

ECO-FRIENDLY THERMAL INSULATION RANGE

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Overview



Siyanqoba Insulations (Pty) Ltd, a company affiliated to Speedheat (Pty) Ltd, is the result of continuous product development to reduce energy wastage and remain in line with sustainable building standards. One of the best ways to achieve energy conservation and improve comfort is to use quality insulation products.

Siyanqoba Insulations (Pty) Ltd manufactures and supplies our local brand thermal insulation products. Our range includes insulation products suitable for floors, wall cavities and roof slabs - both for new builds and renovation projects.

All products are manufactured locally at facilities that are comply with ISO 9001:2015 standards.

Eco friendly and sustainable building

All insulation products are eco-friendly, do not harm the environment and contribute towards green living practices.

Our range of thermal insulation includes floor and cavity wall insulation made from 100% recycled EPS. All insulation products are recycleable.

Conserving energy and resources

Insulation reduces heat loss in Winter and cool air escaping in Summer, reducing heating and cooling bills.

Warming up graphs have proven that our floor insulation products (used in conjunction with Speedheat electric floor heating) installed on top of the concrete slab is more effective than R1 insulation under the concrete slab as specified by SANS 201:2011. **See page 8 and 9 .**

GreenRscreeed insulating floor screed is 85% weight saving, compared to normal sand cement builders screed, reducing material use and saving on transport costs. **Read more on GreenRscreeed on pages 6 – 9.**

All insulation products reduce sound travel, making them perfect for use in multi-storeys.

Read more on features and benefits on page 15.

Overview (cont.)



Durability

Our insulation products are durable and no maintenance is required.

All products carry a 7 year product warranty on all products and accreditation certificates are issued with GreenRscreeed and GreenRwall installations.

Insulation Product Range



Insulating floor screed

Lightweight insulating floor screed
GreenRscreed™

GreenRscreed™ is a lightweight insulating floor screed.

GreenRscreed aggregate, made from 100% recycled polystyrene (EPS) treated with a polymer additive, is mixed into the screed as a sand replacement to achieve high thermal insulation properties. This results in a lightweight insulating finishing screed, making it especially suitable for new builds. **This lightweight aggregate is also used to insulate flat roof slab structures.** *More information on Pg 6-9.*



Floor Insulation Boards

Lightweight floor insulation
KlimaBoard™

KlimaBoard™ is a lightweight, reinforced insulation board made from extruded polystyrene (XPS).

Reinforced with fibreglass mesh and a cement compound on both sides improves compressive strength and allows for effective application onto substrates. *More information on Pg 10-12.*



Wall Cavity Insulation

Lightweight wall cavity insulation
GreenRwall™

GreenRwall™ is a cavity wall insulation.

GreenRwall mix, made from 100% recycled polystyrene (EPS) treated with a polymer additive, is pumped into the wall cavity, resulting in a 100% airtight cavity, leaving no issues for damp.

GreenRwall can be mixed to achieve different R value requirements. *More information on Pg 13,14.*



Celing Insulation

Isotherm is a lightweight ceiling insulation made from 100% thermally bonded, people friendly polyester. The polyester fibre is produced from recycled plastic bottles.

Isotherm is also recyclable, non-toxic, fibreglass free and safe to install. Supplied by ISOTHERM, installed by StoploZ.

A closer look at GreenRscree™ insulating floor screed

GreenRscree™ is a lightweight insulating floor screed which replaces conventional sand cement screed.

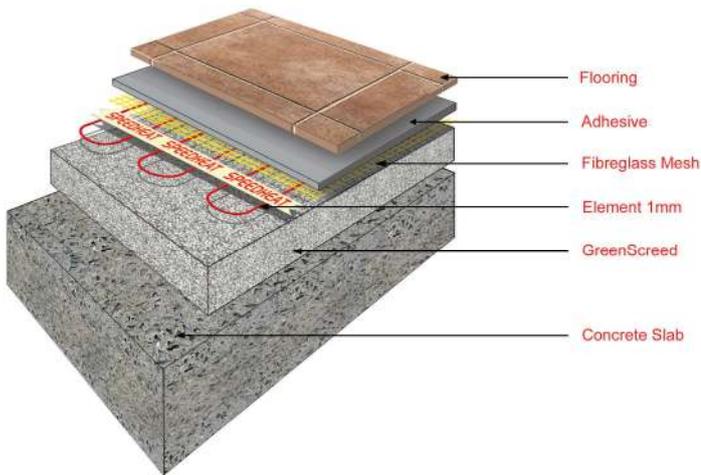
GreenRscree aggregate, made from 100% recycled EPS treated with a polymer additive, are mixed into builder's screed as a sand replacement to achieve ideal thermal insulating properties.



