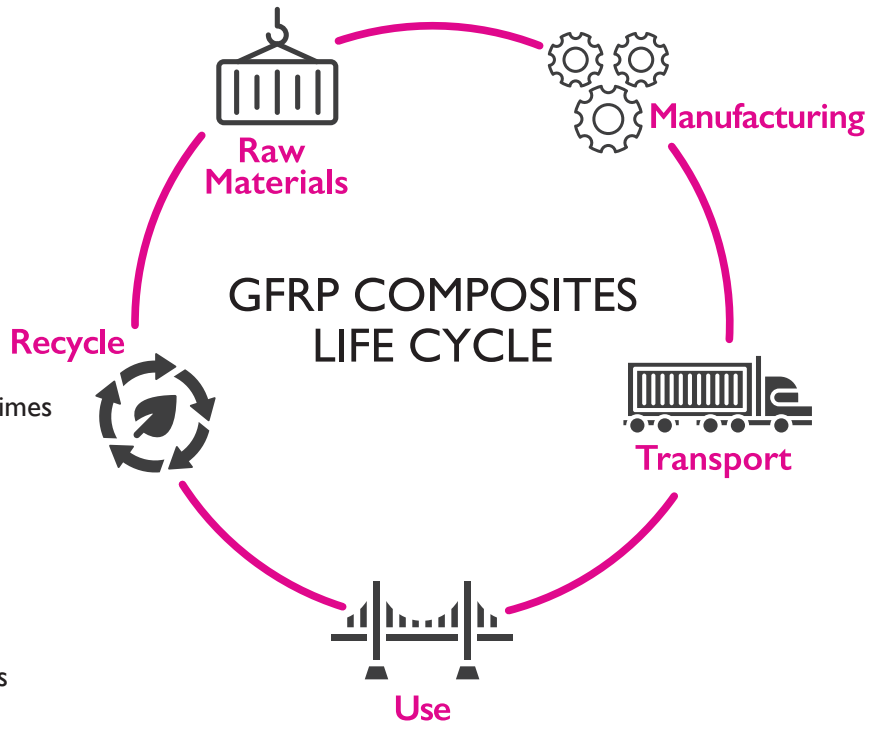
Raw Materials
• GFRP composites have a 15% lower carbon footprint than steel*

The Manufacturing Process
• Minimal heat, water, and energy used
• Lower CO^2 emissions
• Process efficiency = minimal waste

Distribution
• 4 x lighter than steel
• More products per truckload
• Less fuel required for transportation

Use
• Increases asset life-cycle by as much as four times
• Zero maintenance requirements
• Seawater can be used in cement production
• Saves fresh water
• Less cement content needed

Recycle
• GFRP composites can be crushed and used as aggregate in concrete



*Comparison based on the manufacture of steel rebar.

Lightweight
• 4 x lighter than steel
• Faster installation, reduced injury risks, and lower transportation costs

Easy to cut and install
• Cut on-site using standard cutting tools

Low Thermal Conductivity
• Maintains excellent thermal insulation values

No Thermal Cycling Impact
• Thermal expansion coefficient almost identical to concrete

Highly Durable
• Over 100 years retention of strength and modulus in high pH environments

Low Environmental Impact
• 15% lower carbon footprint than steel (comparison based on the manufacture of steel)

mateenbar™

The proven solution to corrosion, replacing steel rebar for concrete reinforcement

Post-Earthquake Kaikoura Seawall, New Zealand

Twice the tensile strength of steel

Over 2000 global projects

International codes and standards

Applications

Mateenbar™ glass fibre-reinforced polymer (GFRP) rebar is designed for heavy load applications. It offers an extended asset lifespan in the most challenging and corrosive environments.

