

VIRIDIA
High-Durability Concrete



Investing in Resilience

Long-term durability, fewer repairs, greater sustainability



Building the Future with Resilience and Responsibility

INTERBETON, a member of TITAN Group, is a pioneer in ready-mixed concrete production, maintaining a consistent commitment to quality, technical reliability, and sustainability. With decades of experience and ongoing investment in innovation, INTERBETON develops solutions that respond to the modern demands of construction, reducing the environmental footprint of buildings and extending their lifespan.

The VIRIDIA series is the practical expression of this strategy: a new-generation concrete that combines advanced technology, exceptional durability beyond standard codes, and environmental responsibility.

Engineered to Last

VIRIDIA is INTERBETON's high-durability concrete series, designed for structures where enhanced resistance to deterioration is essential, particularly against chlorides and carbonation. Through targeted, high-performance technological characteristics in demanding exposure conditions, VIRIDIA:

- significantly reduces the need for repairs
- improves life-cycle environmental performance
- and is ideal both for private buildings and infrastructure works

Developed through extensive research, VIRIDIA is founded on internationally recognized standards.

- EN 12390-18:2021
- fib Model Code 2010
- fib Bulletins No 34 & 76

It has a documented low chloride migration coefficient and high resistance to carbonation. VIRIDIA:

- comes with an Environmental Product Declaration (EPD)*
- has been technically developed and validated in collaboration with Democritus University of Thrace
- supports circular economy principles
- contributes to lower CO₂ emissions over the full life cycle
- and carries a VESTA™ A+ rating, confirming its excellent environmental performance



* Environmental Product Declarations (EPDs) are certified documents that transparently present a product's environmental performance across its entire life cycle, including CO₂ emissions, energy use, raw materials, and other indicators, in accordance with international standards.



INTERBETON has developed the VESTA® system, a certified tool for assessing the environmental performance of its concretes, based on CO₂ footprint calculations and life cycle assessment. VESTA® has been implemented since 2022 and is certified by the independent body BV, accredited by ESYD.



Technical Superiority with Long-Term Durability

VIRIDIA is designed to protect against the most critical deterioration mechanisms: chloride ingress and carbonation. With verified performance in demanding environments, it greatly extends service life, minimizes repair requirements, and reduces the overall carbon footprint over the lifespan.

Technical Characteristics

Chloride Resistance

VIRIDIA is ideal for coastal and marine-influenced environments.

Based on tests (EN 12390-18:2021 and fib Model Code 2010):

- In exposure class XS1 (distance < 1.5 km from the sea), VIRIDIA concretes can delay the onset of reinforcement corrosion by up to 40 years compared with conventional C30/37 XS2 concretes designed only to KTS 2016 minimums.
- Conversely, structures built with C25/30 XC3 not meeting the KTS 2016 requirements for marine exposure can experience up to 20 years shorter service life due to premature steel corrosion.

Carbonation Resistance

The specially engineered VIRIDIA mix offers superior protection against carbonation, extending the service life of the structure by up to 80 additional years compared to standard C25/30 XC3 concrete, provided that proper curing is maintained. This advantage is significant for structures in inland, urban, or underground environments.

In parallel, VIRIDIA contributes to significant CO₂ reductions in the maintenance and repair stages (B2–B3 of Life-Cycle Assessment):

- Up to -46 kg CO₂/m³ in carbonation-driven environments
- Up to -287 kg CO₂/m³ in coastal projects (XS1)

Avoiding Repairs

Thanks to its improved durability, VIRIDIA significantly reduces and, depending on curing, may eliminate repair interventions throughout the structure's lifespan. Repairs due to chlorides and carbonation are both expensive and harmful to the environment. Over a 100-year lifespan, VIRIDIA can completely eliminate certain repair phases linked to carbonation damage.

Stable Performance Over Time

The VIRIDIA series delivers stable, predictable and certified performance against key deterioration drivers, thanks to its outstanding technical characteristics:

- Chloride penetration coefficient: $D_{nssm} < 17,5 \times 10^{-12} \text{ m}^2/\text{s}$
- Carbonation coefficient: $< 2 \times 10^{-10} \text{ [(m}^2/\text{s)]/(kg/m}^3\text{)]}$

This ensures long-term durability and reliability, supporting truly sustainable structures year after year. VIRIDIA is ideal for designing structures with a helpful service life exceeding 50 years, fully compliant with KTS 2016 and Eurocodes.

