



THERMGUARD C.C.

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ADVANTAGES OF CELLULOSE FIBRE

With the rapidly increasing cost of electricity, as well as the ongoing load shedding experienced in recent years, an energy efficient home is one of the primary desires of South African homeowners. Not only does a well-insulated home save you money year-round, it also keeps you comfortable and healthy – improving your lifestyle. Thermguard insulation is installed in buildings to improve the comfort levels of the occupants, conserve energy and ultimately slow the burning of fossil fuels, thus reducing greenhouse gas emissions.

Although Thermguard does not physically heat or cool your home, it prevents the transfer of heat (or cold) from the outside/inside through the ceiling by up to 92%. Each home is unique, but on average we expect the difference between an un-insulated home and one insulated with Thermguard, to be in the region of 4-6°C.

In summer, the hot African sun beats down on your roof causing the still air in your roof space to reach extreme temperatures, creating an oven effect. This heat is transferred via conduction through the ceiling making your living space extremely uncomfortable. By installing Thermguard, you will prevent the heat flowing downwards into your cooler home by up to 90%.

During our freezing winter months, Thermguard will keep your home naturally warm by retaining the heat generated during the day inside your living space. Heat sources such as electric or gas heaters, or a fireplace will be unnecessary in most instances, but when used will not need to stay on for as long. You will simply need to generate heat until you are comfortable, then switch off the heat source and let Thermguard retain the heat in your home. When fitted at 135mm, the reduction of heat flow in winter is an amazing 92%.

Recycled Content

Most homeowners are unaware of the significant impact their decision of choosing cellulose fibre as their insulation can make on the environment. Thermguard insulation contains the **largest amount of recycled content** of any ceiling insulation in the industry. It is manufactured from more than 80% post-consumer recycled newspaper (one of the largest parts of our waste stream) which would otherwise be dumped in landfills, creating greenhouse gasses whilst decomposing. In addition, using paper to produce cellulose fibre insulation preserves valuable landfill space. In the last year the company has recycled more than 1100 metric tons of post-consumer newspaper. Informal collectors are also able to provide a stable income for their families by selling collected newspapers directly to the factory.

Additives

The non-recycled components of cellulose fibre insulation are still **environmentally preferable** to raw materials used by most other insulation types as they are non-toxic and 100% natural. These natural salts and minerals are used in agriculture to promote plant health; stop and prevent wet and dry rot in timber; and they also have various uses in the household and medical fields. The borate additives in Thermguard are harmless



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to humans and pets; however, it will irritate insects and rodents such that they will not live in the material or use it to build a nest. The result is that the Thermguard is a **passive, yet effective, pest control** measure ensuring a clean and healthy home.

Fire Retardant

The borate treatment also gives Thermguard the fire retardation to meet South Africa's SANS 428 test criteria and classified B/B1/2, meaning that it **does not support flame spread**. It will also withstand the heat of a blow torch without melting or emitting noxious fumes. Cellulose has been proven to protect properties against the threat of fire and has even reduced the spread of accidental fires and the resulting damage.

Health Aspects

Cellulose fibre has **great advantages for industrial health and worker safety**. The highest health risks occur during the manufacture, installation, and removal of insulation. None of which is an issue with cellulose fibre. The sole hazard for cellulose is categorised by the American "Occupational Safety and Health Administration" as a dust nuisance. They advise that the only requirement is the use of a simple dust mask during manufacture, installation and removal of cellulose fibre. This compares very favourably to the health risks associated with the handling of foam products and synthetic fibres such as fibreglass. In addition, most fiberglass and polyurethane insulations use formaldehyde-based glues, which present a continuing hazard during manufacture and even years after installation due to off-gassing of the formaldehyde.

Embodied Energy

Embodied energy is the energy that is consumed by all processes associated with a product throughout its manufacture, use and deconstruction or decomposition. The **embodied energy** of cellulose insulation is by **far the lowest** compared to all other insulation materials commercially available. Furnace-made insulation materials (fibreglass and polyester) require 10 – 14 times more energy to produce compared to cellulose fibre, and foam products (polyurethane) contain up to 64 times more embodied energy than cellulose fibre. Cellulose fibre is 100% biodegradable and **will not negatively affect ecosystems or wildlife**. Glass and plastic insulations are not accepted by recycling companies because they cannot be recycled and take hundreds, if not thousands, of years to break down into their separate material components. These tiny pieces of material will never return to a natural state, yet a biodegradable product such as cellulose fibre will. In addition, most landfills do not accept fibreglass waste as it is regarded as hazardous waste.