Corrosive and Chemical Environments

- Bridge decks and approach slabs
- Roads
- Underwater, coastal and offshore
- Drainage arch and box culverts
- Marine pre-cast sea walls
- Sewage treatment plants
- Desalination Plants
- Industrial and agricultural facilities

Thermal Insulation

- Energy efficient buildings

For non-conductive/non-magnetic performance

- Hospitals
- Airport compass calibration pads
- Power plants and transformer sites
- Light Rail

Easy and safe to cut

- Tunnels (soft eyes)
- Mining

Bends and Stirrups

All bends are factory made and delivered to exact specifications. A variety of shapes, stirrups, and bespoke bends can be produced.

Deep Tunnel Stormwater System, Dubai

Advantages

Using Mateenbar™ as an alternative concrete reinforcement to steel eliminates the risk of corrosion.

Corrosion-resistant

Exceptional resistance to water, including salt water. It will never rust or corrode.

Lightweight

4x lighter than steel, Mateenbar™ is quicker and safer to install.

Easy to cut and install

Mateenbar™ is easy to cut on-site and, because of its cuttability, it is ideal for softeyes in tunnel construction.

Whole of Life Savings

Extended life cycle and reduced maintenance expenses

MATEENBAR™ SAVINGS

Cost Savings and Sustainability across the Asset Life-cycle

Sustainability is achieved by balancing environment, economic, and social needs – ensuring what is done today will provide a lasting and productive future.

Mateenbar™ delivers in all key areas, advancing positive outcomes for asset owners, communities, and the environment.

Economic Prosperity

- Longer life cycles. Non-corrosive durable rebar requires no expensive maintenance and preventative corrosion measures.
- Design guides and codes have been improved over time. In recognition of the high performance of modern GFRP rebars, the quantities required for reinforcement have been reduced.
- Design and manufacturing of GFRP rebar have been optimized and are competitively priced.
- Eliminating the risk of corrosion in infrastructure results in savings across the entire asset life.
- Less maintenance (e.g. roadworks) reduces economic losses through delays, and business interference.
- 4x lighter than steel means less tonnage to transport.

Social Responsibility

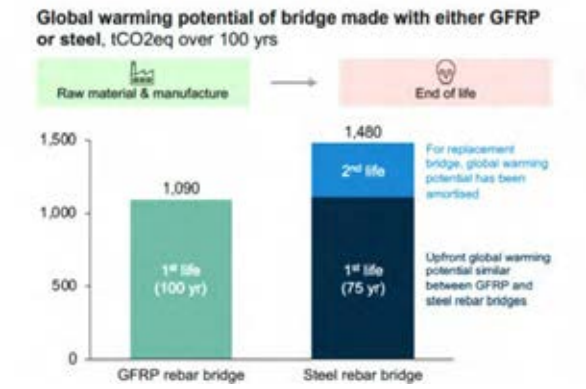
- Mateenbar™ is 4x lighter than steel, making it easier to install, and decreases injury risk to workers.
- Robust infrastructure, particularly roading and bridges, allows supply chain companies and communities to travel safely and freely without delays.

Environmental Savings

- Mateenbar™ does not corrode or cause concrete spalling and breakage.
- No rust or chemical leaching.
- Long-lasting structures result in less damage to the environment.
- Requires less concrete coverage.
- GFRP composites have a 15% lower carbon footprint than steel (comparison based on the manufacturer of steel rebar).

Bridge Life-cycle Study

A research project conducted by the Florida Department of Transport and the University of Miami – consisting of a 100-year life-cycle study of a 57m x 18m bridge showed a composite-reinforced bridge reduced global warming potential by 390 Tonne or 26%:



Design codes and standards

Design standards make it easy to switch from designing with steel to designing with GFRP Rebar.

