



South African Building
Interior Systems Association

**GENERAL SPECIFICATION
FOR
DRYWALL PARTITIONS
AND
LIGHTWEIGHT INTERNAL WALLS**

SECOND EDITION - June 2004

Administered by



AAAMSA
Group

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2nd EDITION

This edition is totally revised and replaces the 1st Edition in its entirety. Individual sections have been expanded taking cognance of the latest manufacturing and standards/requirements in the drywall partition and lightweight internal wall industry.



South African Building
Interior Systems Association

INTRODUCTION

The South African Building Interior Systems Association (SABISA) currently under the aegis of AAAMSA, promotes that part of the building industry which specializes in the interior finishing, altering and/or refurbishing of buildings. Membership constitutes manufacturers and suppliers of ceiling, partition and access flooring systems as well as sub contractors who sell and install these specialised systems.

This specification refers to the design, finishes, glass, glazing and installation of Drywall Partition and will enable Architects, Engineers, Quantity Surveyors, Developers and other specifiers to select and specify the appropriate materials.

Having the installation done by sub contractors who are members of our Association will ensure that the installation meets with the minimum performance standards.

This second edition has been completely revised to meet the latest developments in the Industry. Also attention has been given to safety glazing requirements in accordance with Part N of the National Building Regulations and Building Standards Act 1977 as amended.

DISCLAIMER

*Great care has been taken to ensure that the information provided is correct. No responsibility will be accepted by AAAMSA for any errors and/or omissions, which may have inadvertently occurred.
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1. MATERIALS

1.1 PLASTER BOARD

- 1.1.1 Standard Grade Plaster board manufactured in accordance with the latest edition of SANS 266:2003 Edition 2.2 consisting of aerated gypsum core bonded to durable paper liners with unprinted liner suitable for the application of all decorations.
- 1.1.2 Fire Retarded Plaster board manufactured in accordance with the latest edition of SANS 266:2003 Edition 2.2 consisting of aerated gypsum core with suitable additions fibreglass stands and unexfoliated vermiculite bonded to durable paper liners with unprinted liner suitable for application of all decorations.
- 1.1.3 Moisture Resistant Plasterboard – Standard Plaster board manufactured in accordance with the latest edition of SANS 266:2003 Edition 2.2 consisting of aerated gypsum with special additive core bonded to durable impregnated green paper liners with unprinted liner suitable for application of all decorations.

1.2 FIBRE CEMENT BOARDS

- 1.2.1 Non-Asbestos Fibre Reinforced Cement Board – Medium to high density for Internal and External applications manufactured in accordance with SANS 803. The material specifications of Fibre cement boards shall be in accordance with the material specifications in Annex I Page 8.
- 1.2.2 Asbestos Fibre Cement boards are not suitable for internal building purposes. The use thereof is prohibited by SANS 10400 Part T.

1.3 METAL STUDS

The framework of the drywall system shall be manufactured of galvanised steel as recommended by the manufacturer.

Consult Annex 1 Pages 2, 3, 4, and 5 for appropriate stud selection relative to partition heights.

Wall thickness of the metal studs must be such that they comply with the structural requirements of the installed drywall system and shall not be less than a nominal 0.45mm thickness. The recommended flange must be a nominal width of 35mm.

1.4 TIMBER STUDS - INTERIOR WALL FRAMING

There are two types of interior walls:

1.4.1 Load-bearing walls supporting other building elements

Load-bearing walls shall have studs of the same size and at the same spacing as those recommended for exterior walls, set with the greater dimensions perpendicular to the walls and capped with a continuous top plate of 38mm timber (to suit the stud size) tied into exterior walls at points of intersection. Where openings occur, loads shall be carried across the openings by headers similar to those recommended for exterior walls.

1.4.2 Non-load-bearing walls which carry only their own mass

Non-load-bearing walls may have 114mm x 38mm studs or 76mm x 38mm studs set with the greater dimensions perpendicular to the wall, or 76mm x 50mm studs set with the greater dimension either parallel or perpendicular to the wall.

Studs SHALL be spaced at centres between 400mm and 600mm, depending on the type of wall covering.

1.4.3 For all other applications refer to SANS 10082.

1.5 METAL TRACKS

All horizontal tracks at floor and ceiling level of the drywall system shall be manufactured of galvanized steel and have an overall width to be compatible to suit the vertical framework having a nominal thickness of 0.45mm. Fixing to the metal tracks to be recommended by the manufacturer.

1.6 ALUMINIUM EXTRUSIONS

Extruded aluminium sections shall be fabricated from alloy 6063 or 6061 in temper T5 or T6 all in accordance with the latest edition of BS EN 755 - “Aluminium and its alloys – extruded rod/bar, tube and profiles” or equivalent.

The extruded section shall have a minimum wall thickness of 1.2mm and shall be of such quality and strength that the section properties of the load bearing profiles meet the requirements as laid down in paragraph 2.0 – Page 6

Note: Aluminium door and window framing should not be used in partitions requiring a fire rating in excess of 20 minutes unless otherwise recommended by the manufacturers.

