Nutec Tongue and Groove Boards

Nutec Tongue and Groove Textured and Plain boards are medium density. These sheets are supplied in the natural grey and can be varnished with wood stain to simulate timber. Textured sheets can also be painted in various techniques to achieve a pleasant aesthetic finish. These boards are ideal for ceilings, internal and external wall panelling, door panelling and garden sheds.

Tongue and Groove Plain boards provide a classic smooth Tongue and Groove finish.

Fixing and Installation Details

Guideline - Supporting Structure for Nutec Tongue and Groove Boards (Interior Application)		
	Maximim Span Between	
Description and Thickness of Board	Vertical supports	Horizontal supports
6 mm 9 mm	570 mm 570 mm	500 mm 800 mm

1. Cut the board to the correct size using a masonry cutting disk and place onto the wall in the desired position.
2. Drill 5 mm holes through the board at the fixing points and fasten the board to the wall using a 5 x 30 mm (minimum size) nail in screws with wall plugs. Cut nails can be used on plastered brick walls.
3. Make sure the screws are countersunk into the board when fastened.
4. Adjoining boards are butt joined together to simulate an extra ‘groove’ (5 mm apart).
5. Use crack filler to cover the screw heads and fill the butt joint leaving a smooth finish, (eg. Painter’s mate).

Fig 20 : Flush, internal and external joints for Nutec Tongue and Groove Boards.

