BORAL Building something great

# ENVISIA®

## High performance low carbon concrete for complex and heavily loaded structures

ENVISIA® is an advanced high performance concrete developed to reduce carbon while meeting strict engineering requirements.

It delivers excellent early age strength, low shrinkage and s uperior long term durability, making it ideal for high rise construction, large commercial projects and civil infrastructure with tight construction timelines.

ENVISIA® provides the performance needed for heavily reinforced elements, complex formwork and demanding structural applications.


### ENVISIA®

ENVISIA® has excellent early age strength and drying shrinkage characteristics.

It can be used for all standard post tensioned concrete applications and their low shrinkage characteristics provides engineers and architects with more design options.

ENVISIA® has a light colour which provides architectural benefits, and has excellent resistant to chloride ingress making it suitable for marine environments.

### Product Details

Boral's ENVISIA® concrete is a low carbon concrete product which complies with AS 1379 and has excellent engineering properties. It contains supplementary cementitious materials to reduce the portland cement and the minimum portland cement reduction compared to the GBCA and ISC reference case is 50%. ENVISIA® combines a proprietary cement technology (ZEP®) which gives it good early age strength, low shrinkage characteristics and excellent durability characteristics in a marine environment.

# ENVISIA

## Features and Benefits

| | |
|---|---|
| • . | • Low portland cement.<br>• Low embodied carbon and achieves up to 50 per cent reduction in shrinkage when compared to conventional sustainable concrete mixes.<br>• Very low drying shrinkage.<br>• Good early age strength, suitable for all standard post tension applications.<br>• Excellent resistance to chloride ingress.<br>• Light colour provides architectural benefits and enhances use of coloured oxides.<br>• Good off-form finish.<br>• Suitable for projects targeting a GBCA[1] or ISC[2] rating.<br>• Improved early age strength and drying shrinkage compared to the ENVIROCRETE® and ENVIROCRETE® PLUS products. |

## Environmental properties

| | |
|---|---|
| Reduction in portland cement[3] | ≥ 50% |
| Reduction in portland cement[3] (Typical range) | 50% - 70% |
| Reduction in embodied carbon[4] | Minimum 45% |

## Engineering and durability properties

| | |
|---|---|
| Early age strength | ● ● ● |
| Drying shrinkage | ● ● ● ● |
| Durability in a marine environment | ● ● ● ● |
| Patented ZEP™ activator | ZEP ™ Activator Technology |

Legend: ● Good ●● Very Good ●●● Excellent ●●●● Superior

| ENVISIA | |
|---|---|
| **Applications** | |
| Standard Mixes - Footpaths, house slab, driveways and others | ■ ■ ■ |
| Piling - All types of piling | ■ ■ ■ |
| Columns - Vertical applications | ■ ■ ■ |
| Wall/Stairs - All wall applications | ■ ■ ■ |
| Blockfill - Blockfill / Corefill | ■ ■ |
| PT Slabs - Post Tension / High early strength | ■ ■ ■ |
| Precast - High early strength | ■ ■ ■ |
| Shotcrete - All shotcrete mixes | ■ ■ ■ |
| Footing - General footing mixes | ■ ■ ■ |
| Colour Mixes - Boral Colori mixes | ■ |
| Exposed - Expose' range | ■ |
| Polished - Boralstone range | ■ |
| Tilt-up - Cast insitu / high early strength | ■ ■ ■ |
| Slipform / Jumpform - High early strength | ■ ■ ■ |
| High Strength - up to 65MPa | ■ ■ |
| Other Applications | High Slump & Piling<br>Shotcrete/Poolmix<br>Colori Coloured Concrete<br>Boralstone Decorative Concrete (Honed & Polished)<br>Self Compacting<br>Burnished<br>Marine Grade |
| | Legend: ■ Good ■■ Better ■■■ Best |
| **Compliance** | |
| AS 1379 Specification for Basic Assessment | Complies |
| Compressive Strength (MPa) | 20MPa - 80MPa |
| Flexural Strength (Mpa) | Up to 30% improvement over conventional concrete for similar/low compressive strength |
| Workability | ENVISIA® can be placed, pumped and finished like conventional concrete. |

