Ece®
EMPRESA DE CONTROL DE EROSIÓN

CONTROL DE EROSIÓN
ECE'S OWN LINE

PRODUCTS UNDER ECE'S OWN MARK

Range CE

Tubone® geotubes, Bentone® bentonite barriers, Vitrone® fibreglass geogrids and Hexone® gabions and mattresses — the products Ece specifies, controls and supplies under its own mark, with design and installation included.

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01 ECE'S OWN LINE

Ece began by representing manufacturers. Twenty years on, there are products we know so well — because we specify them, install them and watch them work — that we stopped buying them ready-made and started defining them ourselves. That is the **CE line**.

It is not a white label. It is our own specification: **we set the test standard, the minimum value and the quality control**, and the manufacturer produces against that specification. The result arrives with the CE mark, with the batch test certificates and with the backing of whoever is going to install it.

- **A verifiable specification:** every grade is declared with its test standard — ASTM, EN or ISO — and its minimum average roll value
- **Availability:** we plan the stock against the real demand of the Paraguayan market, not against a global catalogue
- **Price with no steps:** a single intermediary between the factory and the site
- **A product matched to the project:** sizes, weights and coatings are defined to order when the volume justifies it
- **One party responsible:** whoever specifies, whoever supplies and whoever installs are the same company

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PRODUCT FAMILIES

CE
ECE'S OWN MARK

Asunción
STOCK AND TECHNICAL SUPPORT

100%
INSTALLATION WITH OUR OWN CREWS

Product	What it does	Where it fits
Tubone®	Dewaters and confines	Sludge, dredging and coastal works
Bentone®	Lines	Landfills, ponds and bunds
Vitrone®	Reinforces the asphalt	Overlays and widenings
Hexone®	Contains and lines	Walls, banks and channels

What does not change: the CE line lives alongside the brands we represent. When a project calls for a particular manufacturer's product, we supply it just the same — the own line exists to open up the choice, not to close it.

Retaining wall and channel defence — San Lorenzo WWTP, an Ece project

02 TUBONE® — GEOTUBES

A textile tube that separates the water from the solid. The sludge is pumped in with polymer: the solids flocculate and stay confined, the water drains out filtered through the fabric. **No belts, no presses, no power**. The tube is filled in successive cycles up to the design height and the residue is removed dry.

Filled with **sand dredged in situ**, the same tube becomes the structure: groynes, breakwaters, dyke cores and bank protection. In a country with no rock quarries near the river, that is often the difference between doing the works and not doing them.

- More than **99% capture** of solids and up to **90% less volume**
- Circumferences from 9 to 27 m, lengths to measure
- It needs no civil works: a platform, a slope and a collection channel
- It turns dredged material into construction material

Battery in a dewatering operation

The same tube, filled with sand: a groyne facing the waves

WHERE IT APPLIES

Treatment plants · Port and channel dredging · Industrial, meat plant and agro-industry sludge · Mine tailings · Remediation of contaminated soils · Groynes and breakwaters · Riverbank and waterfront defence · Cores of protective embankments

Size	Circumference	Laid width	Filling height	Typical use
Tubone 9	9.0 m	3.6 m	1.4 m	Small plants · pilot test
Tubone 14	13.7 m	5.5 m	2.0 m	Industrial and sewage sludge
Tubone 18	18.3 m	7.3 m	2.7 m	Dredging and mining
Tubone 27	27.4 m	11.0 m	4.0 m	High volume · stacked in layers

The length is set by the project. The final height depends on the type of sludge and the number of filling cycles.

03 BENTONE® — BENTONITE BARRIERS

Clay that comes in rolls. Bentone encapsulates natural sodium bentonite between a woven and a nonwoven geotextile **needle-punched together**: the internal reinforcement keeps the clay from migrating and holds permeability extremely low under any site condition. On hydration the bentonite swells and seals — it even **self-heals** small punctures.

A 5 m wide roll **replaces up to 1 m of compacted clay**: no borrow pits, no layer-by-layer compaction testing, none of the uncertainty of finding a homogeneous clay soil. It is installed by simple overlap, with no welding and no special equipment.

