

Twaron[®] Ultra High Modulus

Unmatched strength and stiffness

TEIJIN ARAMID



Twaron[®]

Unmatched strength and stiffness for subsea cables

Cable reinforcement at depth is a materials challenge. Steel has long been the standard, but its high density and vulnerability to corrosion make it less suitable for deep-water conditions. Twaron® Ultra High Modulus (UHM) offers a lower-density, non-corrosive alternative with stable mechanical performance under sustained load.

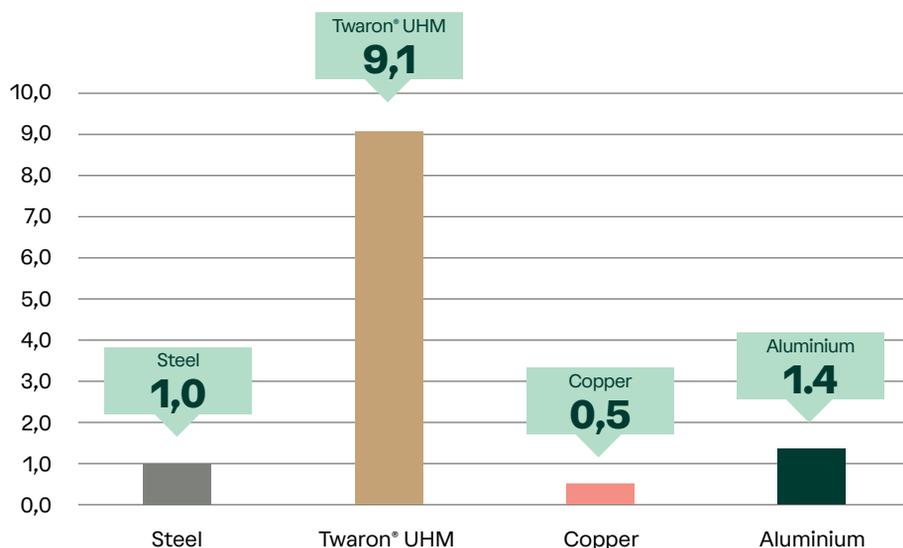
Reinforce your cables with a lighter, stiffer alternative to steel

Deeper installations increase the mechanical demands on cable structure, axial load, and handling. At depths beyond 1,000 meters, conventional steel armoring adds significant weight, limiting cable design and installation options.

Operational consideration	Steel armoring	Twaron® UHM armoring
Specific gravity	~7.85 (8,000 kg/m ³)	~1.45 (1,450 kg/m ³)
Impact on cable weight	High self-weight increases axial load and limits depth viability	Lighter material reduces load, enabling deeper installation and longer unsupported spans
Processing requirements	Requires rewinding and bitumen coating; short lengths per bobbin	No coating required; longer runs possible; compatible with standard equipment
Corrosion behavior	Requires protection against seawater exposure	Inherently resistant to corrosion and marine degradation
Design flexibility	Larger diameter and weight limit routing options	Supports compact designs, tight bends, and suspended routing
Environmental considerations	Petroleum-based coatings and heavier transport requirements	Cleaner manufacturing and reduced vessel trips lower environmental impact

Performance beyond 1,000 meters

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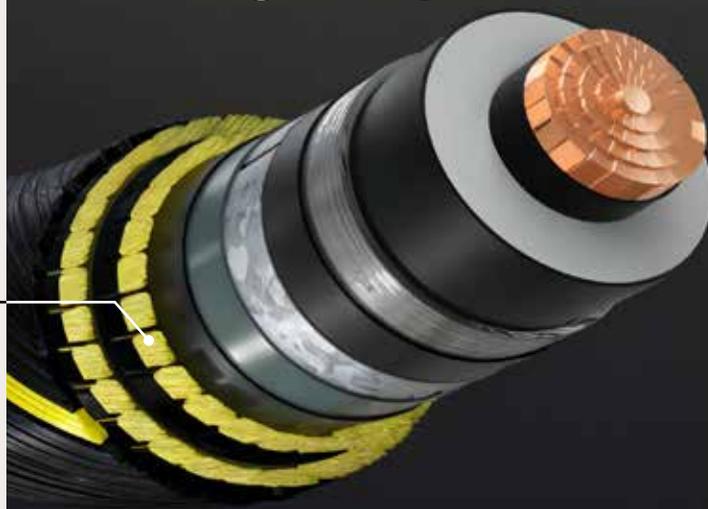


Twaron® UHM enables free-hanging cable depths over 9 times greater than steel at the same strain limit (0.1%).

Twaron® UHM offers a high-stiffness, low-weight alternative with 15.9 times lower density in seawater than steel. Its superior modulus-to-density ratio allows cables to reach free-hanging depths up to 9.1 times greater than steel-armored equivalents. This enables more efficient designs and reliable deep-water deployment.

As offshore installations move into more demanding environments beyond 1,000 m, Twaron® UHM reinforcement provides clear advantages in strength-to-weight efficiency, fatigue behavior, and system design flexibility.

