

## TECHNICAL SALES BULLETIN 003

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#### UNDERSTANDING THE NEW ENERGY EFFICIENCY LEGISLATION SANS 10400: XA & 204 – A GSA PERSPECTIVE

- Although SANS 204 is a National Standard, it is not regulated, therefore it is NOT compulsory.
- SANS 10400: Part XA is a mandatory standard, regulated through the National Building Regulations and the Standards Act.
- Under this Standards Act, all new buildings must comply with SANS 10400: Part XA, and not SANS 204.
- SANS 10400:Part XA does however refer to SANS 204, and because of this, the referred sections must comply with SANS 204.
- SANS 10400: Part XA: Clause 4.2.1 b) states that any building with an occupancy classification of A1 to A4; C1 & C2; E1 to E4; F1 to F3; G1 and H1 to H5 shall have a fenestration satisfying the requirements of Clause 4.4.4 ( For a description of these classifications, see attached).
- Clause 4.4.4.1 of SANS 10400: XA states that buildings with a fenestration area to nett floor area per storey of  $\leq 15\%$  automatically comply with the energy performance requirements, and nothing further is needed.
- Clause 4.4.4.2 of SANS 10400: XA stipulates that where the fenestration area exceeds 15% of the nett floor area, per storey, the fenestration requirements of SANS 204 must be complied with.
- Clause 4.4.4.3 of SANS 10400:XA states that the fenestration shall have an air infiltration complying with SANS 613. Although not specifically stated, it is our assumption that this only applies to fenestrations with areas exceeding 15% of nett floor area.
- It is important to note that the current trend of publishing “centre of glass” values in our product literature is of little or no significance to the energy assessor, as Total U-value and Total SHGC values are required to perform energy calculations. “Total” in this instance refers to the glazed window, and includes the frame.

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- Only spectrophotometric data published on the IGDB may be used in software simulations, hence it is of the utmost importance for glass manufacturers to supply accurate comprehensive

data for inclusion into the IGDB.

- It is our opinion that these energy assessments are the domain of the building's professional team, and the compliance will be underwritten by the architect. This is catered for in Form 1, SANS 10400: Part A, which the architect submits to the local authorities along with his drawings.
- GSA will post an "Energy Calculator" on the SmartGlass website, with appropriate disclaimers, as a design aid to the architectural professionals. This calculator will use the default values as stipulated in Table 6 of SANS 204, with a means of overwriting it if a hot-box test certificate exists.
- Window manufacturers e.g. Primador will conduct a hot-box test of each product type, in size 1200 x 1500mm. These results can be used to calculate values for the largest window in that product type, using NFRC accredited software such as "Windows Therm". These resultant values can therefore be assumed to apply to all smaller size windows, of that product type.
- It is not stated exactly who is entitled to do the software simulations, popular opinion is that it is whoever the architect appoints, as the architect "carries the can".
- There is currently only 1 hot-box available in SA, located at CSIR, Pretoria.
- Smaller window fabricators, as well as custom manufacturer's e.g. PG Aluminium, must get their profile supplier to supply the hot-box test certificates relating to the profiles purchased. There is no need for the window to be re-tested.
- The SANS 613 Water & Air Infiltration test must be carried out by each manufacturer/fabricator. There are currently 5 test rigs located in the major centres.

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#### **A STEP BY STEP GUIDE TO THE DESIGN APPROACH FOR NATURALLY VENTILATED BUILDINGS:-**

**Step 1:** Calculate fenestration area to nett floor area. If less than 15%, no compliance required. If greater than or equal to 15%, proceed to step 2.

**Step 2:** Establish occupancy classification of building, and if this is not included in Clause 4.2.1.b), no compliance is required. If the classification is mentioned in this clause, proceed to Step 3.

**Step 3:** Calculate the target Conductance and SHGC values as per Table 5 of SANS 204, according to the climatic zone of the site (refer to table A.1 in annexure A).

**Step 4:** Calculate the actual Conductance and SHGC values for the building by either of the following means:-

- a) Refer to the methodology in Clauses 4.3.4 & 4.3.5 of SANS 204, utilising the "worst-case" values obtained from Table 6 of SANS 204 for your selected window type.

Should the actual values for both Conductance and SHGC be less than the target values, the fenestration complies. If actual values are greater than target values, select another window type and repeat the calculation. If no values from Table 6 results in compliance, proceed to below.

- b) Working “backwards”, establish the Conductance and SHGC values you require to ensure compliance. This is easily done, as you know your floor area, climatic zone & fenestration area.

You can then ask the window suppliers to submit the appropriate test certificates for both SANS 613 & SANS 204 windows which meet your requirements.



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