NATIONAL GLASS DISTRIBUTION

Glazing Laws

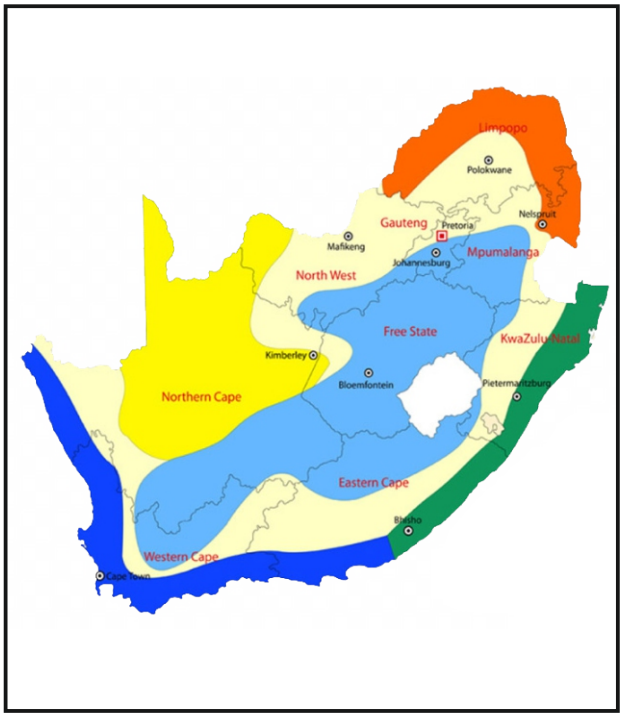
Do they change per region?

SANS 10400:N which is the National Building Regulation for glazing, determines the correct glass thickness and whether safety glass is required, based on the position of the installed pane of glass. The glass thickness and type does not change per region provided the "deemed to satisfy" requirements are met. To deviate from the SANS 10400:N, you will need to apply a rational design using various factors to calculate the glass thickness.

The energy calculations in SANS 10400 – XA and SAN 204 does have different climatic conditions for the energy calculations regarding the Solar Heat Gain and Conductance constants.

South Africa is divided into 6 different climatic zones:

Zone	Description	Major Centre
1	Cold Interior	Johannesburg, Bloemfontein
2	Temperate Interior	Pretoria, Polokwane
3	Hot Interior	Makhado, Nelspruit
4	Temperate Coastal	Cape Town, Port Elizabeth
5	Sub-Tropical Coastal	East London, Durban, Richards Bay
6	Arid Interior	Upington, Kimberly



Constants for conductance and SHGC

1	2	3	4	5	6	7
Constants	**Climatic Zone**					
	1	**2**	**3**	**4**	**5**	**6**
Conductance C_U	1.2	1.4	1.4	1.4	1.4	1.2
SHGC C_{SHGC}	0.15	0.12	0.10	0.13	1.11	1.13

Glazing Laws Per Region

ITB04

To calculate the maximum allowable energy usage you will need the following information:

- Net Internal Floor Area
- Constants for conductance and Solar Heat Gain Coefficients based on climatic zone
- Total glazing area per storey
- Solar exposure Factor E

Step 1:
Calculate the nett floor area of each storey of the proposed building, measured within the enclosing walls.

Step 2:
Calculate the total area of the glazed elements of each storey of the proposed building.

Step 3:
Calculate 15% of the nett floor area of each storey of the proposed building

Step 4:
- Determine whether the total area of the glazing elements for each storey is greater than 15% of the nett floor area of such storey.
- Where the total area of the glazing elements of a storey do not exceed 15% of the nett floor area of the storey, the energy performance requirements for such storey is deemed satisfied.
- Where the total area of the glazing elements of a storey is greater than 15% of the nett floor area of the storey the requirements contained in SANS 204 shall be complied with.

Step 5: *(Compliance with SANS 204)*
The aggregate of both conductance and solar heat gain of the glazing element must not exceed the following equations:
Conductance = Net internal floor area x CU constant based on climatic zone
Solar Heat Gain = Net internal floor area x CSHGC constant based on climatic zone

Step 6:
The aggregate conductance and SHGC of the glazing element in each storey shall be calculated by adding the conductance and SHGC of each glazing element to the following equations:

1)Conductance = (A1 x U1) + A2 x U2) + (A3 x U3) + …….

Where
- $A_{1,2,3}$ etc is the area of each specific glazing element
- $U_{1,2,3}$ etc is the U-value of each specific glazing element
  (See SANS 204 Table 6 for defaults if no rational design is available)

2)SHGC = (A1 x S1 X E1) + (A2 x S2 X E2) + (A3 x S3 X E3) + ……

Where
- $A_{1,2,3}$ etc is the area of each specific glazing element
- $S_{1,2,3}$ etc is the SHGC of the transparent element of each specific glazing element
  (See SANS 204 Table 6 for defaults if no rational design is available)
- $E_{1,2,3}$ etc is the solar exposure factor for each specific glazing element obtained from the tables in Annex C of SANS 204

The aggregate of Conductance needs to be less that the Conductance calculated in Step 5
The aggregate of Solar Heat Gain (SHGC) needs to be less than Solar Heat Gain calculated in Step 5

The responsibility of doing these calculations is the responsibility of the architect or the appointed Competent Person as per SANS 10400 – A Form 3