

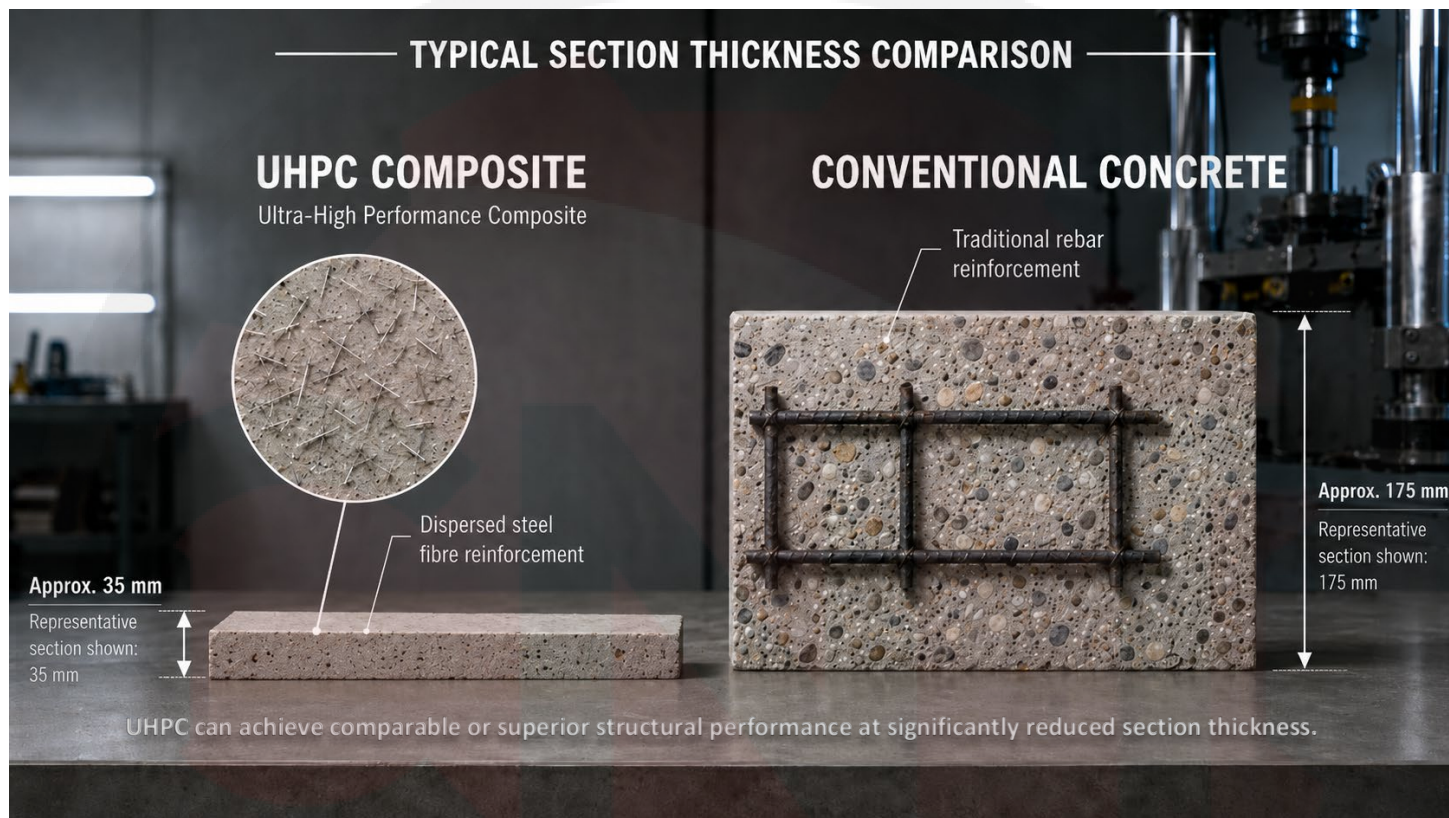


UHPC

Composite Solutions for Strengthening, Hardening & Rapid Deployment

CNT Plus delivers **UHPC composite-based solutions** for **infrastructure strengthening, protective hardening, rapid repair and lifecycle extension** across defence, transport, energy, maritime and critical infrastructure environments.

UHPC composite for resilient infrastructure applications



Infrastructure Problem

Ageing assets, **chloride exposure, freeze-thaw cycles, corrosion, climate stress and operational downtime** are increasing the cost and complexity of maintaining critical infrastructure. Conventional repair and replacement methods are often **slow, disruptive and lifecycle-inefficient**.