Grade	Bentonite	Flux	Use
Bentone S	≥2.5 kg/m²	1×10^{-8}	General lining
Bentone R	≥3.5 kg/m²	8×10^{-9}	High duty · slopes
Bentone F	≥3.5 + geofilm	no measurable flux	Caps and liquids

It is rolled out, overlapped and covered: no welding

Sodium bentonite confined between needle-punched geotextiles

When it is the right choice: whenever the project calls for compacted clay and the local soil does not have it, or when the programme does not allow compacting and testing layer by layer.

WHERE IT APPLIES

Landfills, base and cap · Treatment ponds and reservoirs · Irrigation and supply channels · Fuel tank bunds · Industrial and mining basins · Vertical barriers

04 VITRONE® — FIBREGLASS GEOGRIDS

Stiffness exactly where the asphalt needs it. Vitrone is a fibreglass grid with an elastomeric coating for reinforcing asphalt courses to **EN 15381**. With a modulus of **73 GPa** and an elongation of just **2.5%**, it takes up the stress long before the asphalt deforms.

Its job is **to delay reflective cracking**: the cracks in the old pavement that copy through into the new overlay within months. It withstands hot-mix temperature, it is milled and recycled together with the pavement package, and it takes site traffic.

- Four grades: **55 · 115 · 135 · 215 kN/m**
- Grade 215 is asymmetric, for joints and widenings
- Composite version with nonwoven: adds a moisture barrier
- It does not change the site method: tack coat, grid, course

> **The sum:** an overlay without reinforcement cracks again along the joints of the old pavement within a season or two. The grid does not stop the crack for ever — it multiplies the time until it appears.

The course is laid straight onto the grid

Composite version: grid over nonwoven geotextile

WHERE IT APPLIES

Overlays on cracked pavement · Milled surfaces · Carriageway widenings and expansion joints · Roads and motorways · Airport runways and aprons · Manoeuvring yards and industrial yards

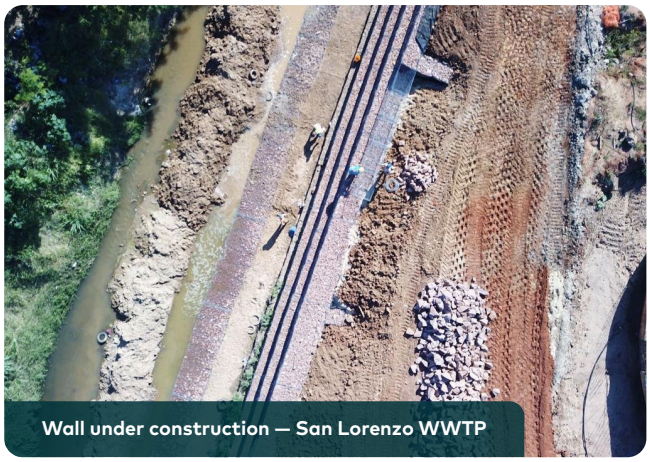
Grade	MD × CD strength	At 2% strain	Mass	Roll
Vitrone 55	55 × 55 kN/m	46 × 46 kN/m	222 g/m²	150 m · 1.0 to 3.0 m
Vitrone 115	115 × 115 kN/m	95 × 95 kN/m	422 g/m²	100 m · 1.0 to 3.0 m
Vitrone 135	135 × 135 kN/m	105 × 105 kN/m	497 g/m²	100 m · 1.0 to 3.0 m
Vitrone 215	115 × 215 kN/m	95 × 180 kN/m	620 g/m²	70 m · 1.0 to 3.0 m

Tested to EN ISO 10319. Ultimate elongation 2.5 ± 0.5% and a coating stable above 232 °C across all four grades.

05 HEXONE® — GABIONS AND MATTRESSES

Classic retention, properly done. Hexone confines stone in a hexagonal mesh of **double twist**: if one wire is cut, the mesh does not unravel. Box gabions form gravity walls, mattresses line banks and channels, and sack gabions solve submerged foundations without diverting the water.

The structure is flexible and monolithic: it follows settlement without cracking, **drains by itself** — it builds no uplift pressure behind the wall — and over time it traps sediment and vegetation until it blends into the landscape.