This results in a lightweight insulating finishing screed, making it especially suitable for new builds.



A typical GreenScreed™ installation



Exploded view of a typical GreenScreed undertile installation with underfloor heating

GreenScreed acts as an effective de-coupler from the substrate. This means cracks from the substrate will not follow through to floor surfaces.

R values and compressive strength

| Screed Density | Thermal Cond. | Comp. Strength | R Value (m ² K/W) against screed thickness in mm | | | | | | | |
|-------------------|---------------|----------------|---|------|------|------|------|------|------|------|
| | | | 30 | 40 | 50 | 70 | 80 | 90 | 100 | 110 |
| kg/m ³ | W/m.k | MPa | | | | | | | | |
| 210 | 0.066 | 0.70 | 0.46 | 0.62 | 0.77 | 1.08 | 1.23 | 1.38 | 1.54 | 1.69 |
| 260 | 0.068 | 0.84 | 0.45 | 0.60 | 0.75 | 1.04 | 1.19 | 1.34 | 1.49 | 1.64 |
| 310 | 0.081 | 1.49 | 0.38 | 0.50 | 0.63 | 0.88 | 1.00 | 1.13 | 1.25 | 1.38 |
| 360 | 0.104 | 1.70 | 0.29 | 0.39 | 0.49 | 0.68 | 0.78 | 0.87 | 0.97 | 1.07 |

Note: R0,50 GreenScreed on top of the slab is more effective than R1 insulation under the concrete slab.

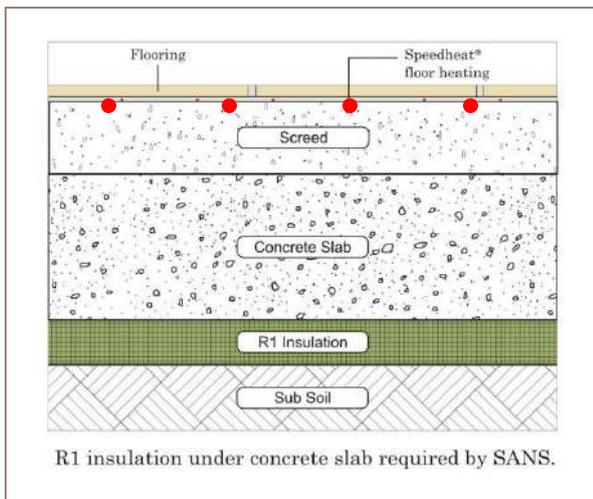
GreenRscreed™ vs. R1 under the slab



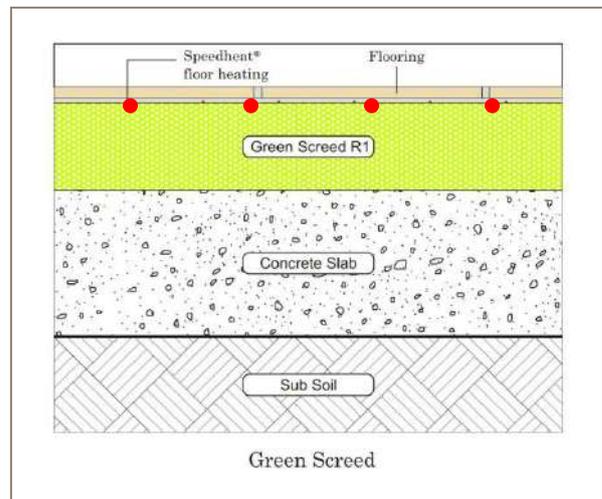
Green Screed on top of the concrete slab is more effective than R1 insulation placed underneath the concrete slab..

Installed underneath an electric floor heating system, GreenRscreed reduces heat loss downward into the concrete slab, thus warming your floor surface and room, not the concrete slab.

Please refer to the illustrations below.