## ENVISIA

| 20MPa | |
|---|---|
| Compressive Strength - 1 day (MPa) | ~ 5 |
| Compressive Strength - 7 days (MPa) | ~20 |
| Compressive Strength - 28 days (MPa) | 20 |
| Dry Shrinkage (mmm) - microstrain (50% RH) - 56 days | <500 |
| Nominal Dry Shrinkage (mmm) - microstrain (50% RH) - 56 days | Up to 40MPa 20mm - 400<br>Up to 40MPa 10mm - 450 |
| Maximum Dry Shrinkage (mmm) - microstrain (50% RH) - 56 days | Up to 40MPa 20mm - 450<br>Up to 40MPa 10mm - 500 |
| Post tensioned applications (MPa@days) - 22MPa @ days | N/A |
| Post tensioned applications (MPa@days) - 25MPa @ days | N/A |

| 32MPa | |
|---|---|
| Compressive Strength - 1 day (MPa) | ~ 7 |
| Compressive Strength - 7 days (MPa) | ~28 |
| Compressive Strength - 28 days (MPa) | 32 |
| Dry Shrinkage (mmm) - microstrain (50% RH) - 56 days | <500 |
| Nominal Dry Shrinkage (mmm) - microstrain (50% RH) - 56 days | Up to 40MPa 20mm - 400<br>Up to 40MPa 10mm - 450 |
| Maximum Dry Shrinkage (mmm) - microstrain (50% RH) - 56 days | Up to 40MPa 20mm - 450<br>Up to 40MPa 10mm - 500 |
| Post tensioned applications (MPa@days) - 22MPa @ days | 22MPa @ 4 days<br>22MPa @ 5 days |
| Post tensioned applications (MPa@days) - 25MPa @ days | contact technical |

## ENVISIA

| 40MPa | |
|---|---|
| Compressive Strength - 1 day (MPa) | ~ 12 |
| Compressive Strength - 7 days (MPa) | ~40 |
| Compressive Strength - 28 days (MPa) | 40 |
| Dry Shrinkage (mmm) - microstrain (50% RH) - 56 days | <500 |
| Nominal Dry Shrinkage (mmm) - microstrain (50% RH) - 56 days | Up to 40MPa 20mm - 400<br>Up to 40MPa 10mm - 450 |
| Maximum Dry Shrinkage (mmm) - microstrain (50% RH) - 56 days | Up to 40MPa 20mm - 450<br>Up to 40MPa 10mm - 500 |
| Post tensioned applications (MPa@days) - 22MPa @ days | 22MPa @ 3 days<br>22MPa @ 4 days<br>22MPa @ 5 days |
| Post tensioned applications (MPa@days) - 25MPa @ days | 25MPa @ 3 days<br>25MPa @ 4 days<br>25MPa @ 5 days |

| 50MPa | |
|---|---|
| Compressive Strength - 1 day (MPa) | ~ 18 |
| Compressive Strength - 7 days (MPa) | ~48 |
| Compressive Strength - 28 days (MPa) | 50 |
| Dry Shrinkage (mmm) - microstrain (50% RH) - 56 days | <450 |
| Nominal Dry Shrinkage (mmm) - microstrain (50% RH) - 56 days | 50MPa 20mm – 450<br>50MPa 20mm – 500 |
| Maximum Dry Shrinkage (mmm) - microstrain (50% RH) - 56 days | 50MPa 20mm – 500<br>50MPa 20mm – 550 |
| Post tensioned applications (MPa@days) - 22MPa @ days | 22MPa @ 3 days<br>22MPa @ 4 days |
| Post tensioned applications (MPa@days) - 25MPa @ days | contact technical |

