Working with archaeologists to reconstitute ancient mortars

Old Dubai plaster case study

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Plâtre.com UAE – Plâtre.com France – Government of Dubai
Outline

Plâtre.com

Gypsum in the middle east – Quick historical survey

Counter-typing of the XVIIth century Jumeirah plaster

Other counter-types
Plâtre.com

Plâtre means gypsum plaster in French

We produce custom plasters made out of gypsum, lime, clay, ...

For interior and exterior use.

France, UAE, USA.
Custom Plasters since 1880

Gypsum kiln - Vieujot factory
France, 1880

Persian restaurant – Madinat Jumeirah
Dubai, 2007
Our main markets

Decoration

Le Louvre, Mona Lisa room

Restoration

French national stud farm

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Gypsum plaster

Oldest constructions of the humanity were made out of gypsum.

Interior plastered wall.

Çatalhöyük – 7000 BC
Anatolia (Turkey)
Gypsum plaster

Gypsum plaster (not lime) was the old Egyptian plaster.

Taousert Tomb

Kings Valley – 1195 BC
Egypt
Gypsum plaster in the Middle East

Gypsum plaster is an old tradition in the middle east.

Ornaments

Sana'a – since 14 AD
Yemen
Gypsum plaster in the Middle East

Qal'at al-Bahrain

Manama – 15th c. AD
Bahrain
Gypsum plaster in the Middle East

Al Zubarah Fort

Doha – 17th c. ?
Qatar
Gypsum plaster in the UAE

Painted gypsum plaster vessel

Dalma Island
Abu Dhabi – 5th mill. BC
UAE
Gypsum plaster in the UAE

Al Hisn Fort

Sharjah – 1822

UAE
Gypsum plaster in the UAE

Umm Al Quwain Fort

Umm Al Quwain – 18th c AD
UAE
Gypsum plaster in the UAE

Al Fahidi Fort
Dubai – 1799
UAE
History in the UAE

Jumeirah

Dubai – 10th & 17th c AD
UAE
Jumeirah site

Residential building
Market
Residential building
Caravanserai
Ruler's house
Reproducing the Jumeirah plaster

2 types of plaster:

17th century

10th century
Goals

Identify the techniques used
Find the chemical composition
Find the material(s)
Reproduce the plaster
Techniques - Plastering

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Techniques - Carving
General Chemical Analysis

Sulphates (pure Gypsum) : 72%
Calcium carbonates : 18%
Non soluble part : 10%
Finer Analysis

SEM - Scanning Electron Microscopy

- Gypsum part
- Carbonate part
- Clay part
Finer Analysis
Gypsum part

Sulphates contains some “celestine crystals” (strontium sulphate)
Finer Analysis
Carbonate part

Carbonates also have celestine crystals.
Finer Analysis
Clay part
Carbonates have celestine crystals as well.

This means the Gypsum, Carbonates and Clay are from the same geologic origin and have not been mixed.

They come from the same stone.
Matching composition, colour & texture

Original

D4553

http://www.platre.com/platre/samples-jsf.jsf?code=D4553
Some other pure gypsum plasters counter-types

Gip – South east of France

Original

Q4384

http://www.platre.com/platre/samples-jsf.jsf?code=Q4384
Some other pure gypsum plasters counter-types

Grillaz, XIX\textsuperscript{th} - Savoie, France

Original

N2705

http://www.platre.com/platre/samples-jsf.jsf?code=N2705
Some other pure gypsum plasters counter-types

Gria, XIXth – Savoie, France

Original

D4449

http://www.platre.com/platre/samples-jsf.jsf?code=D4449
Some other counter-types

Stuc brique, XVIII\textsuperscript{th} – Versailles, France

Original

P4383

http://www.platre.com/platre/samples-jsf.jsf?code=P4383
Some other counter-types

Plâtre Briard, XIXth – Brie, France

Original  N2696
Some other counter-types

Bluestone stuc, 1850 – Bruxelles, Belgium

Original

D4527

http://www.platre.com/platre/samples-jsf.jsf?code=D4527
Jiss or Juss, xIXth – Jumeirah, UAE

Local Jiss is a gypsum plaster used since 10 centuries in the Dubai.

Countertype as made to last 10 centuries ... for the 10,009th Global Gypsum in Dubai.

Let's continue the tradition.
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