

Standardisation of Geopolymers

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Geopolymer Camp 2012

9 – 11 July 2012

St. Quentin

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

Johann Wolfgang von Goethe



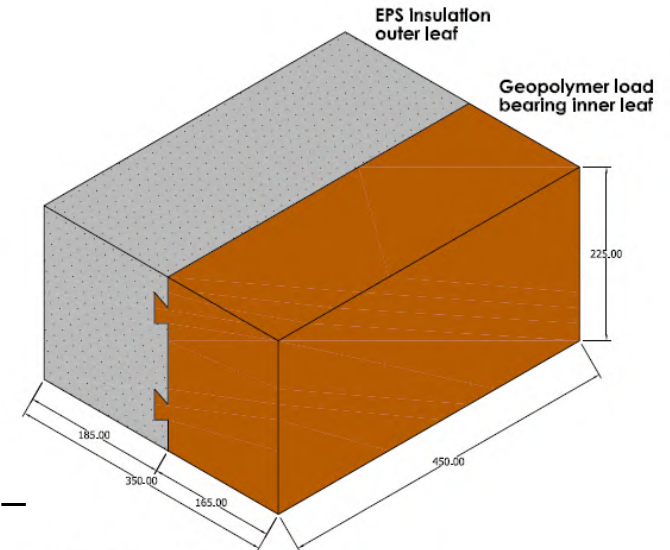
Applications:-

- 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

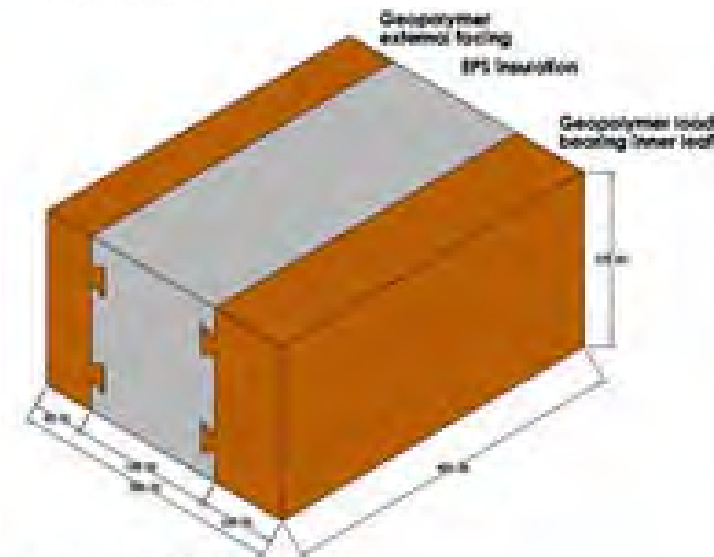


As specifiers – what should we know before specifying any product or material?