Approvals and Quality Controls

Thermguard has maintained the prestigious **SABS Mark** - Permit Number 5085/7411 for more than 20 years. In addition to the SABS Mark, Thermguard insulation is manufactured in a factory which complies with the **International Organisation for Standardization (ISO) 9001:2015** Quality Management System requirements, our assurance to you of a consistently high-quality product.

Installation Advantages

When Thermguard is blown onto your ceiling it fills every nook and cranny and gives **100% cover** which ensures that no heat gains or losses can occur. Cellulose fibre is easily blown over items such as pipes, branding and wiring, leaving few air pockets that would reduce the overall effectiveness. Downlighters and transformers are protected by covers which isolate them when the insulation is blown onto the ceiling, and wiring can easily be traced should maintenance be required. Fewer installers are needed to blow cellulose fibre onto the ceiling than those required for installing rolled insulation. Fewer people in the roof space means there is less chance of damage during the installation. Thermguard is **non-toxic and non-irritant** and can be moved aside by hand should any maintenance or renovation work be necessary after the installation.



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A Real World Test

The University of Colorado School of Architecture and Planning conducted a study that compared two identical buildings, one with cellulose fibre and the other with fiberglass insulation. On average, the building fitted with cellulose fibre performed **26% more efficiently** than the building fitted with rolls of insulation. The energy performance increased to 38% more efficient when tested in extreme climates. This efficiency is due to the fact that cellulose fibre is blown into all of the nooks and crannies, effectively sealing off the movement of air.

Acoustic Performance

Noise reduction is achieved in three ways with cellulose:

1. Cellulose fibre completely fills cavities leaving **no air pockets** for sound to travel through.
2. Cellulose fibres **trap air**, which in turn traps the movement of sound waves through the air.
3. Cellulose fibre is approximately **three times denser than fiberglass**, meaning that it can absorb sound much more effectively.

Moisture Concerns

Small drip leaks will not harm Thermguard or your ceiling as they will be **absorbed by the insulation**. When the roof space heats up, the moisture will evaporate out of the insulation, leaving it and your ceiling unharmed. This is why Thermguard is known as a “breathing insulation”. Thermguard is also resistant to mould and fungus.

Advantages attributed to cellulose fibre during the manufacturing stages

- 80-85% recycled content – more than any other form of insulation
- Reduction of greenhouse gas emissions through diverting waste newspaper from landfills
- Low energy manufacturing process – no heat or water is used during manufacture
- SABS approved and ISO 9001 certified
- Lowest embodied energy of all types of insulation available in South Africa

Advantages experienced by the homeowner directly

- Improved comfort through a passive method of temperature control
- 100% cover – leaving no gaps for air and sound to travel through
- Excellent thermal performance – superior to all rolled insulation in real world tests
- Superior sound insulation properties – higher density means greater sound absorption
- Additional reflective foils are unnecessary to meet the required R-values
- Non-toxic and non-irritant, and can be handled safely by hand
- Insect and rodent repellent – a passive form of pest control
- Fire retardant to SANS 428 – does not support flame spread
- Reduces greenhouse gas emissions by reducing the energy demand of the home
- Financial and energy savings – more money in your pocket and less load on Eskom
- No secondary market – no risk of the insulation being removed to be used in blankets or clothing
- Lifetime guarantee – will last the life of the building under normal conditions

Advantages of cellulose fibre at the end of its lifecycle

- 100% biodegradable and will not negatively affect ecosystems or wildlife

In conclusion, the advantages of cellulose fibre insulation are numerous and well documented – it is the **Greenest of the Green Insulations**. The unsustainable decisions of past generations have severely affected our planet’s ecosystems. The decisions we make from this point on will affect the sustainability of our planet for all future generations. Remember, Thermguard is **Recycled for Your Future**.