CNT Plus UHPC Composite Approach

CNT Plus positions UHPC as an **advanced structural composite technology** - not as an ordinary cement-based repair material. The system is relevant where assets must be **reinforced, protected, repaired or rapidly returned to operational use** under demanding technical and environmental conditions.

Core Capabilities

Thin-Section Strengthening More capacity potential with less section depth for overlays, slabs, walls and bridge elements.	Protective Hardening Structural protection logic for critical assets, shelters, barriers and mission-critical facilities.	Rapid Return-to-Service Repair and recovery routes where downtime, closures and access constraints drive value.
Retrofit Before Replacement Lifecycle extension of existing assets where demolition or full replacement is high-cost/high-risk.	Harsh-Environment Durability Saltwater, chloride, freeze-thaw, abrasion and low-permeability exposure conditions.	Material Efficiency High-performance composite sections where mass, access, logistics or geometry constraints matter.

Technical Performance Indicators

186 MPa Manufacturer technical data compressive strength up to approx.	157.5 MPa Independent lab minimum compressive strength	1.31% Independent lab average water absorption
~2420 kg/m3 Independent lab average density/unit mass	49 coulombs Manufacturer technical data chloride permeability at 56 days	427 microstrain Manufacturer technical data linear shrinkage reference

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UHPc Composite Deployment Framework

A practical framework for resilient infrastructure strengthening, protective hardening and lifecycle extension.

STRATEGIC VALUE

Investment logic, risk reduction and operational continuity.

ENGINEERING BASIS

Validation, detailing and project-specific integration.

INSTITUTIONAL READINESS

Procurement confidence, audit trail and lifecycle governance.

Engineering Data Snapshot

Parameter	Reported value	Basis / why it matters
Compressive strength	From 157.5 MPa / up to approx. 186 MPa	Independent lab average plus manufacturer technical data; used as a strength indicator, not automatic section equivalency.
Density/unit mass	~2420 kg/m ³	Independent lab average reference for mass, logistics and dead-load discussions.
Water absorption	1.31% avg	Independent lab average supports durability and low-permeability positioning.
Chloride permeability	49 coulombs at 56 days	Manufacturer technical data reference for chloride-exposure environments.
Static modulus	57 GPa	Manufacturer PDS reference for stiffness discussions and engineering review.
Shrinkage / early set	427 microstrain / 75-87 min set	Manufacturer technical data references for detailing, curing and construction planning.

From asset risk to validated UHPc composite deployment

R	A	P	I	D
Review	Assess	Prove	Integrate	Deploy & Document
Asset risk, exposure and downtime pressure.	Condition, geometry, access and substrate suitability.	UHPc suitability, load case and acceptance criteria.	Section, interface, placement method and QA/QC.	Controlled execution, inspection evidence and handover file.

Best-Fit Application Triggers

Bridge decks & overlays: Thin-section strengthening, wear resistance and reduced closure time.

Critical infrastructure hardening: Protective improvements to mission-critical assets, barriers, and technical facilities.

Maritime / chloride exposure: Low-permeability applications in coastal, port and aggressive environments.

Rapid repair & recovery: Fast retrofit of degraded or damaged assets where downtime is operationally expensive.

Retrofit instead of replacement: lifecycle extension where demolition, access or replacement is high-cost/high-risk.

Engineering Validation Gates

Structural role: Clarify whether the system is overlay, repair, protective hardening, panel or structural member.

Load case & acceptance criteria: Confirm compression, flexural, shear, bond, abrasion or environmental performance needs.

Substrate and interface: Assess preparation, moisture, bond, edges, joints and connection detailing.

Execution method: Define mixing, placement, curing, QA/QC, access, safety and inspection controls.

Limit of claim: Do not state one-to-one section equivalence without project-specific engineering calculation.

Information Required for RAPID™ Feasibility Review



Asset & location

Type, geometry, age, drawings, photos and access constraints.

Problem statement

Damage mode, exposure, downtime pressure and target outcome.

Performance requirement

Strength, durability, protection, repair or lifecycle objective.

Validation route

Applicable standards, test evidence, inspection and sign-off pathway.

Commercial positioning: Best positioned for projects where lifecycle value, access constraints or downtime reduction matter more than lowest material cost alone.