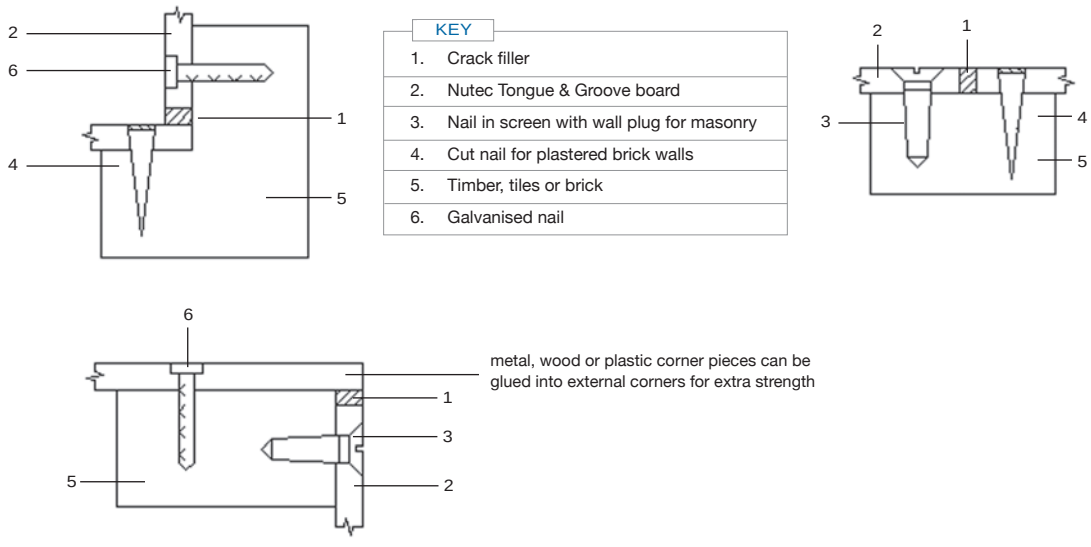
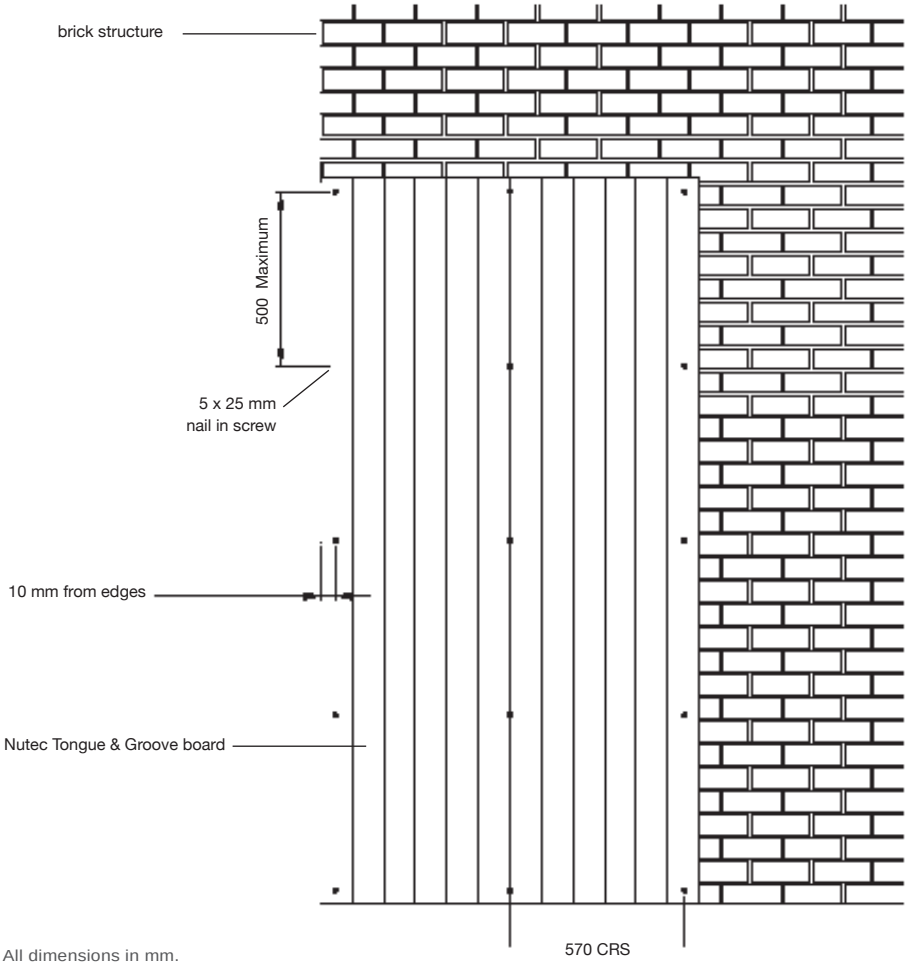
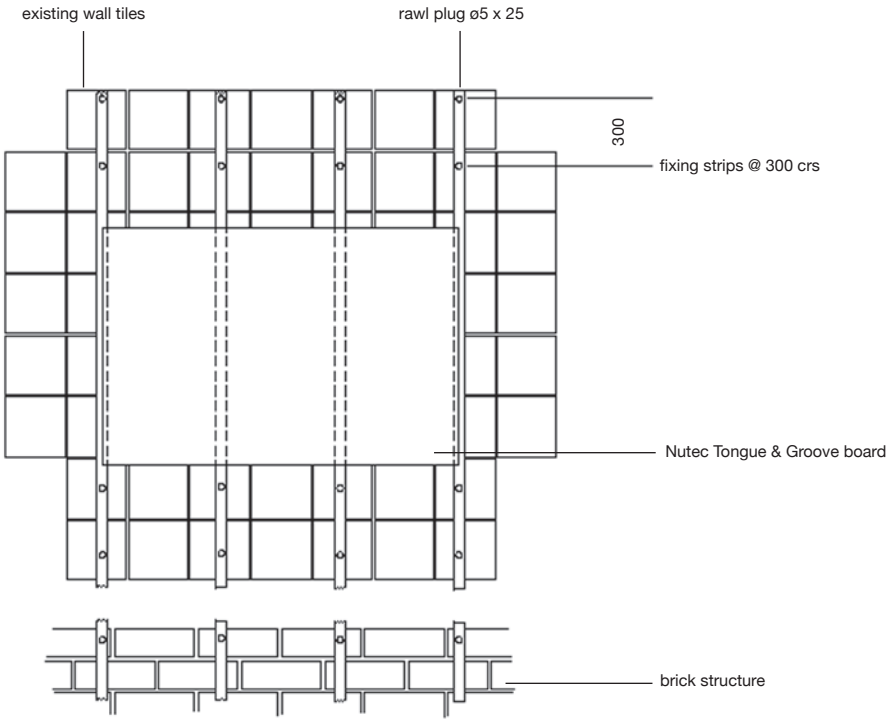


Fig 21 : Installing Nutec Tongue and Groove Board to even surfaces



All dimensions in mm.

Fig 22 : Installing Nutec Tongue and Groove Board to uneven surfaces



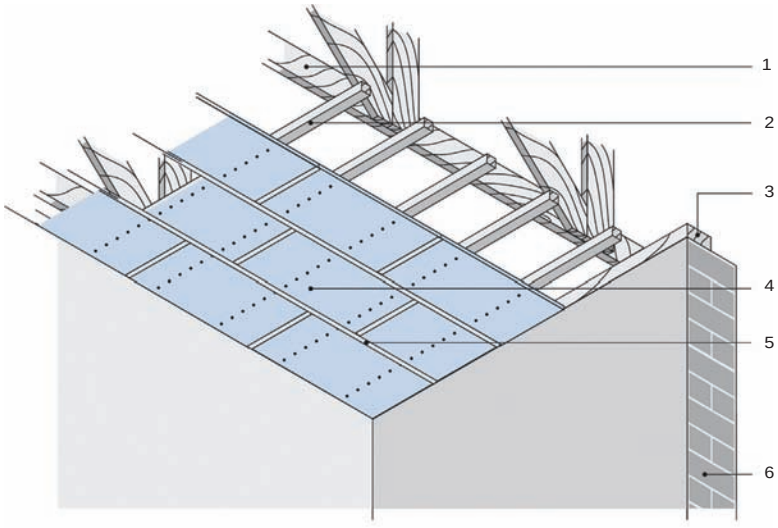
All dimensions in mm.

