

SOUTH AFRICA NATIONAL BUILDING STANDARDS: SANS 10400-XA



WHAT ARE THE SANS 10400-XA REGULATIONS?

The South African National Standards (SANS) 10400-XA provides for the application of Regulation XA, or the minimum requirements of the South African National Building Regulations on energy efficiency and environmental sustainability in building design. Adopted in 2011 in an effort to reduce greenhouse gas emissions caused by energy inefficiency in new buildings and extensions, SANS 10400-XA provides regulations that municipalities in South Africa must enforce. The full regulations can be found [online](#).

Building designers must comply with eight aspects of the national building regulations:

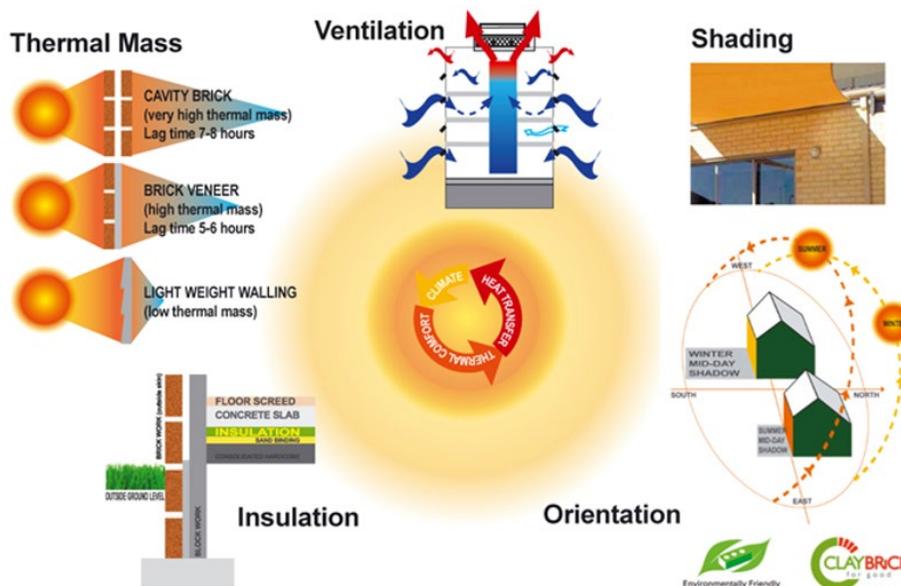
- ✓ Building orientation
- ✓ Shading of the northern wall
- ✓ Fenestration
- ✓ Floors
- ✓ Walls
- ✓ Roof assembly
- ✓ Services that use or control the use of energy
- ✓ Hot water supply requirement



WHY ARE THE SANS I0400-XA REGULATIONS IMPORTANT?

Buildings typically account for 40% of energy consumed in South Africa, yet they have high potential for energy savings. The regulations aim to reduce energy inefficiencies in building design due to energy loss and energy consumption and aims to increase environmental sustainability while reducing greenhouse gases. Correctly designing a building envelope, combined with energy saving techniques can reduce both energy losses and energy consumption by up to 78 percent and present significant cost savings related to utility costs for heating, for example. The SANS I0400-XA are based on energy efficiency considerations with an eye towards climate change mitigation. These climate considerations include:

- Control comfort (heating and cooling) without consuming fuels
- Use the orientation of the building to control heat gain and heat loss
- Use the shape of the building (plan and section) to control air flow
- Use materials to control heat or cold
- Maximize the use of free solar energy for heating and lighting
- Maximize the use of free ventilation for cooling
- Use shade (natural or architectural) to control heat gains



Criteria for passive design allowing for climate considerations in energy efficiencies.



WHO SHOULD APPLY THE SANS 10400-XA REGULATIONS?

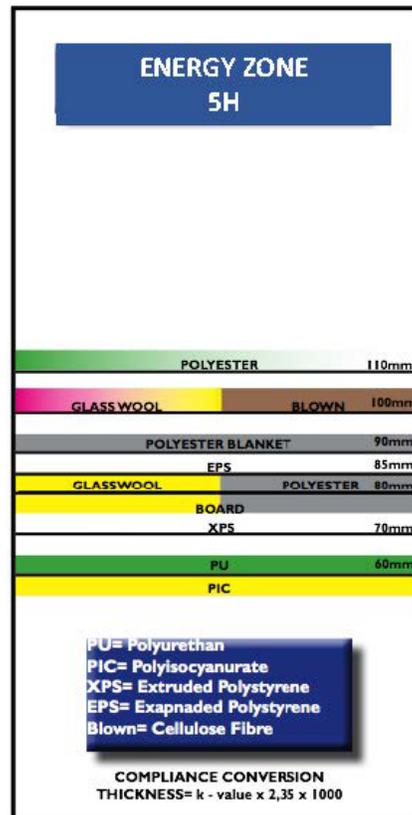
The SANS 10400-XA regulations are particularly important for building control officers, building managers, and surveyors within municipalities who are responsible for enforcing the regulations and ensuring compliance in new buildings and building alterations and extensions.



RESOURCES

The SANS Building Inspector Insulation Ruler (below and on the next page) is a tool that site building inspectors can use to ensure that the buildings they inspect are compliant with the SANS 10400-XA national regulations through assessing the exact measurements of energy zones within a building. The tool was developed specifically for municipal building control officers to enable them to take accurate measurements of insulation in buildings they are constructing and to ensure that specific parts of a building meet energy efficiency requirements. The Insulation Ruler should be used on-site by the inspectors and at all site inspections.

SANS Building Inspector Insulation Ruler



THERMAL INSULATION RULER (CEILINGS)

The deemed-to-satisfy R-value for roof assemblies are:

Energy Zone 1 – 6 (excluding Zone 5H) - R-value = 3.7

Energy Zone 5H – R-value = 2.7

Roof assemblies generally have an R-value = 0.35

Thus, the insulation must have an intervention **R-value** of:

Energy Zone 1 – 6 (excluding Zone 5H) – R-value = 3.35

Energy Zone 5H – R-value = 2.35

The thermal conductivity is a unique property of every type of insulation. Each insulation has its own identifying colour.

R – value (m²K/W) =
Thickness/Thermal Conductivity.



THERMAL INSULATION RULER (CEILINGS)

Therefore, different thicknesses of different types of insulation will result in the complying **R-value**.

The Thermal Insulation Ruler indicates the different types of insulation by name and by colour of product at the correct thickness.

Each side represents one of the **2 R-value** performance requirements.

The building inspector chooses for the **Energy Zone** they are in, holds the ruler against the roof/ceiling insulation and checks if it is the correct thickness.