USA: ACI CODE-440.11-22: Building Code Requirements for Structural Concrete Reinforced with Glass Fiber-Reinforced Polymer (GFRP) Bars; AASHTO LRFD: Bridge Design Specifications for GFRP-Reinforced Concrete Bridge Decks and Traffic Railing

Europe: FIB Task Group 9.3 - Bulletin 40 - FRP Reinforcement in RC Structures

Saudi Arabia: ACI 440.1R; ACI CODE-440.11-22: Building Code Requirements for Structural Concrete Reinforced with Glass Fiber-Reinforced Polymer (GFRP) Bars

Canada: CAN/CSA S806: Design of Buildings with Fibre Reinforced Polymers, CAN/CSA S6: Canadian Highway Bridge Design Code

Technical Data

Mateenbar 46 (ASTM D7957, ACI 440.6)

	Units	#2 (6mm/0.23in)	#3 (10mm/0.39in)	#4 (13mm/0.51in)	#5 (16mm/0.62in)	#6 (19mm/0.74in)	#7 (22mm/0.86in)	#8 (25mm/0.98in)	#10 (32mm/1.25in)
Guaranteed tensile force	kN	27	59	96	130	182	241	297	437
	kip	6.1	13.2	21.6	29.1	40.9	54.1	66.8	98.2
	MPa								
	ksi								
Elastic Modulus	GPa	46							
	ksi	6670							
Guaranteed transverse shear capacity	kN								
	kip								
	MPa	150							
	ksi	23.2							
Primary Materials		Epoxy Backboned Vinylester and Corrosion Resistant E-CR Glass							
Weight	g/m	97	144	315	415	589	780	1030	1680
	lb/ft	0.07	0.096	0.211	0.278	0.395	0.524	0.692	1.128
Nominal cross-sectional area	mm^2	32	71	129	199	284	387	510	819
	in^2	0.049	0.11	0.20	0.31	0.44	0.60	0.79	1.27
Outer diameter (including ribs)	mm	8.2	10.0	14.0	16.0	19.0	21.8	25.0	31.4
	in	0.250	0.375	0.500	0.625	0.750	0.875	1.000	1.270

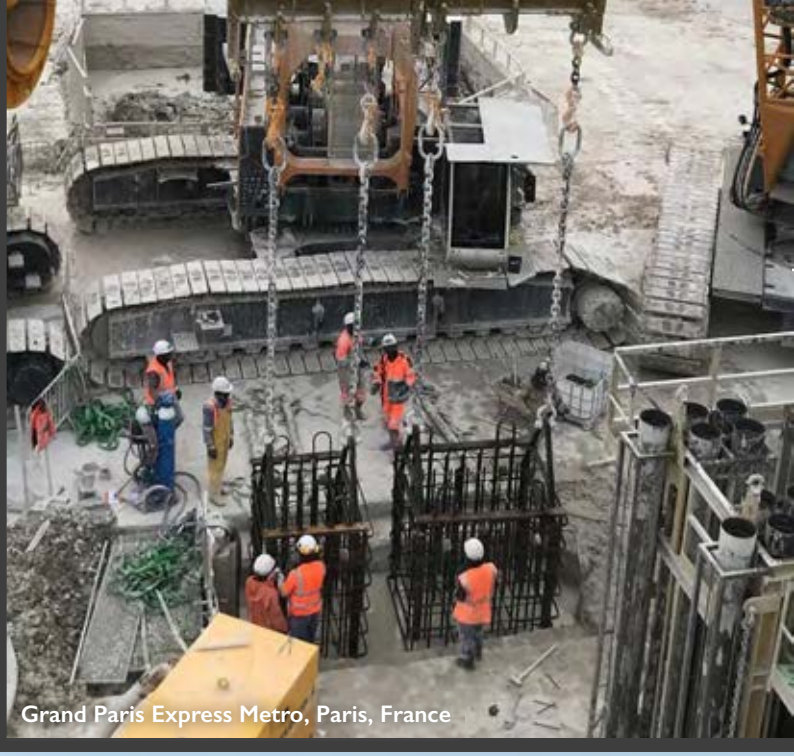
Please contact our team for information on the material properties, shape availability and dimensional limitations of bent bars.