Twaron® UHM reinforcement supports high loads with significantly lower weight, improving handling at depth



Make every meter of cable work smarter

Flexible routing

Lower weight and limited impact on cable diameter make Twaron suitable for tighter bend radii and more adaptable routing.

Reduced structural load

Minimized axial loading decreases the demands placed on support systems such as bend restrictors, tensioners, and hang-offs.

Compact system integration

Aligned with high-voltage compact designs, where space and mass restrictions limit the use of steel-based materials.

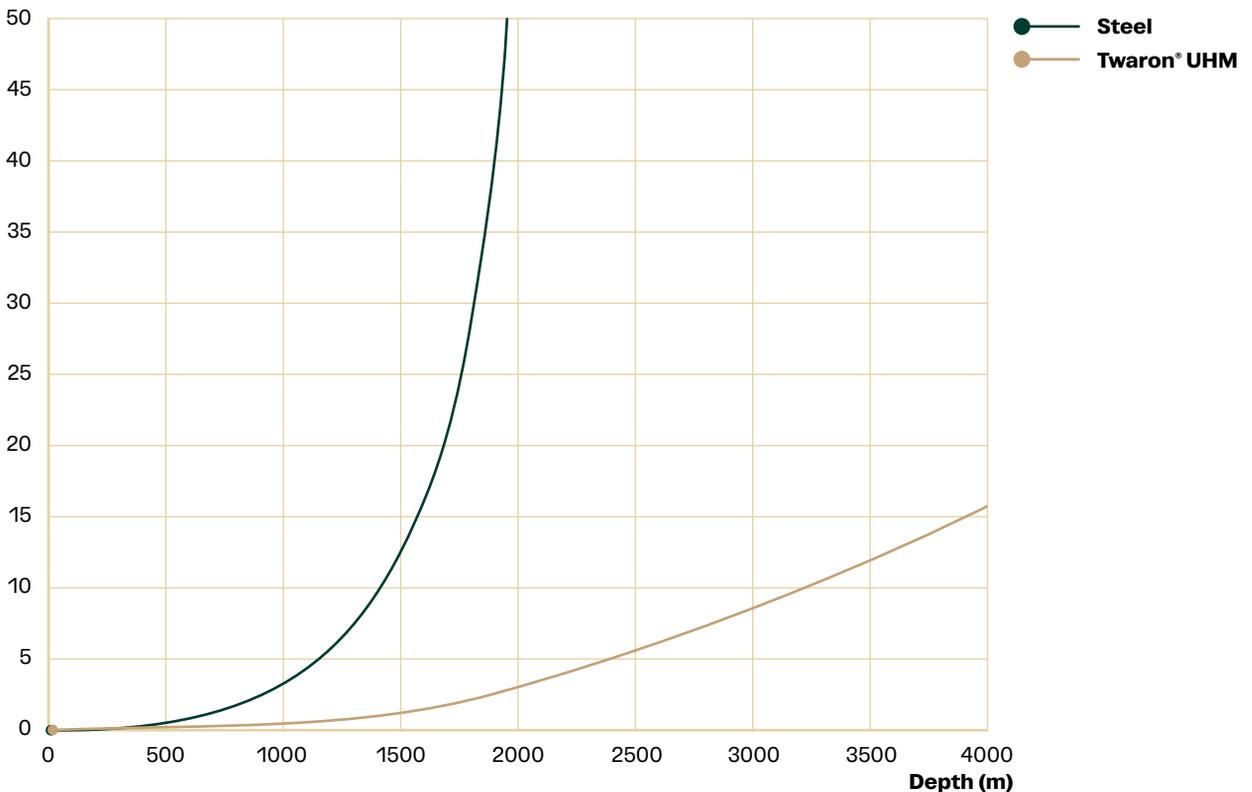
Extended depth potential

Modeled designs using aramid remain structurally viable beyond 2,500 m, supporting deeper and more complex offshore systems.

Mass decreases with Twaron® UHM

Steel armoring gains significant weight as depth and safety factor increases, limiting cable span and design flexibility. Twaron® UHM reduces mass in all modeled scenarios. This enables deeper installations, lowers tension loads, and supports more adaptable offshore systems.

Armor Mass (kg/m)



Maximize technical expertise through collaboration

Selecting aramid reinforcement is more than a material choice. We work alongside cable manufacturers and engineering teams throughout the process, from early design through to installation.

Your partner in offshore cable reinforcement

Support from concept to installation

Our technical account managers collaborate with regional partners to help integrate aramid into existing and new cable designs. Guidance is available across design, production, and field application.

Aligned with manufacturing practices

Aramid reinforcement can be processed on standard arming equipment. Where needed, we provide recommendations on tension control, fiber handling, jointing, and splicing techniques to support efficient integration.

Collaboration at every stage

Whether you are building for deep water transmission, floating wind, or complex subsea environments, we bring decades of experience in rope and cable reinforcement to address your design challenges.

Get in touch

Connect with our team to explore how aramid reinforcement can strengthen your next offshore project.

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