Things to remember when installing Nutec Tongue and Groove Boards.

- Nutec Tongue and Groove Boards may be applied to timber frames, plastered and unplastered walls and tiled surfaces as shown in *figure 21*.
- Standard dado rails can be easily attached onto the wall above or below Tongue and Groove boards except when fixing strips are used. In such cases a shelf should be used instead.
- Fixing to uneven walls may required the use of fixing strips *(figure 22)* to ensure that the board remains flat and does not follow an uneven contour.
- Fixing strips must be fastened to the wall with nail in screws at 300 mm intervals. The irregularity of the wall will determine the thickness of timber used but a minimum of 15 mm should be adhered to.
- Spacer must be used at relevant fixing points behind the strips to compensate for the irregularities in the wall. A builders line must be used to draw a level across the strips.
- Nutec Tongue and Groove boards are attached to the fixing strips at the same intervals as they would normally be attached using.
- For ceiling applications these boards should be fixed at 600 m centers as shown in *figure 23.*
- When used in wet areas, the board must be sealed continuously around the perimeter of the reverse side of the board 5mm from the edge.
- To form a double skin wall in a prefabricated steel or timber framed structure, the cavity between the two skins should be ventilated. In these structures, especially in humid conditions, foil is often

installed as a moisture barrier and as an insulator. Ventilating the cavity will permit the evaporation of any condensation which may collect on the insulating material. The sheets are best painted with a pure acrylic PVA paint. Where it is intended to use oil or alkyd paints it is essential to prime the sheet with an alkali-resistant sealer. In this instance both faces of the product should be sealed.

Fig 23 : Installing Nutec Tongue and Groove Boards as a Ceiling



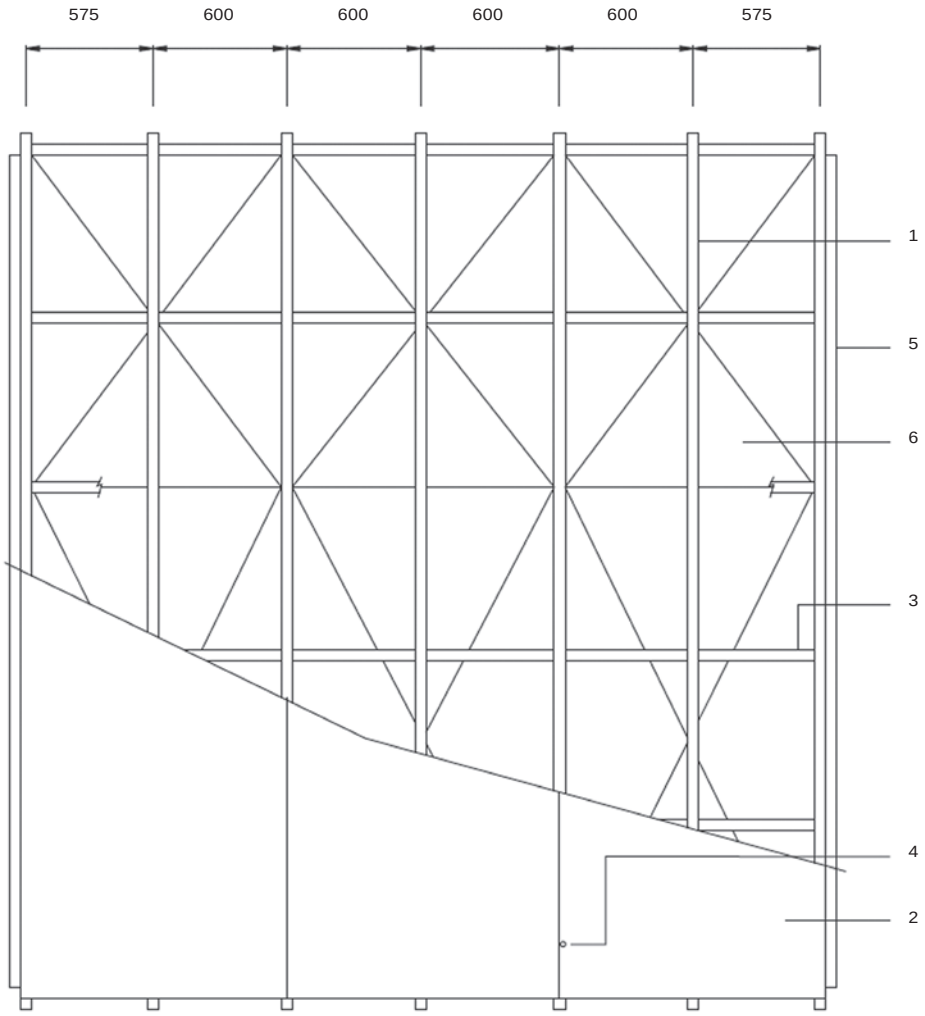
KEY
1. Tie beam
2. Brandering
3. Wallplate
4. Nutec Tongue & Groove
5. H-profile jointing strip
6. Wall