On-Site Advantages

The VIRIDIA series provides substantial technical and construction benefits, making concrete safer, more effective and more reliable at every stage of the project.

- Product of industrial production in fully automated INTERBETON plants
- Strict quality assurance procedures
- Consistent with the highest reliability standards

Thanks to its optimized mix design, VIRIDIA meets all critical exposure classes according to KTS 2016 and EN 206, offering solutions even for the most demanding projects.

Main Practical Benefits

High Workability (S4) & Pumpability

- Easy placing, effective compaction, and good filling of formwork and shutters
- Reduced risk of honeycombing, insufficient reinforcement cover, chipped edges, and other defects
- Can be pumped without modifying its rheology on site, ensuring safe, straightforward placement

Ready-Mixed, Consistent Quality Concrete

- Produced at scale in certified INTERBETON plants
- Constant mix proportions and performance – no job-site mixing uncertainty

Complete Exposure Class Coverage

VIRIDIA mixes can be specified to cover:

- XC1–XC4 (carbonation)
- XS1–XS3 (chlorides from seawater)
- XD1 (chlorides not from seawater)
- XF1 (freeze–thaw)
- XA1 (chemical attack)



For more information, please refer to the VIRIDIA Technical Description brochure.

Repair Scenarios Avoided with VIRIDIA

Typical repair strategies that VIRIDIA helps avoid or significantly delay include:

- Removal and local repair of spalled or delaminated concrete
- Cleaning of reinforcement and protection with 2-component mortar (EN 1504 – Principle 11, Method 11.1)
- Application of repair mortar such as DryBuilt R4 by INTERMIX (Principle 7, Method 7.2)
- Spraying with corrosion inhibitor (Principle 11, Method 11.3)

These interventions typically provide 20–25 years of additional protection in XS1 (coastal) or carbonation exposure. Over a 100-year service life, they result in multiple maintenance cycles with significant costs and environmental impact — cycles that VIRIDIA can largely eliminate or significantly reduce.

Exposure categories met by VIRIDIA

According to KTS 16 and ELOT EN 206

Chloride-induced corrosion

	Carbonation-induced corrosion	Seawater	Other than seawater	Freeze–thaw attack	Chemical attack
C25/30	XC1, XC2, XC3	XS1, XS2	—	—	—
C30/37	XC1, XC2, XC3, XC4	XS1, XS2, XS3	XD1	XF1	XA1
C30/37 ULTRA	XC1, XC2, XC3, XC4	XS1, XS2, XS3	XD1	XF1	XA1

Technical characteristics

	C20/25	C25/30	C30/37
Compressive strength	C25/30	C30/37	C30/37
Workability	S4	S4	S4
Workability retention (min)	45	45	45
Maximum aggregate size (mm)	31,5	31,5	31,5
Chloride diffusion coefficient D _{nssm} (m ² /s)	17.50 * 10 ⁻¹²	14.30 * 10 ⁻¹²	15.30 * 10 ⁻¹²
Chloride diffusion coefficient RACC,0-1 [(m ² /s)/(kg/m ³)]	2.0002E-10	1.3225E-10	9.25261E-11
Global Warming Potential* kg CO ₂ /m ³	245	261	262

* According to the Environmental Product Declaration (EPD), an independently verified and registered document that provides transparent and comparable information on the environmental impacts of products over their life cycle.

Sustainability in Practice

VIRIDIA is not just a “durable concrete”. It is a strategic tool for sustainable construction, bringing together technological and environmental innovation to:

- enhance the longevity of structures
- reduce environmental impact
- and minimise life-cycle cost

Long-Term Strength with Lower Cost

The VIRIDIA series offers high durability, drastically reducing deterioration driven by chloride ingress and carbonation. As a result:

- Repairs and interventions are significantly reduced over the structure’s life,
- total cost is lowered,
- and the overall environmental footprint of the project is considerably improved.

Fewer Repairs, Improved Sustainability

By avoiding repair cycles, VIRIDIA:

- eliminates the impacts associated with additional construction materials, corrosion inhibitors and repair mortars
- supports the circular economy by reducing demolition, removal, and reconstruction
- enables the design of structures with a useful service life of more than 50 years, in full compliance with KTS 2016 and Eurocodes.

VIRIDIA turns durability into a measurable sustainability strategy: less intervention, lower emissions, longer life.



Contact our team for more information
on how VIRIDIA can support your project.

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