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 **GeoMITS**



GEOPOLYMER PAVER



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OUTLINE

GeoMITS and CEDA introduction

R-EVOLUT Patented eco-friendly GP
paver

CO2 saving thanks OPC clinker substitution

Final Enhanced Properties



GeoMITS

MATERIAL
INNOVATION
TECHNOLOGY
SERVICE

GeoMITS is focalized on :

- Consulting, R&D and supplying about Geopolymer binders (reactive powders and liquid hardeners) for several applications
- Customizing of automatic mixing plants (mobile and fixed central beton) for production from laboratory to industrial scale
- 360° Service about designing of final geopolymer recipes included choice of best partially reactive aggregate curve and intermediation between clients and aggregates supplier



CEDA

CEDA was born in 1964 in Mareno di Piave (Treviso) and is focalized on :

Productions of OPC concrete pipes from the time of the foundation of the company

Productions of OPC concrete roof tiles

And ,more recently, the manufacturing of outdoor flooring (pavers) also made of OPC

concrete

Worked OPC/year > 15000 ton

Workers 60 people

Total surface 200000 m2



R-EVOLUT PROJECT

CEDA and GeoMITS started to collaborate few years ago about the developing of new type of outdoor flooring to shift the paver technology to an other level

R-EVOLUT GP paver has low CO2 emission , prolonged durability (acid proof), high resistance to the mould and grass formation and high pigment and sweet water saving

R-EVOLUT born from a hybrid composite between OPC bottom layer (optimized to have the lowest amount of Portland Cement) and top layer based on Matter +, the new Geopolymer binder developped by GeoMITS for this application



R-EVOLUT PROJECT



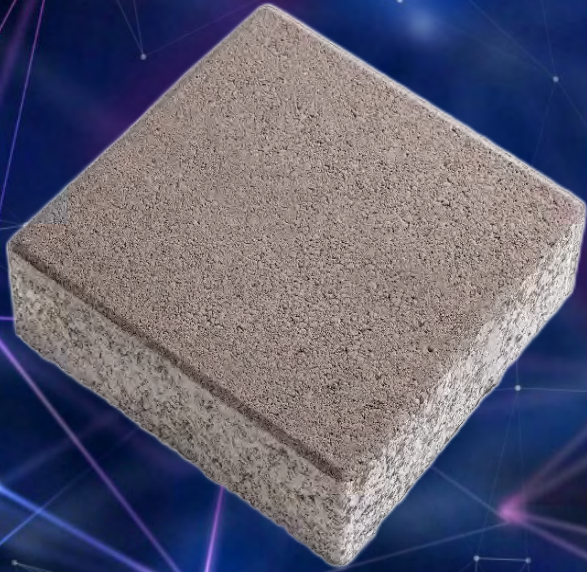
The flow ability of the GP binder MATTER+, industrially prepared using the GeoMITS automatic mobile mixer, allows:

- **LOW GP BINDER AMOUNT**
- **SAVING ON PIGMENTS AMOUNT**
- **SAVING ON EXTRA WATER**
- **SAVING ON TOTAL COSTS**

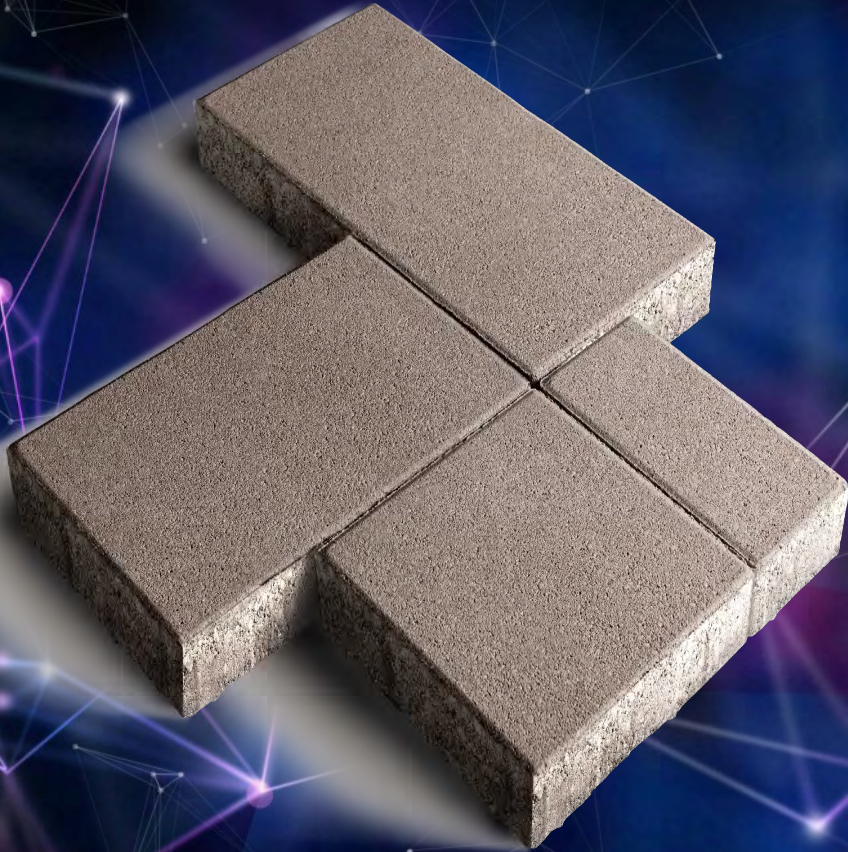
R-EVOLUT PROJECT

MAIN PROPERTIES

- STRONG ADHESION BETWEEN THE LAYERS
- HIGH RECYCLED CONTENT
- ALL MANUFACTURING USING THE TRADITIONAL SYSTEMS AND MACHINERIES (0 IMPACT TECH)
- NO PROBLEM ABOUT FORMATION PROCESS
- 80% CO2 SAVING COMPARING TO OPC PAVER
- 100-350% SAVING ABOUT PIGMENT AMOUNT



R-EVOLUT PROJECT



SAVING PER SQUARE METER

- - 0,8 Lt / m² of water
- - 22% Portland Cement per m²
- > 15% recycled materials per m²
- - 18% CO₂ emission per m²
- The water saved each minute of production can let survive an adult for 1 day
- Extra water can be recycled or salty, GP process isn't hydraulic, GP isn't AAM



R-EVOLUT PROJECT

SPECIAL RECIPES USING RECYCLED MATERIALS



R-EVOLUT PROJECT

SPECIAL RECIPES USING RECYCLED MATERIALS



• Glass



R-EVOLUT PROJECT

SPECIAL RECIPES USING RECYCLED MATERIALS



Cocciopesto



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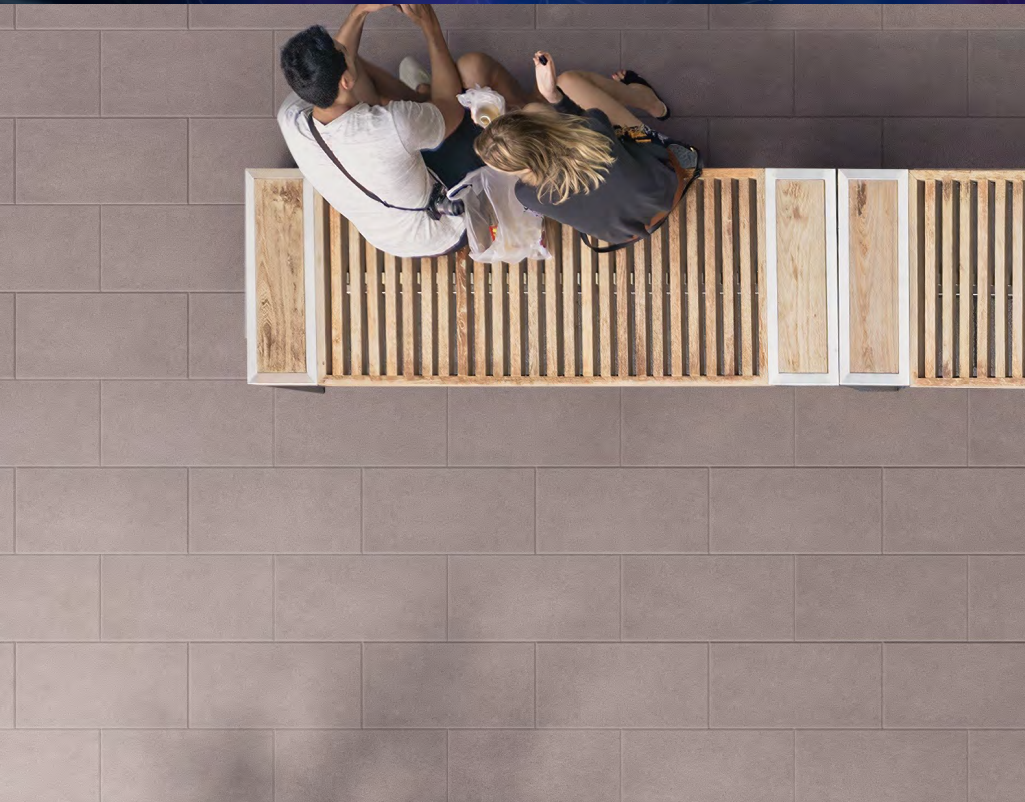
MATTER+

R.
EVOLUT
THE CONCRETE REVOLUTION

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SPECIAL RECIPES USING RECYCLED MATERIALS



Wood



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SPECIAL RECIPES USING RECYCLED MATERIALS



Plastic



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SPECIAL RECIPES USING RECYCLED MATERIALS



Materic Flakes



R-EVOLUT PROJECT

SPECIAL RECIPES USING RECYCLED MATERIALS



HIGH SOLAR REFLECTION (SRI)