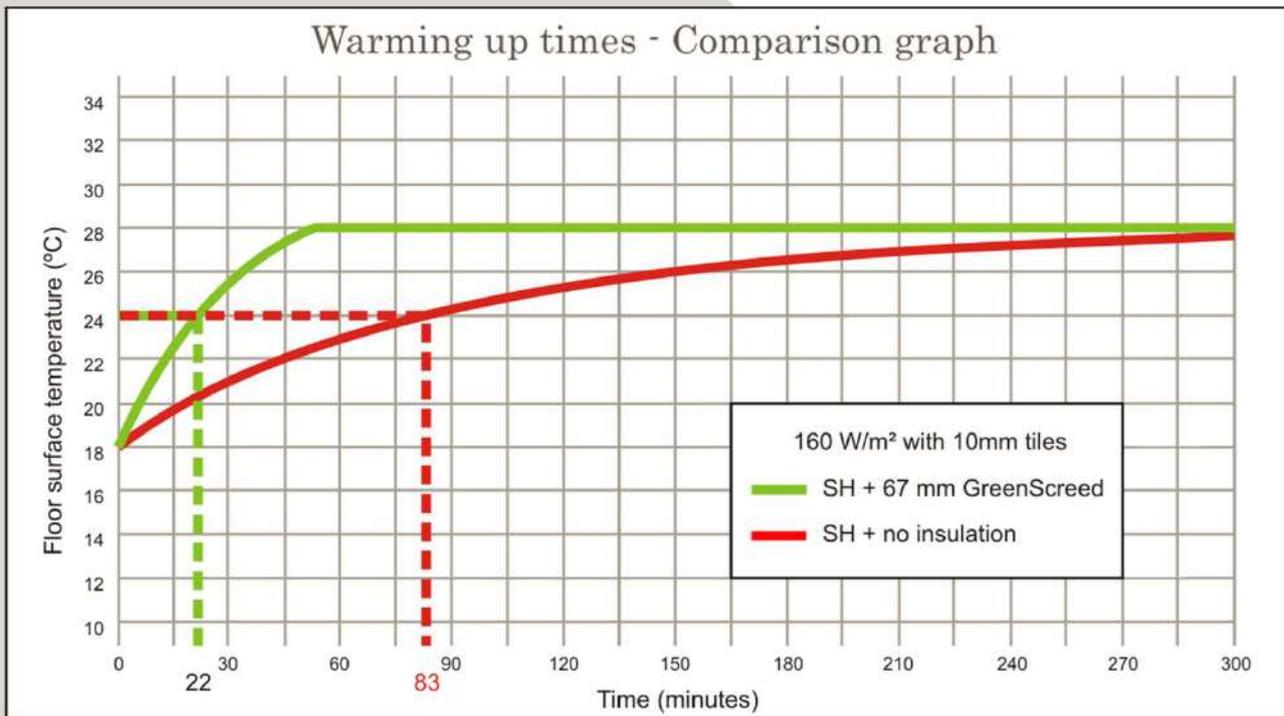


vs.



| R1 insulation under concrete slab | vs. | GreenScreed on top of concrete slab |
|---|-----|---|
| High thermal mass = longer warming up times | | Thermal mass reduced = shorter warming up times (warms up in minutes) |
| Energy wastage from longer warming up times and limited control | | Energy saving from shorter warming up times and improved control |
| Cannot respond quickly to changing weather conditions | | Responds swiftly to weather changes with reduced energy consumption |

Warming up graphs



The warming up graph shows response times for Speedheat underfloor heating without insulation versus Speedheat with GreenRscreeed insulating screed.

We compare the time it takes to increase the floor temperature by 6 degrees Celsius (18-24 °C) as seen on the graph.