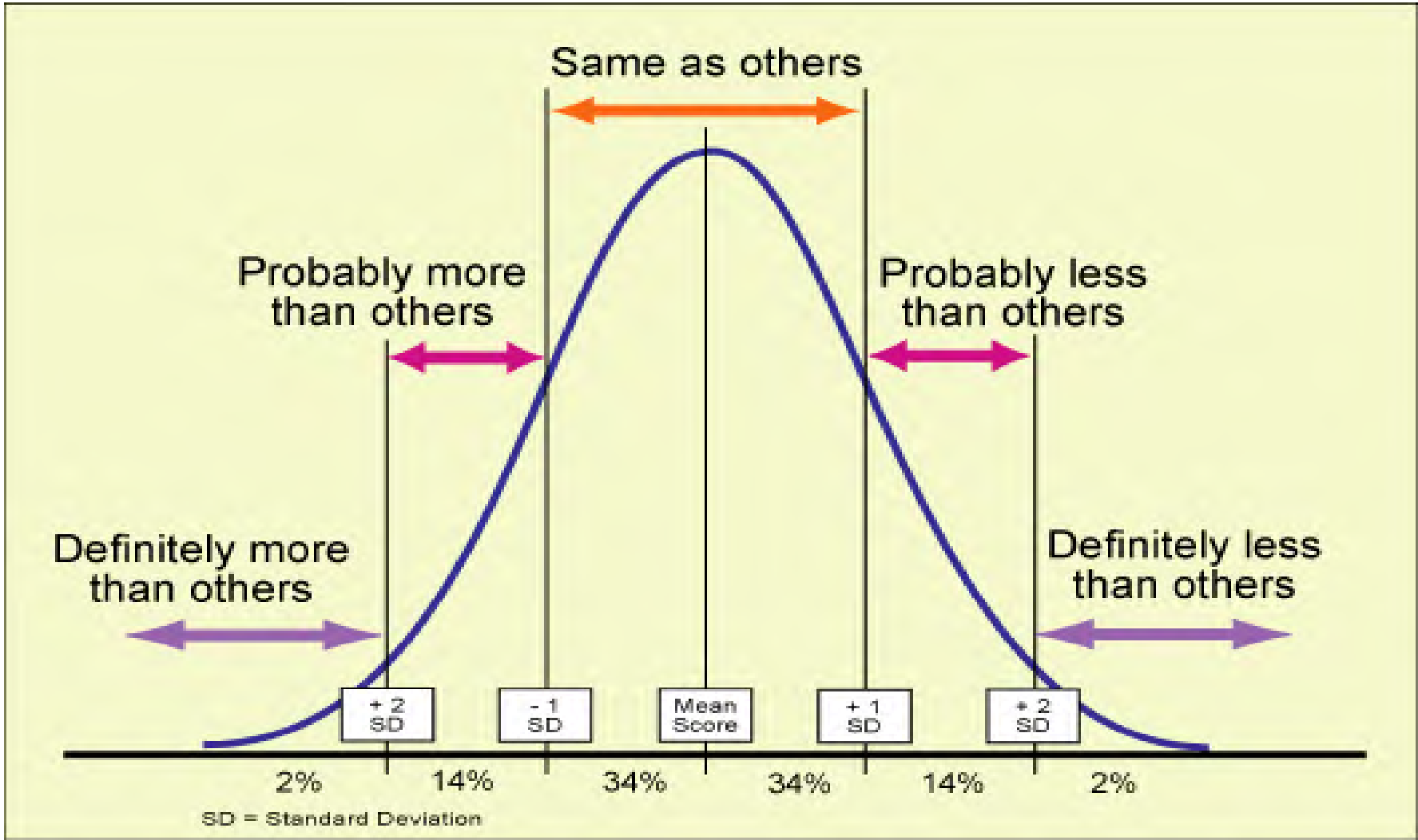
- Standards required to meet client's brief – attributes of performance, durability, aesthetics, safety, 'environmental sustainability'. Also, lead-in times and cost
- Standards offered – assess whether they fulfill the standards required.
- Evidence of third party testing to provide verification, substantiation, proof, as necessary and to assuage professional indemnity insurers.



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(facing block)





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





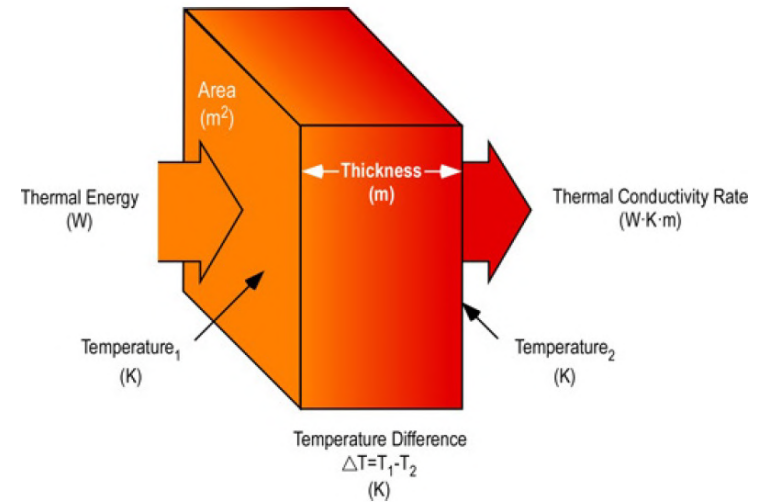
banahCEM – 3rd Party Testing
University of Ulster Jordanstown



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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