NB:

- **Timber or steel framing may be used and should be constructed in accordance with local building regulations and acceptable building practice.**
- **Timber should be selected structural grade timber.**
- **Timber supports must be firmly secured to top and bottom plates and frames must not rely on the Nutec Flat Sheets for stability.**
- **Support spacings for external or internal walls should not exceed 600 mm centres.**
- **Framing members, should be arranged to support all sheet edges.**
- **Where the support faces behind sheet joints are less than 38 mm wide, pack out to provide additional landing for sheet fixing.**
- **For further information on timber framed structures refer to SABS 082 - the Code of Practice for Timber Buildings.**

Floor / Ceiling Fire Resistant Systems

Fig 24 : General Plan of Arrangement of Floor/Ceiling 60 Minute Fire Rated System - Loading 1500 kN/m²



KEY

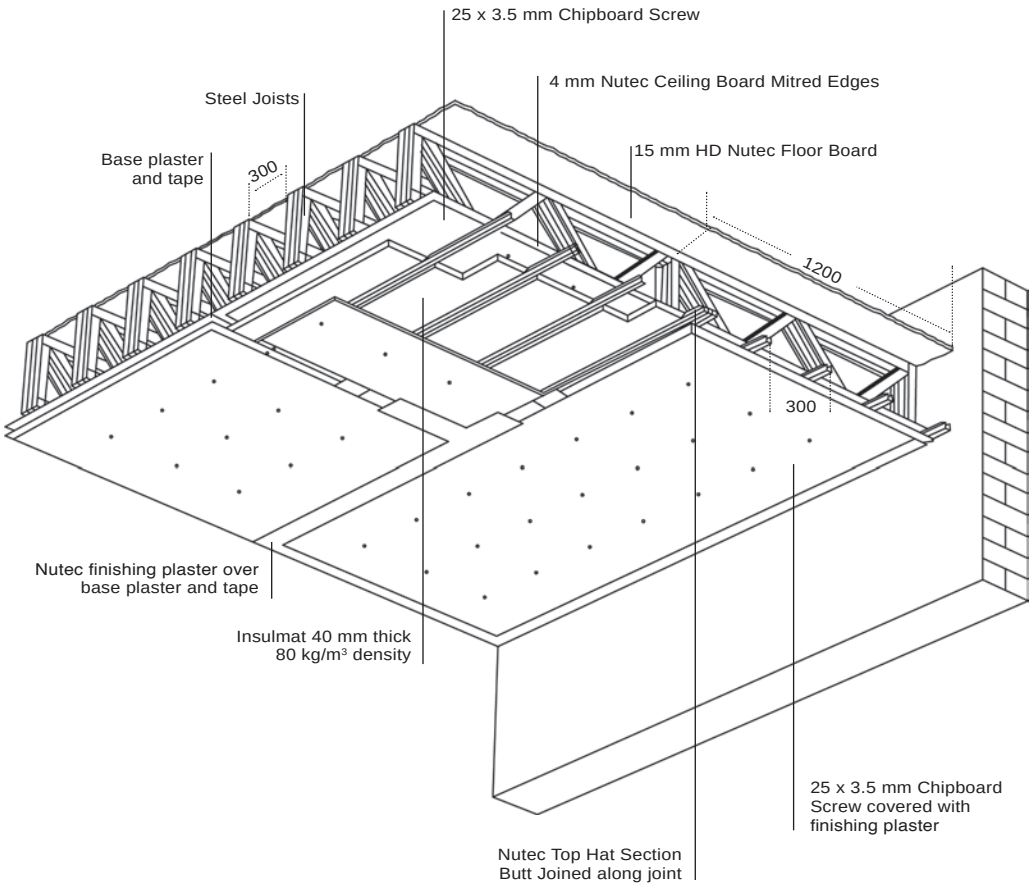
1.	Softwood timber joists - 230 mm x 50 mm at 600 mm centre.
2.	Floor Boards HD Nutec, 3600 mm x 1200 mm x 15 mm.
3.	Softwood timber noggings at 600 mm centres by means of 100 mm nails.
4.	50 mm timber screws at 300 mm centres.
5.	Mineral Fibre seal.
6.	6 mm Nutec Ceiling Board, 3600 mm x 1200 mm. Fixed with 50 mm timber screws at 300 mm centres to underside.

