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CONDUCTIVE & THERMAL GEOPOLYMER COATING

Dr. Alex Reggiani, GeoMITS, Italy

OUTLINE

GeoMITS, Alisea and Studio Saccozza
introduction

Graphii-coat 30 Patent pending

Geopolymer based-Graphite coating

Application and methods

Final 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

Intermediation between clients and aggregates supplier



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Alisea

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Alisea is benefit company focalized on :

Since 1994 design and production objects using sustainable raw materials
from waste or from recycling

Since 2013 R&D division specialized on developing of new materials that
,using waste from industrial processing, created new production systems,
useful to improve people's quality of life



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Studio Saccozza

Studio Saccozza is engineering company focalized on :

Technical studies about Hydraulic and Thermotechnology Civil Engineering

Energy saving about building construction

20 years of experience as Building company with specialization in conservation and rehabilitation of existing artifacts and buildings



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Graphii-coat 30



Patent Pending Geopolymer coating for thermal conductivity and thermal insulation

High content of graphite (even from recycling)

High mechanical strength

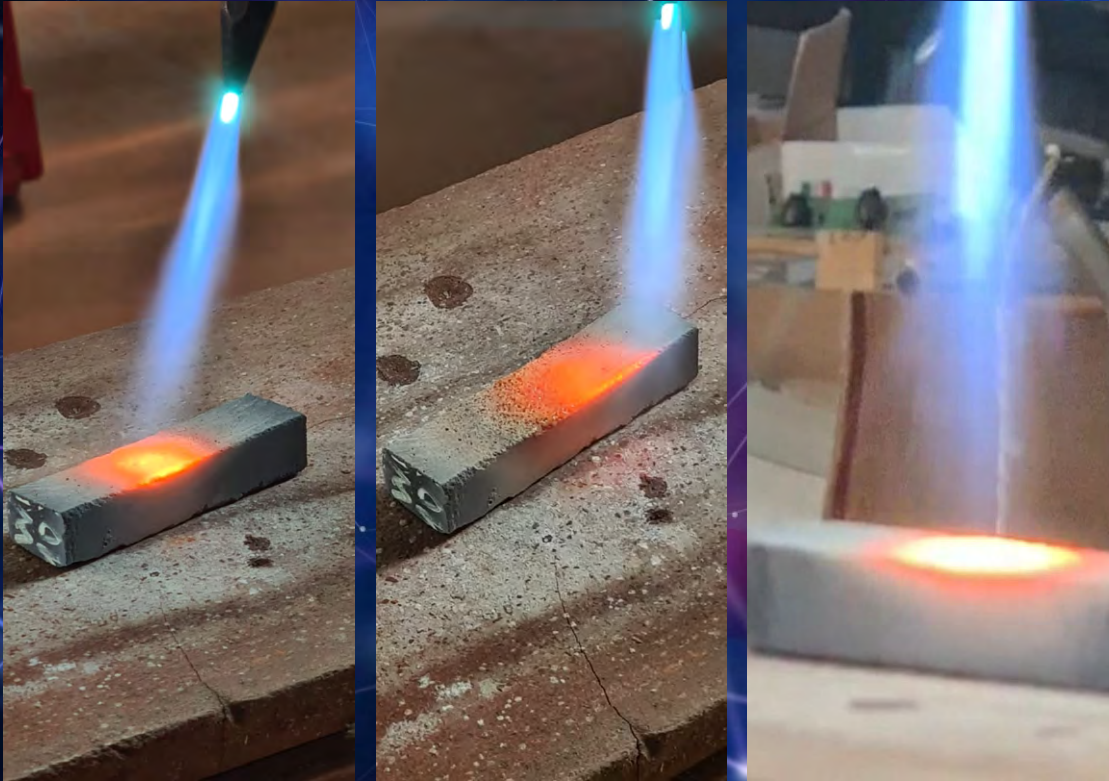
High durability (acid and seawater proof)

Fireproof

VOC free, 100% Portland cement and lime free

Low thickness coating

Graphii-coat 30



Fusion occurs after 7 seconds of direct flame

GP coating anyway resisted well to the thermal shock and even after melting can recondense at room temperature conserving enough strength

No more creeping

Destructive test using blowtorch (3000°C)

Graphii-coat 30



Fireproof test at 1300°C (blowtorch at 10-15 cm from the material)

Heat resistance, initial trials show good results after more than 60 minutes of firing

Graphite lamellar nature of particles allows good heat reflection prolonging the durability of the coating

Thermal insulation test are in progress

Graphii-coat 30



MECHANICAL PROPERTIES

After 24h by air at room temperature:

F= 2 MPa C= 10 MPa

After 28 days by air at room temperature:

F= 6,7 MPa C=33,5 MPa

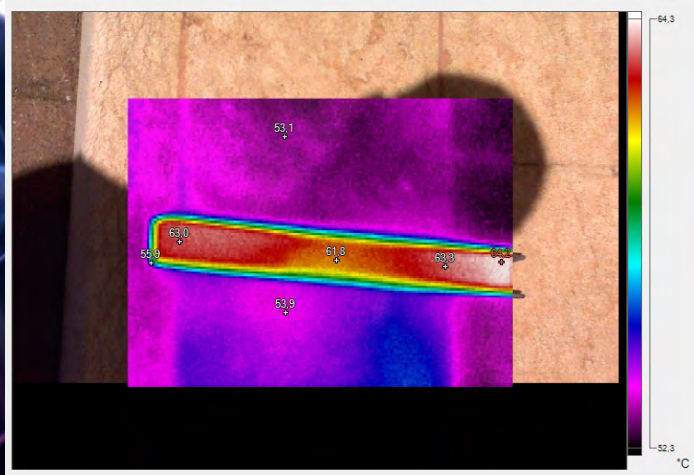
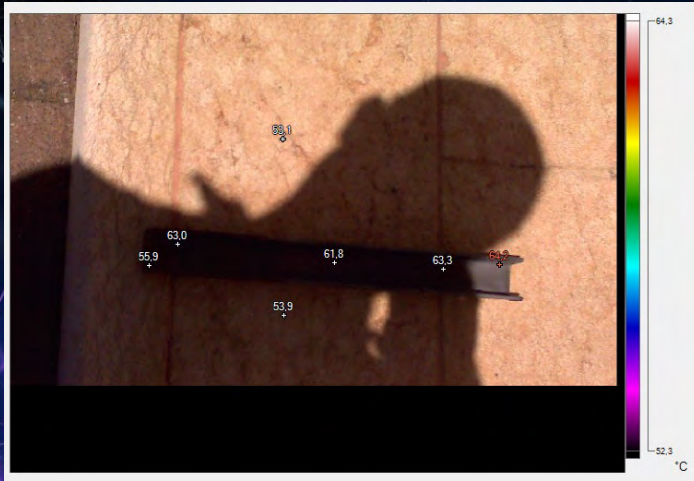
After 28 days under water:

F= 5,6 MPa C=31,9 MPa

Graphii-coat 30

20 MINUTES SUNLIGHT EXPOSURE

Oxidized iron with corrosion spots coated by Graphii-coat 30 (1 hand from 0,5-1 mm)



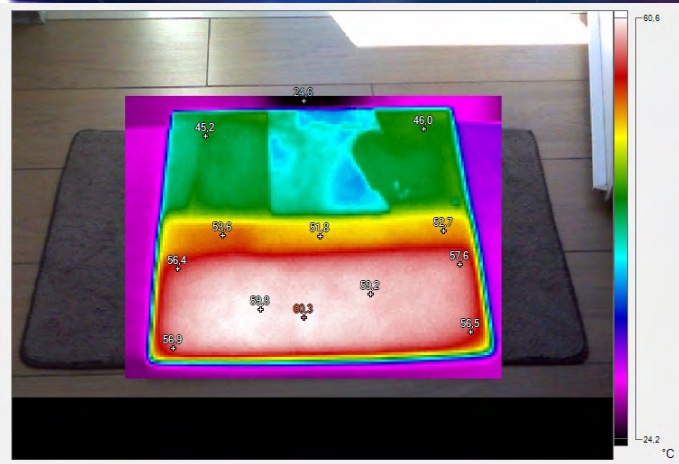
THERMAL CAMERA DATA

Graphii-coat 30

20 MINUTES SUNLIGHT EXPOSURE

Boronsilicate glass coated by Graphii-coat 30
about 1 mm (2 hands)

THERMAL CAMERA DATA



Graphii-coat 30

APPLICATION AND EQUIPMENTS

- BRUSH (if applied by hand on little surfaces)
- FLAT TROWEL (if applied on larger surfaces)
- SPRAY GUN (if applied on curved surfaces)

PACKAGING

- 5 Kg KIT ready to use, composed by:
 - big bucket with Geopolymer precursor in powder form
 - small bucket with Partially reactive aggregate with Graphite and Antidust technology
 - Potassium silicate user friendly reagent in plastic bottle

Thanks for kind attention



 **eoMITS**

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 **Alberto Saccozza**
ingegnere

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