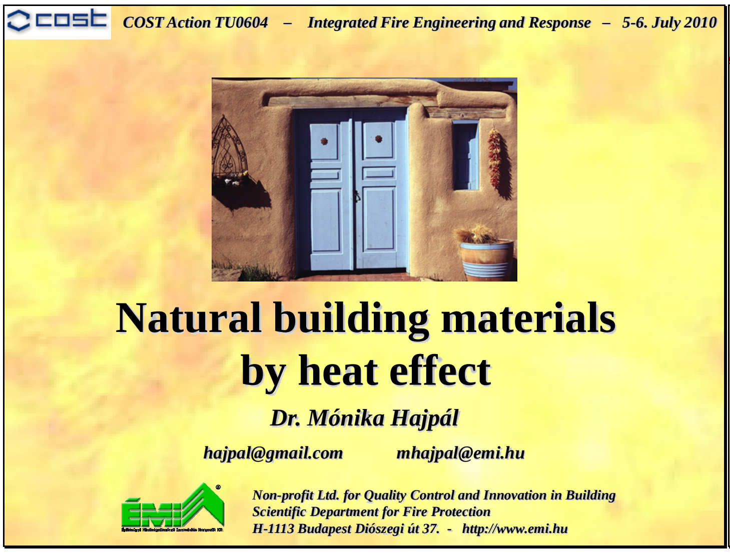
2.8 Natural building materials by heat effect

Hajpál M., Hungary



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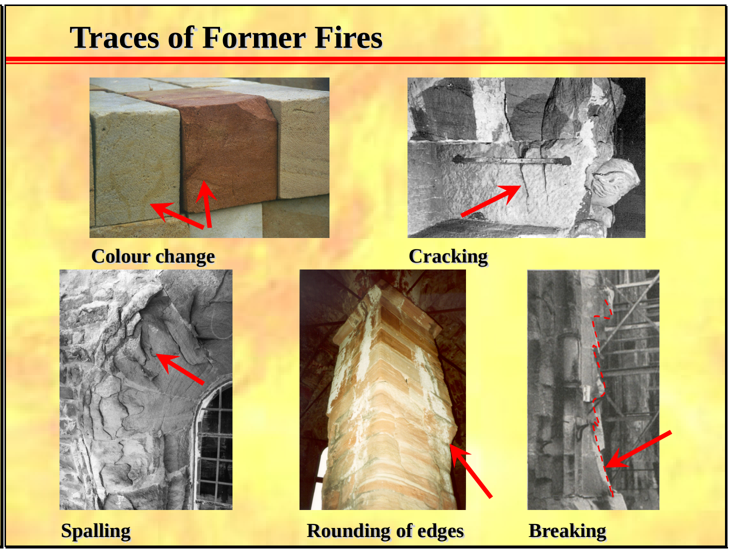

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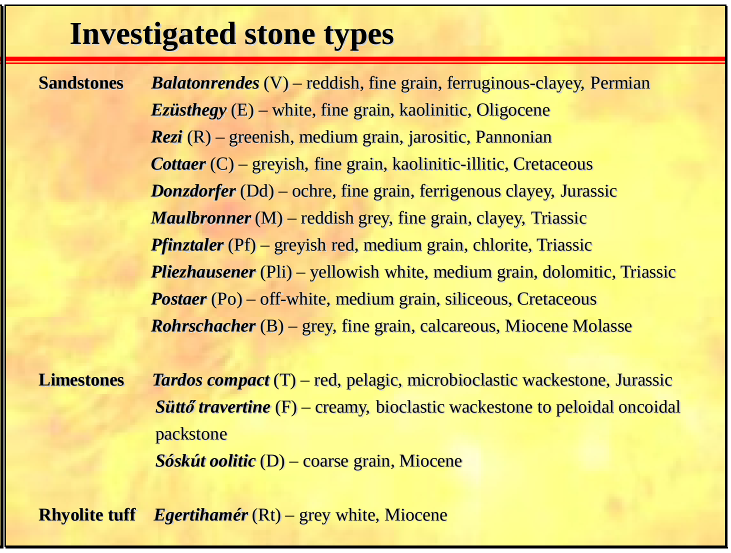

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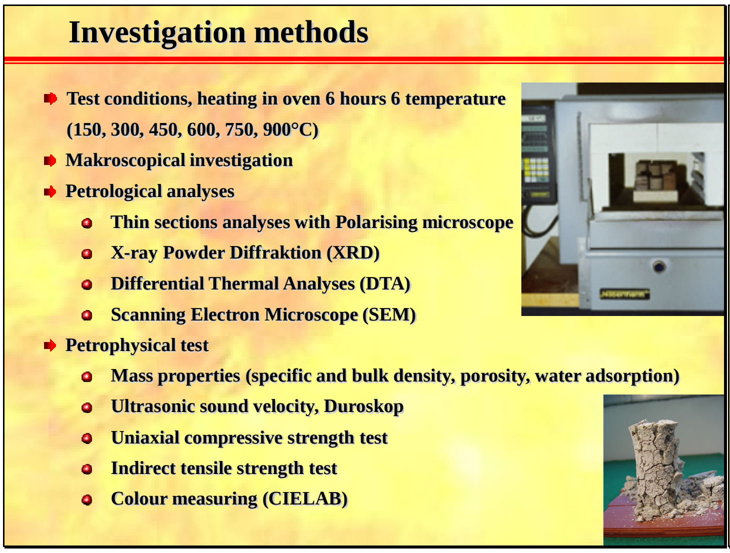