Insulation: 50 mm Insulmate, 80 kg/m^3.

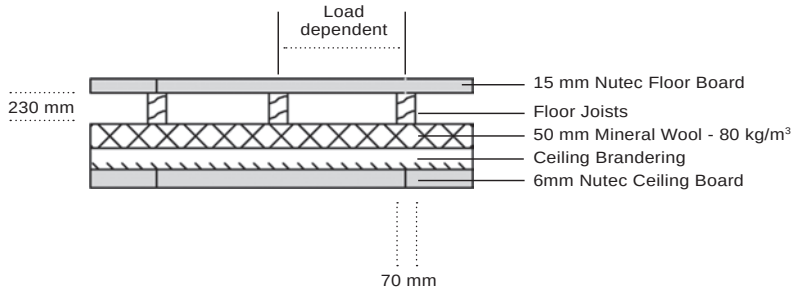
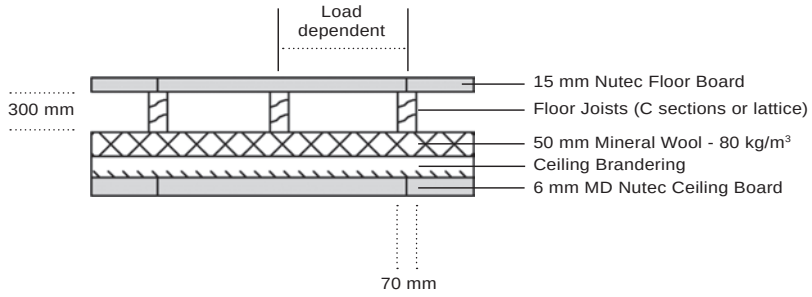
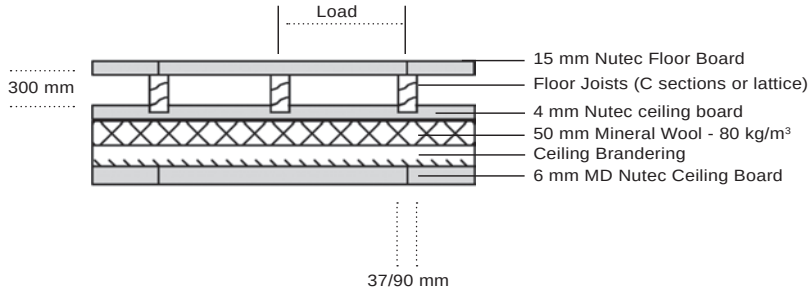
Joints sealed with Intumex MA.

Screws and nail heads sealed with sodium silicate liquid.

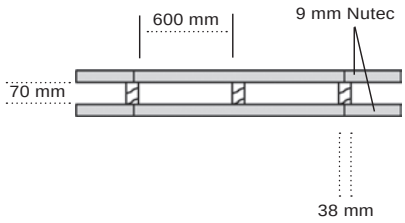
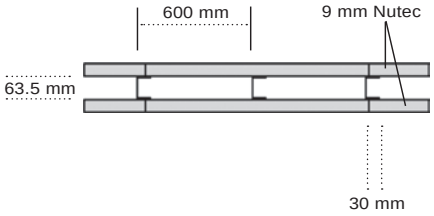
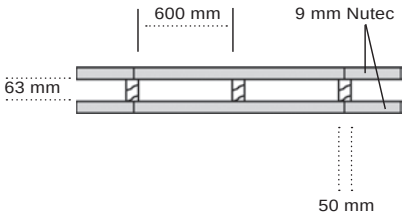
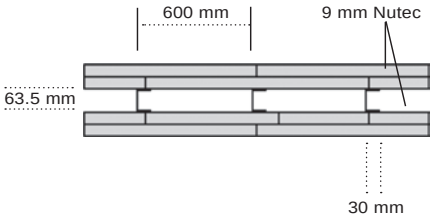
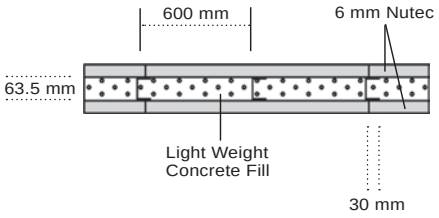
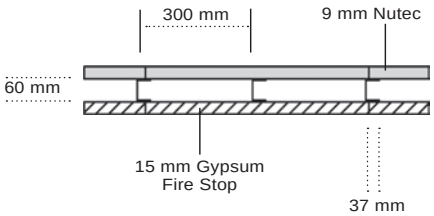
Fig 25 : Typical 2-hour fire rated floor system