Mateenbar 60 (CSA Grade III)

	Units	#2 (6mm)	#3 (10mm)	#4 (13mm)	#5 (15/16mm)	#6 (19/20mm)	#7 (22mm)	#8 (25mm)	#9 (30mm)	#10 (32mm)
Guaranteed tensile force	kN	27	71	129	199	284	387	510	600	735
	kip	7.2	16.0	29.0	44.0	64.0	87.0	115.0	134.9	165.2
	MPa									
	ksi									
Elastic Modulus	GPa	60								
	ksi	8700								
Guaranteed transverse shear capacity	kN									
	kip									
	MPa	180								
	ksi	26.1								
Primary Materials		Epoxy Backboned Vinylester and Corrosion Resistant E-CR Glass								
Weight	g/m	97	185	315	476	702	960	1252	1575	2050
	lb/ft	0.07	0.12	0.21	0.32	0.47	0.64	0.84	1.06	1.37
Nominal cross-sectional area	mm^2	32	71	129	199	284	387	510	645	819
	in^2	0.049	0.110	0.200	0.310	0.440	0.600	0.790	1.000	1.270
Outer diameter (including ribs)	mm	8.2	10.8	14.0	17.2	20.6	24.1	27.4	30.8	35.0
	in	0.315	0.425	0.551	0.677	0.807	0.949	1.087	1.213	1.378

Please contact our team for information on the material properties, shape availability and dimensional limitations of bent bars.

Kwinana Desalination Plant, Perth, Australia



Grand Paris Express Metro, Paris, France

Jizan Flood Mitigation Channel, Jizan, Saudi Arabia
World's largest GFRP composite project (23km long channel)

Port of Rotterdam upgrade, The Netherlands

Gisborne Port Upgrade, New Zealand

MATEENBAR™ FOR FLATWORK

The Best Rebar for Fast Installation of Flatwork

Applications

- Slab-on-ground applications
- Pavements
- Sidewalk
- Parking slabs
- Continuously reinforced concrete paving
- Curbs and gutters
- Patios

	Units	#3 (10mm)	#4 (13mm)
Guaranteed tensile strength	kN	56	91
	kip	12.5	20.5
Minimum tensile modulus	GPa	40	
	ksi	5800	
Guaranteed transverse shear capacity	MPa	130	
	ksi	20	
Weight	kg/m	144	315
	lb/ft	0.096	0.211
Nominal cross-sectional area	mm^2	71	129
	in^2	0.11	0.20
Actual diameter (including ribs)	mm	10.0	14.0
	in	0.375	0.500

Mateenbar for Flatwork is not to be used in high-load bearing applications.

Advantages

Corrosion-resistant
Exceptional resistance to water, sea water, and de-icing salts – it will not rust

Lightweight
4x lighter than steel, significantly reducing transport and labour costs