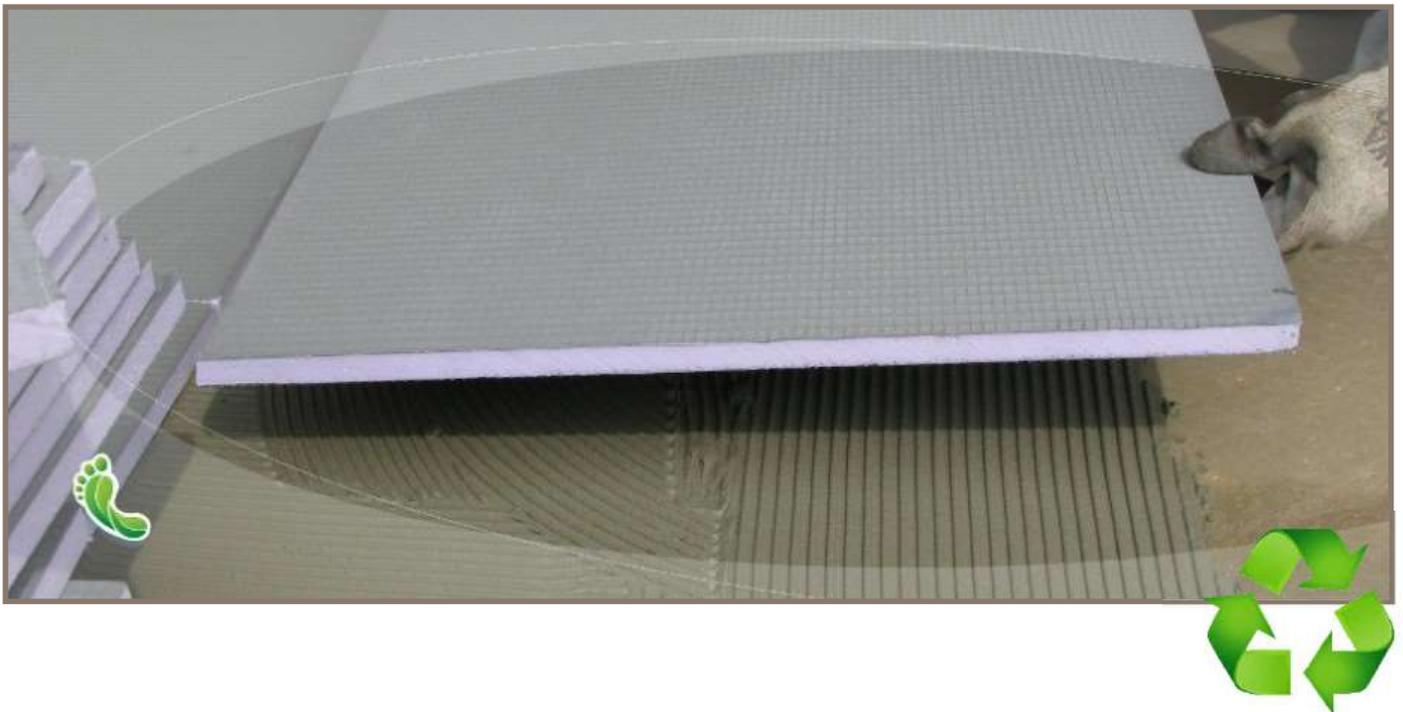
Speedheat without insulation (red curve) takes 83 minutes while Speedheat with GreenRscreeed (green curve) takes 22 minutes.

It can be noted that by installing GreenScreed, the warming up times is 3.5 times faster!

A closer look at KlimaBoard™ Floor insulation boards

KlimaBoard™ is a lightweight, reinforced insulation board made from extruded polystyrene. Reinforced with fibreglass mesh and a cement slurry on both sides improves compressive strength and allows for effective application onto substrates.

KlimaBoard floor insulation boards are often installed underneath electric floor heating systems to reduce downward heat loss into the concrete slab, improving warming up times and reducing energy consumption.



KlimaBoard is available in different thicknesses, achieving different compressive strengths and R values. Improvement in warming up times are also noted in the table below:

| Product | Material | Total build up (mm) Includes heater and screed | Warming up time | R value (m ² K/W) | Compressive strength (kPa) |
|-----------------|----------|---|------------------|------------------------------|----------------------------|
| KlimaBoard 5 mm | EPS 40 | 10 | 2.5 times faster | ±0.15 | >250 |
| KlimaBoard 10mm | XPS 40 | 15 | 3 times faster | ±0.30 | >250 |
| KlimaBoard 25mm | XPS 40 | 30 | 3 times faster | ±0.80 | >250 |

Best practices when installing KlimaBoard™ insulation boards



Klimaboard is installed with a polymer modified tile adhesive on top of the finishing screed.



Seams are taped off, ready for the floor heating system to be installed.