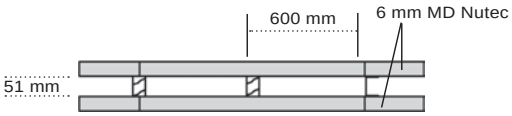
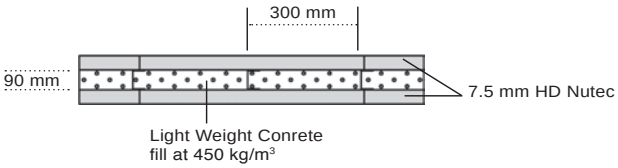
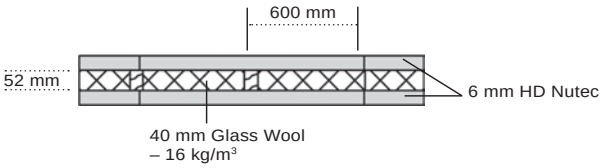
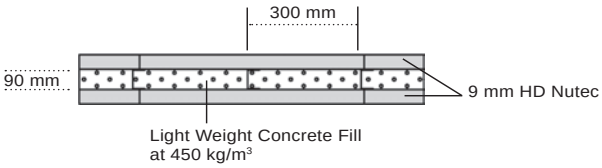
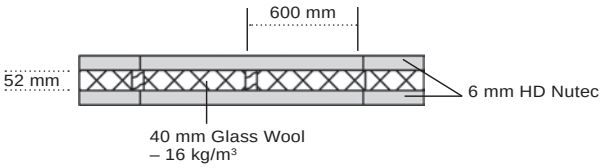
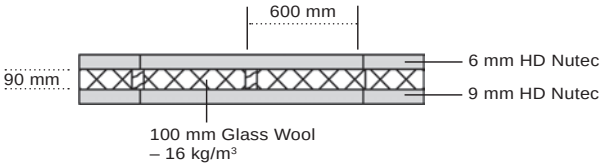
Nutec Ceiling Boards in a suspended Floor System

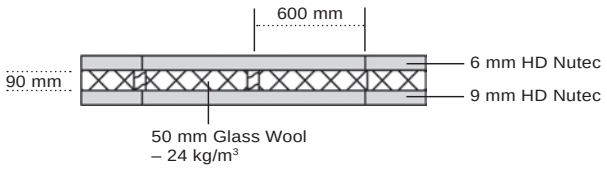
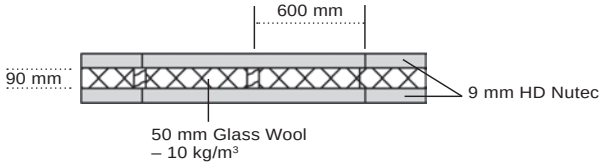
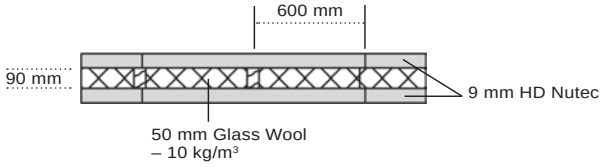
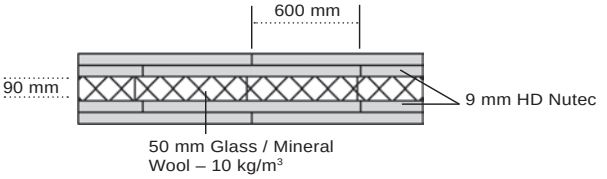
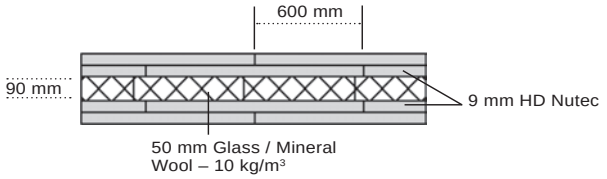
Fire Resistance	Timber Support Systems
60 minutes (structural)	
Fire Resistance	**Metal Support Systems**
30 minutes (structural)	
60 minutes (structural)	

