Standardisation of Geopolymers

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St. Quentin
“knowing is not enough, we must apply - willing is not enough, we must do..”

Johann Wolfgang von Goethe
Applications:-

• Fire protection for buildings, especially high rise
• Architectural claddings and mouldings
• Stone repairs
• ‘Environmentally sustainable’ construction products and materials
• Nuclear industry waste encapsulation and containment
• Construction of sea-defences
• Renewable energy industry:-
  • Wind generator foundations on land and at sea
  • Tidal generator foundations
  • Housings for wave energy devices
As specifiers – what should we know before specifying any product or material?

- Standards required to meet client’s brief – attributes of performance, durability, aesthetics, safety, ‘environmental sustainability’. Also, lead-in times and cost.

- Standards offered – assess whether they fulfill the standards required.

- Evidence of third party testing to provide verification, substantiation, proof, as necessary and to assuage professional indemnity insurers.
banahCEM – Third Party Testing
Queen’s University Belfast

**Physical Testing**
- Flexural Strengths
- Modulus of Elasticity
- Water Absorption
- Freeze Thaw
- Slip Resistance
- Pull-off Tests
- Tensile Strengths
- Vapour Permeability
- Initial Surface Absorption (ISAT)
- Capillary Water Absorption
- Abrasion Resistance
- Effect of Water/Cement Ratio

**Chemical Testing of Hardened Cement/Concrete**
- Acid Resistance
- Chloride Diffusion
- Alkali Aggregate Reaction
- Leaching / Efflorescence
- Microstructure Observation
- Sulfate Resistance
- Protection to Steel Reinforcement
- Chloride Ion Penetration
- Coefficient of Thermal Expansion
banahCEM – 3rd Party Testing
University of Ulster Jordanstown

Fire Resistance Testing

Thermal Conductivity
Why should Geopolymers have Standards?

- All products and materials require standards

- Existing standards for Portland cements and concretes are unsuitable for Geopolymers

- Geopolymer specific standards would provide the Geopolymer community with greater credibility
A Few Points to consider:-

• We need a standards system which is respected and can apply globally

• There are many ways forward – which should we choose? Aims, Structure etc.?

• I understand that it is possible that RILEM is already looking at this issue – can we get involved? If so, how?
How should we go about this task?

- Questions?
- Suggestions?
- Next Steps?

Thank you
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