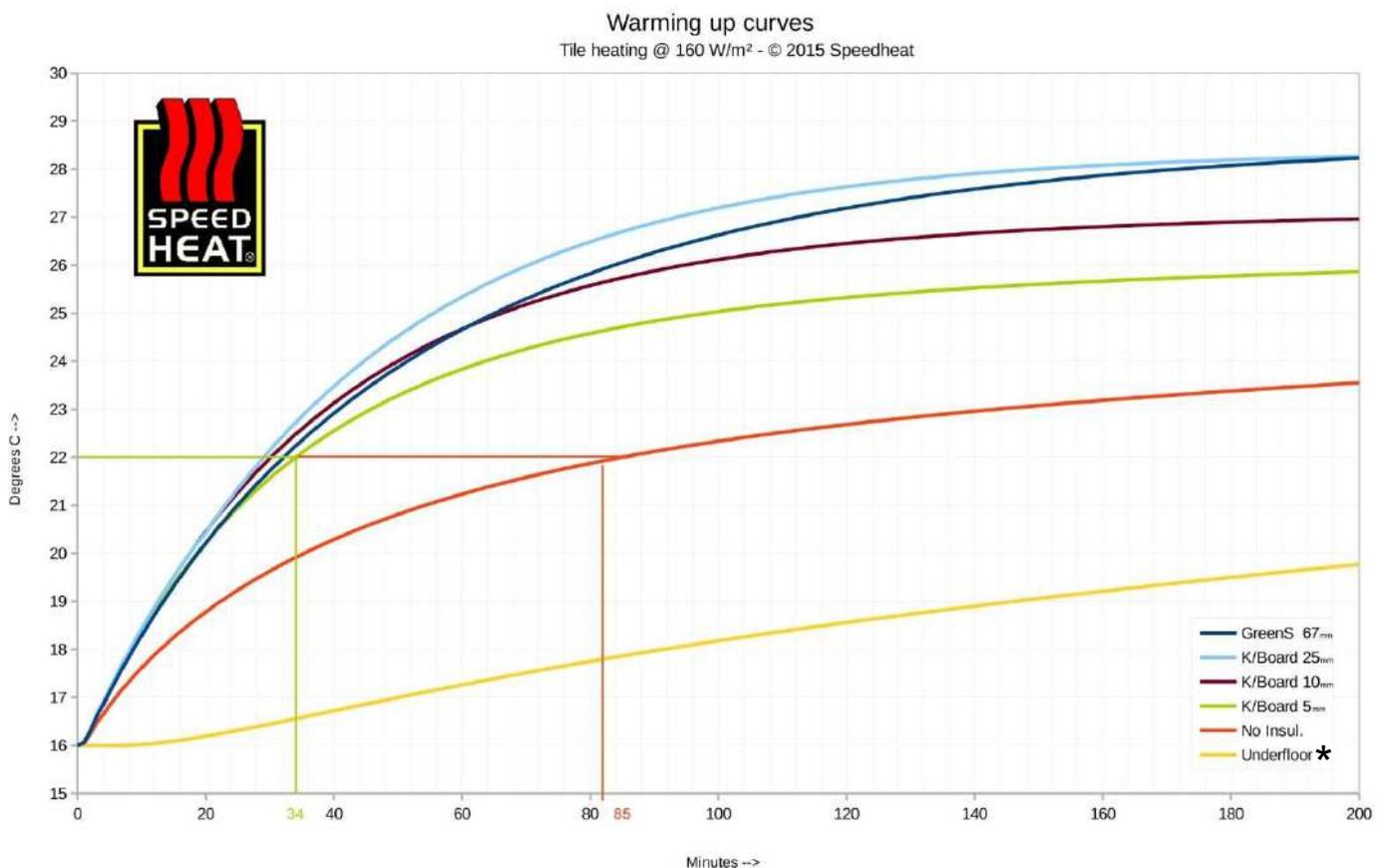


Floor heating is installed on top of the KlimaBoard insulation boards.



Warming up graphs with KlimaBoard™

The below graph shows warming up times which have been calculated and tested using different floor insulation products with Speedheat floor heating.



*The yellow line represents conventional in-slab under floor heating.

We compare the time it takes to increase the floor temperature by 6 degrees Celsius (16-22 °C) as seen on the graph.

It can be noted that by installing KlimaBoard 5mm only, the warming up time is 2.5 times faster!

A closer look at GreenRwall™ wall cavity insulation



100% airtight
No air = no
convection flow
= no
condensation =
no damp

▪GreenRwall™ is a lightweight cavity wall insulation, suitable for 20mm - 80mm wall cavities.

▪Cavity wall insulation reduces heat loss through walls, making a significant difference in temperature in your home. Comfort is improved and heating, as well as cooling bills are reduced. Greater savings in energy consumption can be seen by adding cavity wall insulation to a home with existing ceiling insulation.