Nutec Board for Fire Rated Walling Systems

Fire Resistance	Timber Frame Systems	Metal Frame Systems
30 minutes (non-structural)		
30 minutes (non-structural)		
60 minutes (non-structural)		
90 minutes (non-structural)		
90 minutes (non-structural)		

Acoustical Insulation Walling Systems

Acoustical Performance	System Details Timber or Steel	Thermal Resistance
26.0 dB		0.02 m^2K/W
35.7 dB		0.06 m^2K/W
44.0 dB		-
44.8 dB		1.06 m^2K/W
45.0 dB		-
46.5 dB		1.05 m^2K/W
48.0 dB		2.56 m^2K/W

Acoustical Performance	System Details Timber or Steel	Thermal Resistance
48.0 dB		2.76 m²K/W
48.0 dB		1.44 m²K/W
49.0 dB		2.56 m²K/W
55.0 dB		1.44 m²K/W
56.0 dB		1.44m²K/W

Mechanical and Physical Properties

Plain and Textured Nutec Flat Sheets

Parameter	Unit	High Density	Semi-High Density	Medium Density	Textured Nutec	Test Method
Specifications						
DIMENSIONS						
Thickness Tolerance:						
9 mm	mm	-	± 0.3	± 0.8	± 0.8	SANS 803
10 mm	mm	± 0.8	-	-	-	SANS 803
12 mm	mm	-	± 0.8	-	-	SANS 803
15 mm	mm	± 1.0	-	-		
Length Tolerance:						
All lengths	mm	± 2	+0 or -5	+3 or -5	+3 or -5	SANS 803
Width Tolerance:						
All widths	mm	± 2	+0 or -2	+3 or -5	+3 or -5	SANS 803
Squareness						
All sizes	mm	Maximum 5	Maximum 2	Maximum 5	Maximum 5	SANS 803
Edge Trueness						
All sizes	mm	Maximum 1	Maximum 3	Maximum 5	Maximum 5	SANS 803
Physical Properties						
Minimum MOR :						
With Grain	MPa	9.00 (2)	8.44 (1)	7.40 (1)	7.40 (1)	SANS 803
Minimum MOR :						
Across Grain	MPa	13.00 (2)	12.10 (1)	10.60 (1)	10.60 (1)	SANS 803
Target Density	g/cm^3	1.50	1.35	1.26	1.26	ISO 8336
Maximum Hygral Linear Expansion	mm/m	2.47	2.47	2.47	2.47	SANS 803

(1) Dried till constant weight (2) Saturated with water (3) Equilibrium conditions

Parameter	Unit	High Density	Semi-High Density	Medium Density	Textured Nutec	Test Method
Typical Values						
Thermal Conductivity	W/m.K	0.30	-	0.19	0.19	ASTM C518
Thermal Expansion Coefficient						
20-70°C	°C-1	Negligible	-	Negligible	Negligible	SANS Doc. 722/W 1009
10-70°C	°C-1	4.21 x 10-6	-	9.31 x 10-6	9.31 x 10-6	ASTM C518
Moisture Movement						
With Grain	%	0.30	0.053	0.06	0.06	ASTM C1185
Across Grain	%	0.06	0.049	0.06	0.06	ASTM C1185
Moisture Content	%	6.92	2.53	6.25	6.25	ASTM C1185
Water Absorption	%	22.05	28.10	37.72	37.72	ASTM C1185
Permeability	-	No droplets	No droplets	No droplets	No droplets	SANS 685 ASTM C1185 BS 4624
Water Vapour Transmission	ng /Pa.s.m²	97.154	-	276.79	276.79	ASTM E96
pH		10 -12	10 -12	10 -12	10 -12	
Mechanical Properties						
MOR :						
With Grain	MPa	-	6.20 (2)	4.20 (2)	4.20 (2)	ASTM C1185
	MPa	14.40 (3)	11.20 (3)	7.50 (3)	7.50 (3)	ASTM C1185
	MPa	-	9.40 (3)	11.20 (3)	11.20 (3)	BS 4624
MOR :						
Across Grain	MPa	-	8.40 (2)	7.75 (2)	7.75 (2)	ASTM C1185
	MPa	24.05 (3)	18.50 (3)	12.10 (3)	12.10 (3)	ASTM C1185
	MPa	-	15.60 (3)	16.40 (3)	16.40 (3)	BS 4624

(1) Dried till constant weight (2) Saturated with water (3) Equilibrium conditions