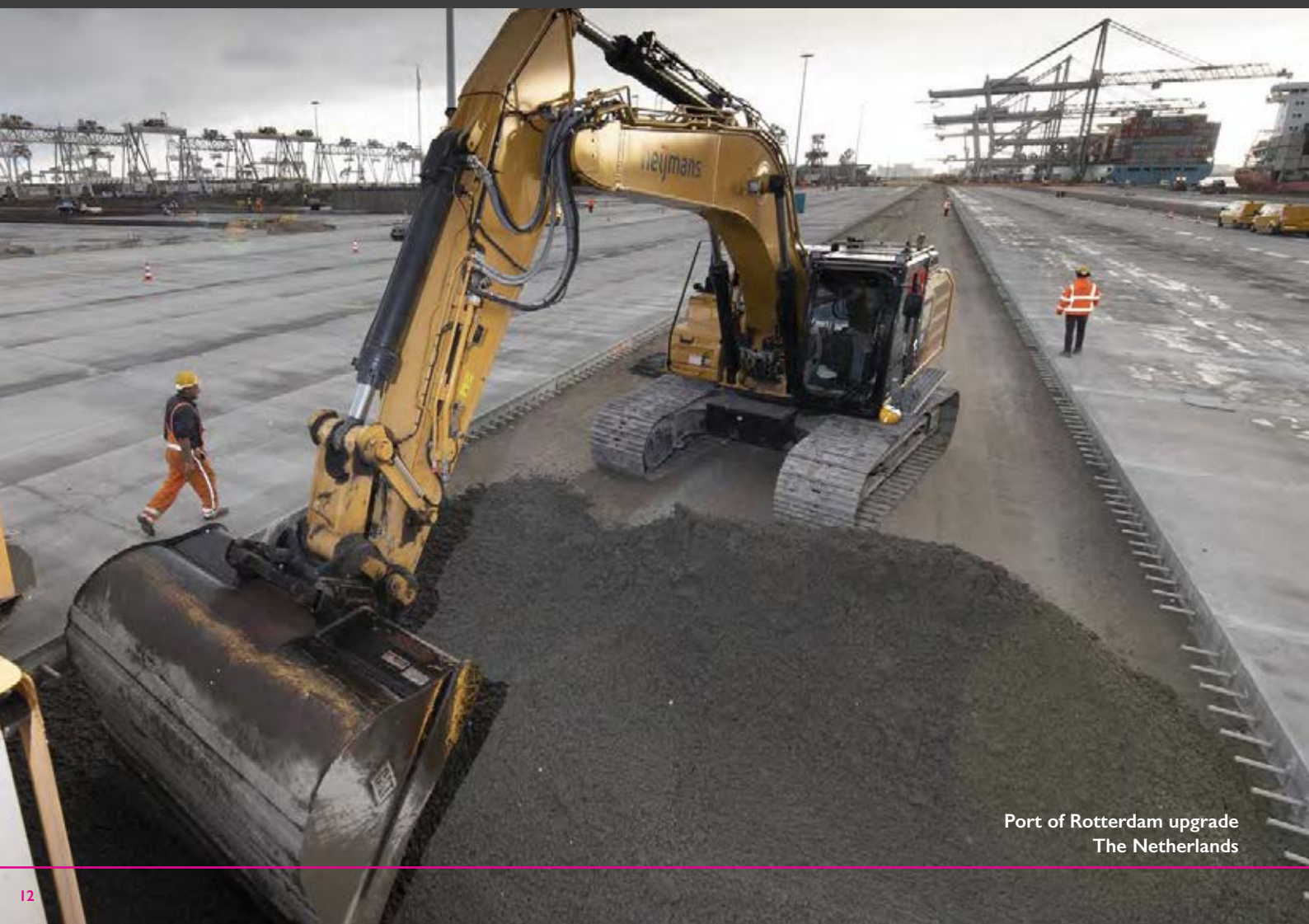
Easy to cut and install
Cut on-site with standard tools

High Strength
Twice the tensile strength of steel.
Excellent stiffness and shear capacity.

Competitive savings
Zero maintenance cost

PULTRON DOWEL

Corrosion-free joining system reduces maintenance costs



Port of Rotterdam upgrade
The Netherlands

Longest life-cycle of all dowels

Corrosion-resistant Will not rust

No greasing or pre-preparation

Applications

Provides shear reinforcement where corrosion or electromagnetic interference is a concern. Extends asset life through a corrosion-free joint system reducing maintenance and increasing whole-of-life cost savings.

Dowels are used extensively in concrete jointed roads, underpasses in extreme conditions and a range of other applications including:

- Roading
- Industrial and commercial floors
- Jointed concrete pavements
- Mechanically-stabilized wall panels
- Expansion and contraction joints
- Approach slabs.

Installation methods

Pultron dowels can be installed using the same standard installation methods already used for other dowel types:

- Slip form paver baskets
- Dowel bar insertion machines
- Precast panels
- Retrofits and repairs.

Advantages

Pultron dowels will not corrode, even when exposed to salty soils. They are designed to provide excellent load transfer across expansion joints between slabs.

The longest life cycle of all dowel types
The dowels will not cause concrete spalling, even in corrosive environments.

High shear strength for load transfer efficiency

Significant savings compared to stainless steel dowels

Lightweight
Pultron dowels are quicker and safer to install.

No dowel preparation required
Designed with a low bond strength, they are quicker to install and do not require greasing or other preparation methods.