▪Moisture condensing on the outer leaf cannot penetrate to the inner leaf of the wall. Without convection flow inside the cavity wall, there will be no condensation. Cavity wall insulation virtually eliminates condensation and mould problems, creating healthier living conditions.

▪GreenRwall mix is either poured or pumped into the wall cavity, resulting in a 100% airtight cavity, leaving no issues for damp.

▪Cavity wall insulation also reduces sound transmission, protecting your home from unwanted exterior noise and reducing the impact of noise from within the home on your neighbours.

GreenR wall ingredients:

- ❑ 100% recycled polystyrene
- ❑ Cement
- ❑ Polymer additives

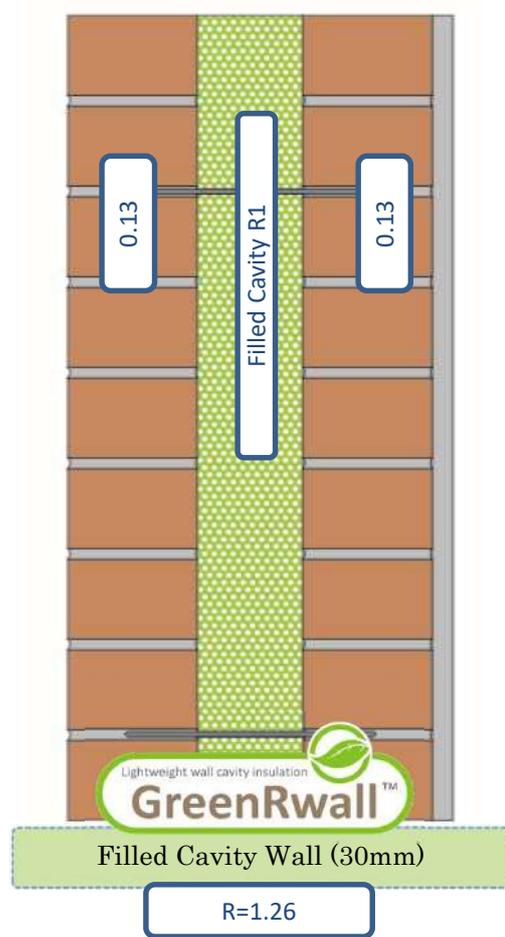
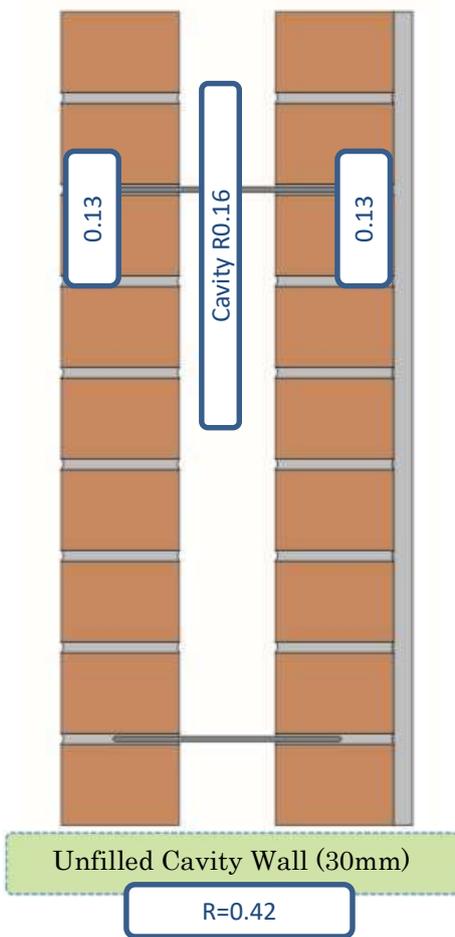


Comparing R values of wall cavity constructions



The below images are a comparison of two constructions, an unfilled cavity wall and a filled cavity wall respectively. The R values have been included for the individual respective materials.

It can be noted that the unfilled cavity wall has a total R value of 0.42 compared to a total R value of R1.26 with GreenRwall.



GreenRwall can be mixed to achieve different R value requirements. See table below:

| | R value (m ² K/W) against Cavity Gap in mm | | | | | | |
|------------------|---|------|------|------|------|------|------|
| Cavity Gap in mm | 30 | 35 | 40 | 45 | 50 | 55 | 60 |
| R value | 0.97 | 1.13 | 1.29 | 1.45 | 1.61 | 1.77 | 1.94 |

Features & benefits



Green Living

- GreenRscreeed™ and GreenRwall™ are made from 100% recycled materials.
- All products are recyclable.
- Durable and no maintenance is required.
- Reduces the transmission of sound and noise.