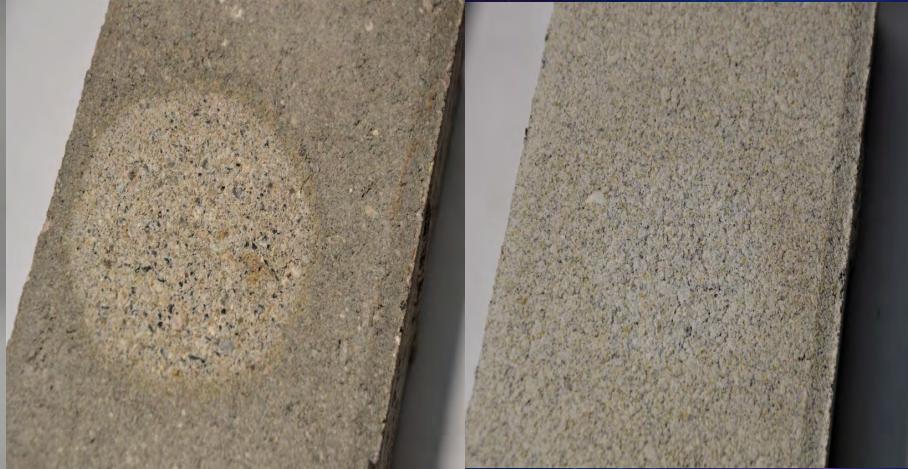
Thanks to MATTER + GP binder and recycled aggregates like glass and cocciopesto the reflection of sunlight is enhanced at best reducing the heating absorption on the flooring

State	Geopolymer MATTER+	Portland Cement
New	45	33
Post UV	46	34
Post aging	42	29

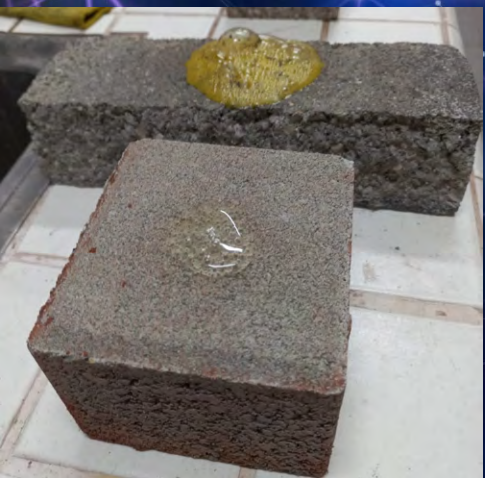


R-EVOLUT PROJECT

HIGH CONCENTRATION ACID RESISTANCE



After 1 h from the acid test



OPC std paver

MATTER + paver

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MOLD AND MOSS RESISTANCE



MATTER + VS OPC Std.
After 28 d of mold growth



MATTER + top layer blocks every moss growth
thanks its alkaline pH even after the aging

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COLOR YIELD AFTER PROLONGED TIME OUTDOOR (AFTER > 2 YEARS)



NATURAL BRICK COLOR



RED COLOR



GREEN COLOR



BLACK COLOR

1. **NO EFFLORESCENCE**
2. **SAVING: < 150-300% OF PIGMENT AMOUNT WITH MATTER +**

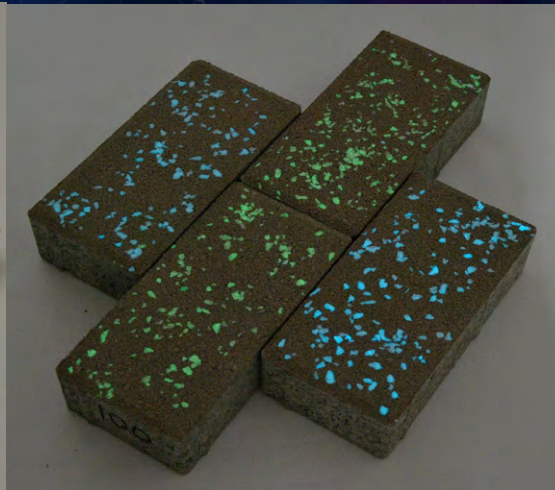


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PHOTO LUMINESCENT EFFECT FOR SPECIAL PECIES



NATURAL LIGHT



GLOW IN THE DARK



VIDEO LIGHT-DARK



R&D TRIALS



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FIREPROOFING TEST: BLOWTORCH



BLOWTORCH TEST (1600°C from 15 cm for 3 minutes)



OPC STARTS EXPLODING IMMEDIATELY

MATTER + RESISTS ONLY DOLOMITE IN THE AGGREGATE BURNS

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CERTIFICATIONS

- **UNI EN 1338:2004 - App. G:** ABRASION RESISTANCE
- **UNI EN 1338:2004 - App. I:** SLIP RESISTANCE WITHOUT POLISHING
- **UNI EN 1338:2004 - App. D:** FROST/THAW RESISTANCE WITH DEICING SALTS
- **ASTM E 903-12:** MEASUREMENT OF SOLAR REFLECTION COEFFICIENT
- **ASTM C 1371-15:** MEASUREMENT OF THE EMISSIVITY COEFFICIENT
- **ASTM E1980-11:** CALCULATION OF SOLAR REFLECTION INDEX (SRI)



Thanks for the kind attention



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