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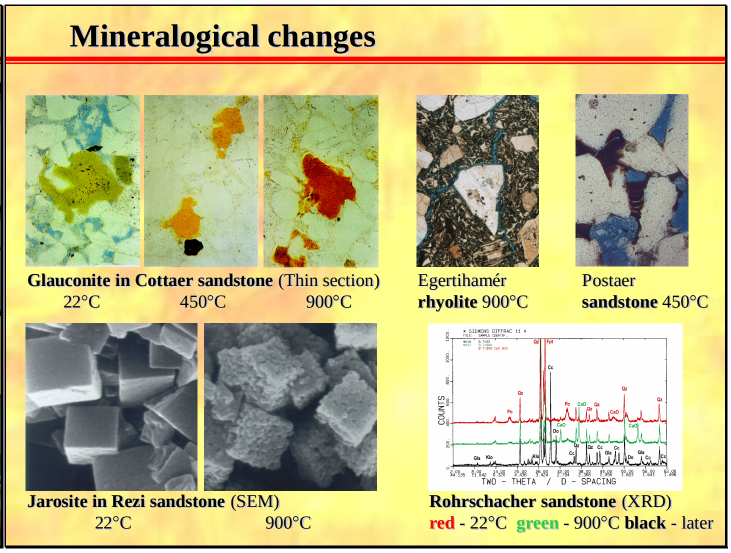
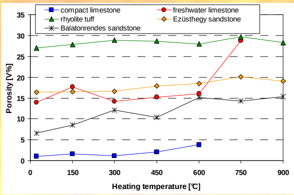
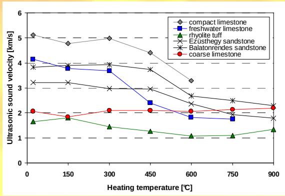


6

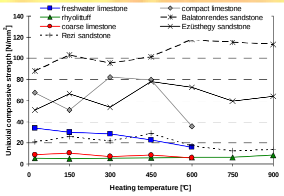
Petrophysical changes (natural stone)



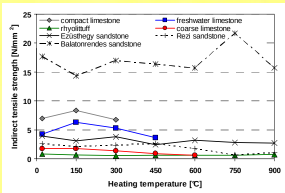
Porosity



Ultrasonic sound velocity



Uniaxial compressive strength

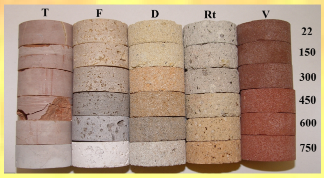


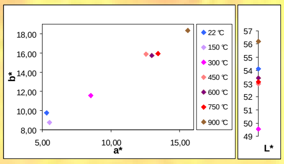
Indirect tensile strength

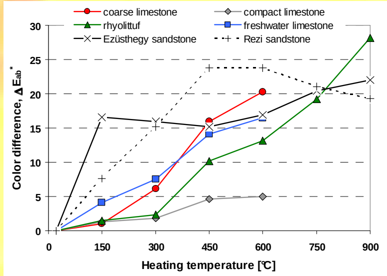
Colour measuring (natural stone)

Sóskút coarse limestone

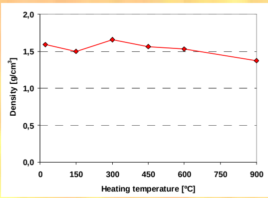
22°C ⟶ 900°C



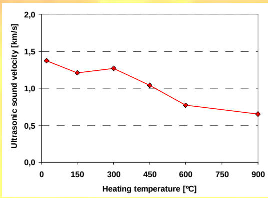




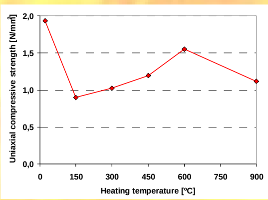
Petrophysical changes (adobe)



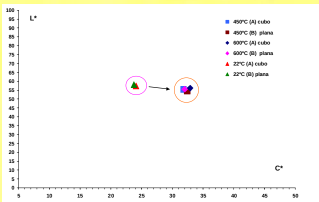
Density



Ultrasonic sound velocity



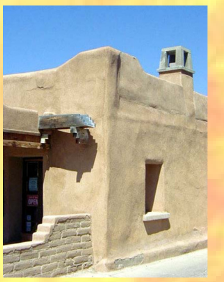
Uniaxial compressive strength



Colour

Conclusion

- At the effect of heat changes take place in the inner structure and mineral composition, which influences the petrophysical parameters
- The heat resistance depends on:
  - the type of cementing mineral
  - the amount of the cement (grain/cement ratio)
  - the grain size (fine, medium, coarse)
  - the grain to grain or matrix to grain contacts
  - the amount of organic matter (e.g. straw by adobe)
- The compact stones show more dramatic change in porosity at elevated temperature
- The porous and cement rich stone is more adaptable, these can adopt the addition strength caused by thermal expansion
- The silica cemented, ferruginous or clayey stones are less sensitive than the carbonatic ones (disintegration at higher temperature)



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Thank you for your attention!

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