| >50MPa |
|---|
| Contact Boral Technical for more information |

## ENVISIA

| Content Declaration (% by weight) - Refer to EPD for TfNSW & Special applications | |
|---|---|
| General purpose cement | 5–17% |
| Ground granulated blast furnace slag | 8–12% |
| Fly ash | 0–3% |
| Silica fume | - |
| Coarse aggregate | 36–50% |
| Manufactured sand | 8–38% |
| Natural sand | 0–38% |
| Admixtures | <0.6% |
| Steel Fibres | - |
| Water | 6–9% |

| Concrete Mixes (Covered by EPD - NSW) | |
|---|---|
| Low carbon concrete products for special applications | • ENVIROCRETE® PLUS 20MPa<br>• ENVIROCRETE® PLUS 25MPa<br>• ENVIROCRETE® PLUS 32MPa<br>• ENVIROCRETE® PLUS 40MPa<br>• ENVIROCRETE® PLUS 50MPa<br>• ENVIROCRETE® PLUS 65MPa<br>• ENVIROCRETE® PLUS 80MPa |
| Concrete products for special applications | • ENVISIA® 50MPa PRECAST TUNNEL SEGMENTS |
| Fibrecrete products | • ENVISIA® 32MPa 20KG STEEL FIBRE<br>• ENVISIA® 40MPa 20KG STEEL FIBRE<br>• ENVISIA® 50MPa 20KG STEEL FIBRE<br>• ENVISIA® 32MPa 25KG STEEL FIBRE<br>• ENVISIA® 40MPa 25KG STEEL FIBRE<br>• ENVISIA® 50MPa 25KG STEEL FIBRE<br>• ENVISIA® 32MPa 30KG STEEL FIBRE<br>• ENVISIA® 40MPa 30KG STEEL FIBRE<br>• ENVISIA® 50MPa 30KG STEEL FIBRE |

| ENVISIA | |
|---|---|
| **Content Declaration (% by weight) - VIC** | |
| General purpose cement | 4–11% |
| Ground granulated blast furnace slag | 6–12% |
| Fly ash | – |
| Silica fume | – |
| Coarse aggregate | 35–50% |
| Manufactured sand | 0–20% |
| Natural sand | 22–40% |
| Admixtures | <0.8% |
| Steel Fibres | – |
| Water | 6–8% |
| **Concrete Mixes (Covered by EPD - VIC)** | |
| Low carbon concrete products | • ENVISIA® 20MPa<br>• ENVISIA® 25MPa<br>• ENVISIA® 32MPa<br>• ENVISIA® 40MPa<br>• ENVISIA® 50MPa<br>• ENVISIA® 65MPa<br>• ENVISIA® 80MPa |
| Low carbon concrete products for special applications | – |
| **Content Declaration (% by weight) - QLD** | |
| General purpose cement | 3-10% |
| Ground granulated blast furnace slag | 5-14% |
| Fly ash | - |
| Silica fume | - |
| Coarse aggregate | 38-50% |
| Manufactured sand | 0-22% |
| Natural sand | 10-40% |
| Admixtures | <0.4% |
| Steel Fibres | - |
| Water | 6-9% |

## ENVISIA

| Concrete Mixes (Covered by EPD - QLD) | |
|---|---|
| Low carbon concrete products for special applications | • ENVISIA® 20 MPa<br>• ENVISIA® 25 MPa<br>• ENVISIA® 32 MPa<br>• ENVISIA® 40 MPa<br>• ENVISIA® 50 MPa |

| Content Declaration (% by weight) - SA | |
|---|---|
| General purpose cement | 4-8% |
| Ground granulated blast furnace slag | 6-13% |
| Fly ash | - |
| Silica fume | 0-1% |
| Coarse aggregate | 41-42% |
| Manufactured sand | 8-11% |
| Natural sand | 22-30% |
| Admixtures | <0.8% |
| Steel Fibres | - |
| Water | 6-9% |

| Concrete Mixes (Covered by EPD - SA) | |
|---|---|
| Low carbon concrete products for special applications | • ENVISIA® 20 MPa<br>• ENVISIA® 25 MPa<br>• ENVISIA® 32 MPa<br>• ENVISIA® 40 MPa<br>• ENVISIA® 50 MPa<br>• ENVISIA® 65 MPa<br>• ENVISIA® 80 MPa |

