
Insulating waterproof concrete

Posted by Nanos - 2008/02/07 13:38

I fancy using concrete to insulate rather than foam on the basis that I want something very long lasting, ultimately fireproof and crush resistant (for earth sheltered design underground.) that also doubles as a waterproof layer to reduce costs.

Anyone thoughts on what would good options in this area for use in the UK ?

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Re:Insulating waterproof concrete

Posted by jackson - 2008/02/07 14:19

Concrete is a good conductor of heat, and therefore not a great insulator, which is why lots of 1960's concrete blocks of flats have such terrible condensation problems when the occupiers want to have their homes warmer than outside.

Have you checked the hockerton housing association (in the links tab above under interesting projects), they have effectively built using concrete as the structural element which then acts as the main thermal store. But they have insulated around this using I think 300mm of polystyrene, to prevent the heat stored in the concrete being lost to the environment. They havealso banked over the concrete and insulation with soil, so from the north side the terrace looks like a flowing bank of grass.

If concrete is used, with its high embodied energy, this is the only real way I think it can be justified, but certainly not in the indiscriminated thoughtless way it is usually used on many building sites, especially when there are alternative solutions available.

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Re:Insulating waterproof concrete

Posted by james - 2008/02/08 07:39

Im no expert here, but you could look at SIP, structure insulated panels...most times there an insulative inner, sandwiched between sprayed on concrete. The whole wall seals up nicely I expect they last ages. But its concrete and has limited breathability, so think carefully about moisture movement

james

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Re:Insulating waterproof concrete

Posted by Nanos - 2008/02/14 22:38

I'm looking at adding pumic, or perlite to produce an insulating concrete.

Yes I've looked at the Hockerton project before, one of the better efforts in my view.

Yes the moisture issue is one that is found in underground homes, as such I would want to include an air conditioning system with de/humidifer. (Which would avoid the need for underfloor heating, as I hear from so many people about it leaking!)

I really want to avoid foam on the basis that can burn and produce noxious fumes if there is a fire, could compress over time, and deterate either by aging or pest attack.

Plus I want to use the outer concrete layer not just for insulation, but also to double as a waterproof layer, thus not requiring any further layers of waterproofing material to be added. (As long as that fits with planning regulations..)

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Re:Insulating waterproof concrete

Posted by Neil - 2008/04/09 17:13

AECEB have a forum with LOTS of detailed construction debate, much of it from experience & priceless, check out...

<http://www.greenbuildingforum.co.uk/newforum/>

Re:Insulating waterproof concrete

Posted by hasdai - 2011/08/11 09:22

These days we can see building designed with concrete walls to make it more stronger able to withstand hazardous calamities and other accidents. And this has become quite necessary as well. If we build our walls strong and water proof then the lifespan of our will certainly increase and won't get rusted. So, putting concrete makes it strong and can protect us from anything. So keeping that in mind I have thinking of adjusting a concrete on my wall too. But here I don't have link with building remodeling agencies. I have heard about Los Angeles remodeling through my friend back there in Los Angeles but I live in California. So anyone can suggest me options?

Re:Insulating waterproof concrete

Posted by MichelleVivera - 2011/09/11 05:34

A lightweight insulating concrete is produced from a cement mix containing sawdust, diatomite, bentonite, and lime. The addition of rock salt and the entrainment of air bubbles results in a concrete with a high compressive strength, high thermal resistance (R) values (up to 30 to 40 times that of standard concrete), and excellent acoustical properties. The new insulating concrete is one third the weight of standard concrete. The composition is fire retardant, insect proof, and is very easy to clean up. Methods for producing cementitious materials include a process for manufacturing strong, lightweight, waterproof building products such as wall panels and roof panels. The mixture can be easily pumped for walls and floors. A well-insulated, cost-effective floor that has a slight give to it is excellent for gymnasium floors. This material is used for residential, light commercial, and agricultural buildings. The composition has the unique property of being able to absorb contaminated or hazardous materials especially petroleum based contaminants. The compressed air bubbles allow the composition to mix totally with the contaminated liquids and absorb the contaminants within the mass of the composition.

Thanks
MichelleVivera