Conserving Energy and Resources

- Reduces heat loss in Winter and cool air escaping in Summer.
- Heating and cooling bills reduced.
- 85% weight saving, reducing material use.

Structural Advantages

- Effective de-coupler from substrate, meaning cracks in concrete slabs will not follow through to floor surfaces.
- Limits damp
- Lightweight
- Sound proofing properties make it especially suitable for multi level buildings

Sustainable Building Standards

- Floor insulation products are more effective than R1 under concrete slab as specified by SANS 201:2011
- .
- GreenRwall™ achieves R1 with 50mm cavity wall.

*

Top 5 Projects

The Willows at Heron Banks

GreenRscreed insulating screed will be offered in these building packages! Show houses ready for viewing!

This luxurious eco estate, surrounded by beautiful natural parklands, on the banks of the Vaal River offers top facilities which include:

- 18 hole Danie Obermeyer - designed golf course
- Boating Centre
- Walking Trails

Properties include exclusive stands with building packages, sectional title townhouses and custom built units. <http://www.heronbanks.co.za/>



The Royal India, Menlyn

GreenRscreed™ was installed in the cold rooms and freezer at this outstanding authentic indian restaurant.

This interesting project includes the installation of GreenRscreed insulating screed together with Speedheat floor heating, with the objective of preventing condensation build up in the cold rooms.



Top 5 Projects (cont.)

Groenkloof Retirement Villages, George

We've completed three GreenRscreeed™ installations at this group of retirement villages!

GreenRscreeed insulating floor screed has been installed to increase comfort in these retirement villages and privately owned title houses at Groenkloof Rif.

Groenkloof consists of three retirement villages and a senior estate located in the heart of the beautiful Garden Route in the Western Cape. The villages boast the full spectrum of retirement offerings including Own Title Houses, Assisted Living Flats, Frail Care Units, Sub Acute Care Facilities, Community Centers and a multitude of Senior Services.

The villages will eventually be home to over 700 retired families and are already the happy home of roughly 420 retirees. <http://groenkloof.net>



Eye of Africa Signature Golf Estate

With energy efficiency being one of this estate's top priority, GreenRscreeed could not miss this opportunity.

This signature golf and residential estate in Johannesburg introduced the Energy Efficiency Matrix as part of their Architectural and Building Guidelines, following amendments to the National Building Regulations in 2011.

<http://eyeofafrica.co.za/>



Top 5 Projects (cont.)

Bantry Bay Apartments, Cape Town

KlimaBoard™, a 10mm thick, high density EPS board was installed underneath Speedheat floor heating systems in 57 rooms at The Bantry Bay apartments and penthouses.

The installation of KlimaBoard insulation boards will reduce downward heat losses to the concrete slab. This will result in less energy wastage and minimal impact on the environment. This will also result in a more responsive heating system, able to accommodate Cape Town's unpredictable weather patterns.

KlimaBoard has sound proofing properties especially beneficial in an apartment block.



Top 2017 commercial project

This new 12-storey development in Stella Rd, Sandton is targeting a five star Green Star SA rating from the Green Building Council SA. GreenRscreeed™ contributed towards this exciting project!

GreenRscreeed was installed underneath Speedheat floor heating to prevent downward heat losses into the concrete slab. This will increase warming up times, making the heating system very responsive, resulting in on-demand heating - heating when you need it. Energy wastage is largely reduced.

Other contributing factors that make this installation green are:

- *With the installation of GreenRscreeed, it is possible to install a low power heating system due to improved efficiency and response times. The floor heating system is compatible with a Siemens BMS (Building Management System), contributing towards energy efficiency and lower operational costs.

- *Soundproofing and weightsaving properties make GreenRscreeed perfectly suited for this multi-level building.

- *Compared to normal sand cement screeds, GreenRscreeed is a lightweight screed, therefore reducing material use, transport costs and ultimately carbon footprint.

- *GreenRscreeed also acts as an effective decoupler from the substrate. This means potential cracks in the concrete slab are unable to follow through to the floors.

- *GreenRscreeed is made from 100% recycled polystyrene, and is recyclable. Read more on this development <http://alive2green.com/development-starts-new-old-mutual-green-building/>



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