Parameter	Unit	High Density	Semi-High Density	Medium Density	Textured Nutec	Test Method
Specifications						
Classification in Accordance to ASTM C1186	-	II	I	I	I	
Compressive Strength Parallel to Surface of Board						ASTM C1186
With Grain	MPa	15.21	-	10.86 (2)	-	ASTM D1037
	MPa	24.62	-	15.57 (3)	-	ASTM D1037
Across Grain	MPa	20.61	-	11.54 (2)	-	ASTM D1037
	MPa	37.22 3 (3)	-	19.58 (3)	-	ASTM D1037
Tensile Strength Parallel to Surface of Board						
With Grain	MPa	3.47 (2)	-	2.11 (2)	-	ASTM D1037
	MPa	5.12 (3)	-	3.26 (3)	-	ASTM D1037
Across Grain	MPa	4.34 (2)	-	2.24 (2)	-	ASTM D1037
	MPa	5.95 (3)	-	2.88 (3)	-	ASTM D1037
Tensile Strength Parallel to Surface of Board	MPa	1.42 (2)	-	0.83 (2)	-	ASTM D1037
	MPa	2.18 (3)	-	1.02 (3)	-	ASTM D1037
Young's Modulus (E.Mod)						
With Grain	MPa	9898 (3)	-	5337 (3)	-	ASTM C120
	MPa	7747 (2)	-	3974 (2)	-	ASTM C120
Across Grain	MPa	11645 (3)	-	6474 (3)	-	ASTM C120
	MPa	7903 (2)	-	4681 (2)	-	ASTM C120
Block Shear Strength	MPa	3.30 (3)	-	1.60 (2)	-	ASTM D143
	MPa	3.17 (2)	-	1.32 (3)	-	ASTM D143

(1) Dried till constant weight (2) Saturated with water (3) Equilibrium conditions

Parameter	Unit	High Density	Semi-High Density	Medium Density	Textured Nutec	Test Method
Fire Properties						
Surface Spread of Flame	Class	1	1	1	1	SANS 10177: Part 111, BS 476: Part 7
Spread of Flame Index	-	Nil	Nil	Nil	Nil	SANS 10177 Part III
Heat Contribution Index	-	Nil	Nil	Nil	Nil	SANS 10177 Part III
Smoke Emission Index	-	Nil	Nil	Nil	Nil	SANS 10177 Part III
Surface Fire Index	-	Nil	Nil	Nil	Nil	SANS 10177 Part III
Surface Burning Characteristics						
FSI (Flame spread index)	-	0	-	0	0	ASTM E84
SD (Smoke developed index)	-	5	-	3	3	ASTM E 84
Non-Combustibility		Non-combus.	Non-combus.	Non-combus.	Non-combus.	BS 476 Part 4, SANS 10177: Part V
Continuous Temperature	-	150°C	150°C	150°C	150°C	-

(1) Dried till constant weight (2) Saturated with water (3) Equilibrium conditions

Parameter	Unit	High Density	Semi-High Density	Medium Density	Textured Nutec	Test Method
Other Properties						
Frost Resistance						
Cycles Completed	-	50	-	50	-	ASTM C1185
Strength Ratio	%	97.5	-	78.5	-	ASTM C1185
Biological Resistance						
Rodent Resistance	Class	B1	-	B1	-	SANS 5417
Termite Resistance		No Damage	-	No Damage	-	SANS 5471
Resistance to Bacteria		-	-	No Growth	-	BS 5980

(1) Dried till constant weight (2) Saturated with water (3) Equilibrium conditions

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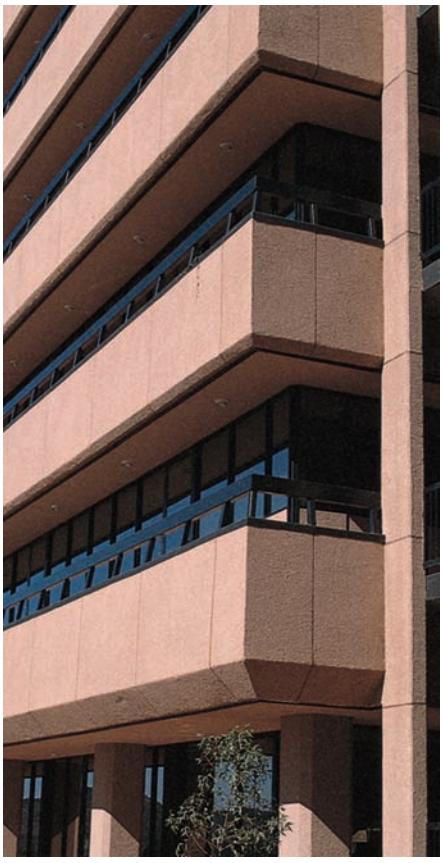

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