## ENVISIA

| Content Declaration (% by weight) - WA Perth Region | LOW CARBON CONCRETE PRODUCTS |
|---|---|
| General purpose cement | 4-15% |
| Ground granulated blast furnace slag | 4-13% |
| Fly ash | 0% |
| Silica fume | 38-46% |
| Coarse aggregate | 7-13% |
| Manufactured sand | 0-32% |
| Natural sand | <0.7% |
| Admixtures | 0% |
| Steel Fibres | 0% |
| Water | 7-8% |

| Content Declaration (% by weight) - WA Perth Region | LOW CARBON CONCRETE PRODUCTS - FOR SPECIAL APPLICATIONS |
|---|---|
| General purpose cement | 1-40% |
| Ground granulated blast furnace slag | 0-27% |
| Fly ash | <3% |
| Silica fume | 0-46% |
| Coarse aggregate | 4-53% |
| Manufactured sand | 7-37% |
| Natural sand | <0.7% |
| Admixtures | 0% |
| Steel Fibres | 0% |
| Water | 6-35% |

## ENVISIA

| Concrete Mixes (Covered by EPD - WA Perth Region) | |
|---|---|
| Low carbon concrete products | • ENVISIA® 20 MPa<br>• ENVISIA® 25 MPa<br>• ENVISIA® 32 MPa<br>• ENVISIA® 40 MPa<br>• ENVISIA® 50 MPa<br>• ENVISIA® 65 MPa |
| Low carbon concrete products for special applications | • ENVISIA® 80 MPa<br>• ENVISIA® 32 MPa PTA TRACK SLAB<br>• ENVISIA® 40 MPa INDUSTRIAL FLOOR CONCRETE<br>• MRWA ENVISIA® SLIPFORM 32 MPa |

| Content Declaration (% by weight) - NT | |
|---|---|
| Density | 2,330-2,380 kg/m$^3$ |
| General purpose cement | 6-11% |
| Ground granulated blast furnace slag | 4-13% |
| Fly ash | - |
| Silica fume | - |
| Coarse aggregate | 40-45% |
| Manufactured sand | 15-25% |
| Natural sand | 5-20% |
| Admixtures | <0.7% |
| Steel Fibres | - |
| Water | 7% |

| Concrete Mixes (Covered by EPD -NT) | |
|---|---|
| Low carbon concrete products | • ENVISIA® 20 MPa<br>• ENVISIA® 25 MPa<br>• ENVISIA® 32 MPa<br>• ENVISIA® 40 MPa<br>• ENVISIA® 50 MPa<br>• ENVISIA® 65 MPa |
| Low carbon concrete products for special applications | - |

## ENVISIA

| Content Declaration (% by weight) - TAS | |
|---|---|
| General purpose cement | 8-13% |
| Ground granulated blast furnace slag | 3-9% |
| Fly ash | - |
| Silica fume | - |
| Coarse aggregate | 36-41% |
| Manufactured sand | 9-17% |
| Natural sand | 19-28% |
| Admixtures | <0.3% |
| Steel Fibres | - |
| Water | 7-9% |

| Concrete Mixes (Covered by EPD -TAS) | |
|---|---|
| Low carbon concrete products | • ENVISIA® 25 MPa<br>• ENVISIA® 32 MPa<br>• ENVISIA® 40 MPa<br>• ENVISIA® 50 MPa |

[1] Green Building Council of Australia (GBCA).
[2] Infrastructure Sustainability Council (ISC).
[3] Using the reference case from the GBCA Design and As-Built v1.3 rating tool.
[4] Using a reference case calculated from the GBCA upfront embodied carbon emissions calculator for concrete with GP cement.

**CONTACT BORAL'S CONCRETE TEAM** 1300 267 251



BORAL Building something great

Scan QR code