Technical Data

Nominal Diameter		Shear Strength		Weight	
mm	inch	Mpa	ksi	g/m	lb/ft
25	1.0	160	23	1065	0.72
28	1.125	158	22.9	1250	0.84
32	1.25	155	22.5	1640	1.10
38	1.5	150	21.7	2320	1.60

PULTRON BOLTS AND SOIL NAILS

Precision machined threads with advanced fibreglass composite materials

Grand Paris Express, France

Designed for maximum shear strength

No risk of damage to TBMs

Easy to install and cut on-site

Composite Bolts and Soil nails offer a safe method of securing excavations, slopes or embankments by installing reinforcement bars through the failure zone into stable ground below.

Applications

Suitable in most ground conditions including highly corrosive soils.

- Tunnelling
- Mining
- Slope Stabilisation

Advantages

Composite Bolts and Soil Nails deliver outstanding benefits:

Washer allows offset angles of up to 10° from perpendicular

Suitable for both temporary and permanent reinforcement

Cuttable bolts for ground support

NATM/SEM/Lunardi Tunneling method ground support

An alternative to black, galvanised or epoxy-coated steel, stainless steel or double-corrosion protected bolts.

No risk of damage to Tunnel Boring Machines
Composite dowels are strong and easy to cut. Eliminate risk of unforeseen costs and project delays due to damaged TBMs.

High strength

Lightweight

Technical Data

Lengths: 6 metre or 12 metre (custom lengths on request)
Washers: high strength and shaped to allow offfset angles

Guaranteed Properties			
Size	**25mm**	**32mm**	**32mm Hollow**
Ultimate Tensile Strength	>280kN	>430kN	>340kN
Shear (single sided)	>78kN	>113kN	>90kN
Shear (double sided)	>156kN	>226kN	>180kN
Nut Termination	>100kN	>140kN	>140kN
Working Area	385mm²	645mm²	532mm²
Elastic Modulus*	>53GPa	>53GPa	>53GPa

*Elastic Modulus is based on the working area of the bolt

PULTRON FORM TIES

Precision machine threaded form tie system

Save on labour and time

Easy to cut and lightweight

Highly Durable

Applications

- Dams
- Water Tanks
- Wastewater Applications
- Corrosive environments
- Single-sided formwork
- Columns
- Architectural work

Technical Data

Tie Rod Specifications	
Size (diameter)	16mm
Colour	Concrete Grey
Nut strength average	65 kN
Nut strength guaranteed	55 kN
Nut size	
Length	75mm
Diameter of washer face	65mm
Hex size for spanner	32mm / 1 ¼"

Advantages

Use with ALL concrete grades

High durability

Corrosion-free

Highly chemical resistant

Lightweight for construction and transport

Easy to cut

No loss of time through removal of formwork delays

NO PATCHING NEEDED

NO PREPARATION

Concrete-coloured rod for a better finish and less remedial work

Excellent thermal insulation

Thermal expansion coefficient almost identical to concrete

COST SAVINGS: PULTRON FORM TIES

The biggest impact on the bottom line is labour and materials.
Watch the savings add up when you use Pultron Form Ties:

SAVE on Transport

- 4x lighter than steel, composite form ties are more economical to transport.
- Quicker to unload when it arrives on-site.

SAVE on Labour

- NO Extra labour for preparation and finish work.
- NO removing taper ties.
- NO preparing the patch (clean holes, mix and prep grout).
- NO additional time spent on worksite.
- Faster installation and easy to cut = LESS TIME AND LABOUR.

SAVE Hireage and Materials

- LESS TIME using elevated access platforms, scaffolding and other lifting equipment.
- NO grouting products & mixing equipment required because the composite rods are similar to concrete.

SAVE Time

- LESS TIME delays risk due to unfavourable weather limiting opportunities to complete grouting work.
- ONE LESS WORKFLOW STREAM for supervisor/inspector to assess for compliance.
- Labourers can MOVE FASTER to next job.