



SUSTAINABLE MATERIALS

Green Star SA does not prescribe or endorse any particular material. However, it does provide guidance in choosing products that reduces our reliance on virgin materials for manufacture, favours lower embodied energy products and calls for recycled/reused components to be used. Green Star SA is also concerned that materials used in the building are obtained using sustainable manufacturing principles, where harm to the environment and the people who live in it is minimised.

reused and recycled materials

There are several opportunities to use reused materials especially in a low cost housing environment. Processing of previously used clay bricks at building dump sites already is prevalent and these materials may be purchased for housing. Not only would this put an existing “waste” material back to use, but it would also offer a meaningful income for individuals working in these building dump sites. Similarly, doors and windows are salvaged for resale from demolition sites throughout South Africa.

concrete

Portland Cement production is an exceptionally energy intensive process. As a means of reducing the embodied energy content of cement, waste products such as fly ash or industrial slag can be incorporated into the concrete mix. While this does not impede the strength of the product in any way, the strength of the concrete during the curing process takes longer to attain.

steel

Steel that contains recycled steel content reduces the reliance on virgin ore bodies, and is shown to have a substantially lower embodied energy component. In South Africa, rebar typically has between a 90-95% recycled content, whereas structural steel has a lower recycled steel component.

Steel would be used in light steel framed buildings where the wall structure and roofing structures are steel, doors, windows frames, rebar, steel mesh,

pvc minimisation

PVC has been shown to leach dioxins throughout its lifecycle, from its production until disposal. These dioxins are poisonous to the factory workers in the production process, leach into the soil and water table on disposal, but pose the greatest risk to human life while installed in buildings. During fires PVC releases dioxins into the atmosphere which. This gas claims more lives and causes more long term health damage than the fire itself.

It is recommended that PVC applications be replaced with alternative products wherever is possible. Many options exist for plumbing applications, from HDPE and PEX through to copper piping. While PVC replacements are available for electrical flex, they are not widely available and expensive. It is preferable not to use PVC floor covering.

sustainable timber

Ideally timber used in buildings should be derived from salvaged timber which is reused for the same function, or recycled into new products from waste timber. Alternatively all timber work use in the building of the house and for fittings should be sourced from FSC accredited forests.

The FSC accreditation is an assurance that the forests from which the timber derives is managed sustainably, that the water bodies are not polluted and the workers and inhabitants are fairly treated. An FSC accreditation can only be claimed if all parties handling the timber from forest to manufacture have Chain-of-Custody certification. This guarantees that the timber is genuinely obtained from FSC accredited forests.

In addition to all timber structures and fittings complying the above criteria, any form work or timber pallets used on the site should also comply. Currently 80% of all forests in South Africa are FSC accredited. However the progress of obtaining chain of custody certification is not as advanced.

Timber products can be found in doors, windows, roofing struts, facades, interior walling, flooring and panelling.



local sourcing

In an effort to reduce the embodied carbon of products derived from transportation, Green Star SA rewards products that are sourced as close to the site as possible. This criterion does not only refer to the manufacturing site, but also to point of extraction of raw materials.

Green Star SA specifically rewards locally sourced materials permanently installed in the building, but excludes mechanical, electrical, plumbing and speciality components.

low VOC and low formaldehyde products

Indoor air quality is hampered by off-gassing of volatile organic compounds into the atmosphere. These gases are charged with causing headaches, ear, nose and throat irritations, eczema nausea lethargy amongst various ailments. Removing these toxins from the interior environment has a positive effect on the inhabitants' well being. VOC's are prevalent in paints, sealants, adhesives and carpets. Formaldehyde which is used as an adhesive for bonding engineered timber products is singled out. The emissions have been linked to respiratory cancers.

When selecting any of the aforementioned products it is important to ascertain the VOC limits. While many South African paint companies are striving toward EU2007 levels in their paint, Green Star SA limits are far more stringent. There are a few local carpet suppliers whose carpets comply with Green Star SA VOC limits.

zero ODP insulation

Insulation is vital for improving and maintaining comfortable indoor thermal conditions. While the bulk of insulation (fibreglass, cellulose, PET, rockwool) are manufactured without using blowing agent; expanded polystyrene (EPS), extruded polystyrene (XPS), elastometric nitril foam and polyisocyanurate (PIR) insulation amongst others, are manufactured using HCFC blowing agents. These gases are still permitted under the Montreal Protocol until 2020, but they contain ozone depleting gases. When specifying insulation that uses any blowing agent in its manufacture, non-HCFC gases need to be specified. The most common replacement gas is pentane, which has neither ozone depleting potential nor green house warming potential.

hazardous materials

Potentially found in:

- Floors: concrete, insulation,
- walls: concrete hollow brick, clay brick, cement brick, gypsum board, insulation, adobe, timber, plaster, steel, paint, waterproofing
- Roof: IBR , clay tiles, plastic tiles,
- Fittings: doors, windows, plumbing, sanitary ware, sink, wiring.