Wall under construction — San Lorenzo WWTP

Format	Mesh	Dimensions	Use
Hexone C	8 × 10 cm	1.0 × 1.0 × 1.5–4.0 m	Gravity walls
Hexone M	6 × 8 cm	2.0 m × 3–6 m · 0.17–0.30 m	Banks and channels
Hexone S	8 × 10 cm	Ø 0.65 m × 2–4 m	Submerged foundations

Why double twist: welded or single-twist mesh unzips in a chain reaction when it is cut or struck by a rolling stone. Double twist keeps the stone confined even if a wire fails — which is why it is the only one accepted on serious hydraulic works.

Never on its own: a gabion without a filter geotextile behind it clogs with the fines of the ground and loses the drainage that justified choosing it.

WHERE IT APPLIES

Gravity retaining walls · Bank and slope-toe protection · Channel lining · Energy dissipators and drops · Submerged foundations · Bridge abutment protection

1 · The stone

1 to 2 times the mesh aperture, angular and sound. Round stone does not interlock and the gabion deforms.

2 · The filter

Nonwoven geotextile across the whole back of the wall: it lets the water through and holds the fines of the ground.

3 · The reinforcement

A geogrid anchored between layers when the height exceeds what gravity alone can hold.

06 FROM THE PROBLEM TO THE PRODUCT

The CE line is not chosen from a catalogue but from the problem to be solved. This is the short route; the sizing is done by our technical department, at no charge.

The problem on site	The answer	What has to be defined
I have sludge and nowhere to put it	**Tubone®**	Flow rate, solids concentration and the area available. Flocculation is tested before sizing.
The river is taking the bank away	**Tubone®** o **Hexone®**	If there is sand to dredge, Tubone. If there is stone nearby and the attack is localised, Hexone.
I need to line it and I have no clay	**Bentone®**	Hydraulic head, slope gradient and the type of liquid contained.
My overlay cracks straight away	**Vitrone®**	The condition of the existing pavement, the design traffic and whether it is milled or not.
I have to retain a slope and there is stone	**Hexone®**	Height, thrust and how aggressive the water is — this sets the wire coating.
The channel erodes with every flood	**Hexone M**	Flow velocity and the grading of the bed. Always with a filter geotextile underneath.

THE CE LINE DOES NOT WORK ALONE

Almost no problem is solved with a single product. A gabion wall needs **filter geotextile** behind the wall; a pond with Bentone needs **puncture protection**; a slope protected with Tubone needs **revegetation** to finish stabilising.

That is why the own line lives alongside the brands we represent: **Strata** for reinforcement and drainage, **Synthetex** for concrete mattresses, **Profile** for erosion control and revegetation, **Geo Soluções** for reinforced soil and geomembranes, **Pietrucha** for sheet piles.

WHAT IS INCLUDED

Technical visit and survey · Sizing and design calculations · Take-off by product · Technical specification for the tender · Crew training · Technical supervision during installation · Test certificates for the batch supplied

Each product in the line solves a different stage: contain, dry, line, reinforce

07 ECE — EROSION CONTROL COMPANY

+20	+24	4	100%
YEARS IN THE PARAGUAYAN MARKET	PROJECTS DELIVERED	COUNTRIES WITH ECE PROJECTS	INSTALLATION WITH OUR OWN CREWS

We do not sell rolls: we deliver the problem solved. Ece designs, supplies, installs and follows through. That complete chain is what makes it possible to sustain an own line carrying the company's name — and it is what lets us answer for the result, not just for the material.

The experience is not only local: Ece has designed, trained crews and supervised works in **United Arab Emirates**, and has worked in **Peru, Colombia and Ecuador**. What is learned on 75,000 m² of desert slopes comes back to the job in Paraguay.

Ask us for the sizing before the tender. Most of the cost overruns in a specification involving geosynthetics come from a spec written without knowing the product. Reviewing the specification in time costs nothing and avoids the expensive adjustment later.

The four brands of the CE line

Tubone®	Dewatering geotubes and coastal works
Bentone®	Geosynthetic clay liners
Vitrone®	Fibreglass geogrids for asphalt
Hexone®	Double-twisted gabions and mattresses

CONTACT

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From the treatment plant to the coastal defence: the CE line covers the full cycle of water and soil