1.7 GLASS & GLAZING

The moment the 3rd Edition of SANS 10400-Part N is published by the SANS the following shall apply:

- The concept of “Competent Person (Glazing)” will be introduced.
- The definition of a Competent Person (Glazing) as contained in the 3rd Edition of SANS 10400 Part N reads:
competent person who is recognized by an institute, which has specialist expertise in the field of glazing as generally having the necessary experience and training to determine glazing requirements in accordance with the provisions of SANS 10137.
- Sub contractors/glaziers may not deviate from the Tables published in SANS 10400-Part N 3rd Edition unless such deviation is authorized in writing by the competent person (glazing).
- Sub contractors/glaziers must obtain, in writing, information regarding **any** glazing application not detailed in SANS 10400-Part N. This applies to, amongst other, overhead or sloped glazing, glass flooring, three and one edge supported glass, toughened glass assemblies and entrances, glass for balustrading supported by clamps etc.
- Sub contractors/glaziers are alerted to the fact that any glass installed to the exterior of buildings exceeding 10m in height requires the written approval from a Competent Person (Glazing).
- The Competent Person (Glazing) is registered with our Association.

Table 1 – Dimensions for vertical glass supported in frame all round in internal walls

Nominal Glass Thickness (mm)	Maximum Pane sizes in sq. m						
	3	4	5	6	8	10	12
Monolithic Annealed Glass	-	1.5	2.1	3.2	4.6	6.0	6.0
Patterned Annealed & Wired Glass	-	0.75	1.2	1.9	2.6	3.4	-
Laminated Annealed Safety Glass	-	-	-	4.1	6.0	7.2	7.2
Toughened Safety Glass	-	3.0	4.2	6.4	9.2	9.2	9.2

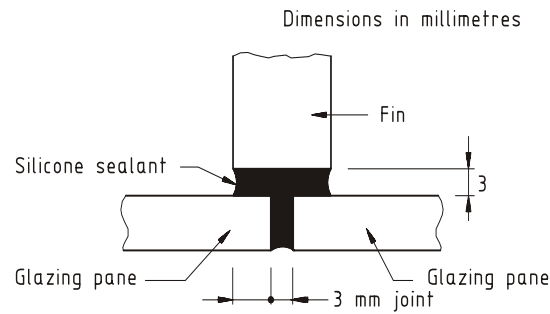
Table 2 – Dimensions for vertical glass supported in a frame on two opposite sides in internal walls

Nominal Glass Thickness (mm)	Maximum Span between support in m						
	3	4	5	6	8	10	12
Monolithic Annealed Glass	-	0.65	0.8	0.95	1.3	1.55	2.0
Patterned Annealed & Wired Glass	-	0.4	0.48	0.57	0.78	0.9	-
Laminated Annealed Safety Glass	-	-	-	0.9	1.25	1.5	1.95
Toughened Safety Glass	-	0.9	1.1	1.3	1.75	2.0	2.7

Note: A butt joint is assumed to have no structural strength. Accordingly panels which incorporate a butt joint are not considered to be supported on four sides. A glass fin is necessary to provide the support at the joint so that the pane can be considered to be supported along four sides.

Table 3 – Minimum Glass Fin Dimensions

Fin Height in m	Internal	External
1.5	150 x 12	150 x 15
2	150 x 12	150 x 19
2.5	150 x 12	175 x 19
3	175 x 15	200 x 25
3.5	225 x 15	275 x 25
4	275 x 15	300 x 25



1.8 SAFETY GLAZING

SANS 10400 Part N prescribes the following regarding safety in glass installation:

* Note! Paragraphs 1.8.2.2 a) and l) will only come into effect when SANS 0400 Part N Edition 3 is published in the latter part of 2004 or early 2005.

1.8.1 TRANSPARENT GLAZING

Where transparent glazing is used and is not likely to be apparent to or suspected by any person approaching it, such glazing shall bear markings that shall render such glazing apparent to such person.

1.8.2 SAFETY GLAZING

1.8.2.1 The panes of all safety glazing material shall be permanently marked by the installer in such a manner that the markings are visible in individual panes after installation.

1.8.2.2 Safety glazing material complying with the requirements of SABS 1263 shall be used where:

- a)* the occupancy or building classification is A3 (places of instruction), E1 (place of detention), E2 (hospital) and E3 (other institutional (residential buildings)). (Refer to table 1 of annex A of SANS 10400-A:2004.);
- b) doors and sidelights form part of any entrance up to 2 100 mm from finished floor level;
- c) a window has a sill height of less than 500 mm from the floor and is not guarded by a barrier that prevents a person from coming into contact with the glass panel;
- d) a window has a sill height of less than 800 mm from the floor and in the opinion of the local authority, is so placed that persons are likely, on normal traffic routes, to move directly towards such window;
- e) a bath enclosure or shower cubicle is glazed or where glazing occurs immediately above a bath;
- f) glazing is used in any shop front or display window within 2 100 mm from the finished floor level;
- g) glazing is used in any wall or balustrade to a stairway, ramp, landing or balcony;



- h) glazing is used within 1 800 mm of the pitch of a stairway or the surface of a ramp, landing or balcony;
- i) glazing applications are sloped or are horizontal;
- j) a mirror is installed as a facing to a cupboard door less than 800 mm above floor level and there is no solid backing;
- k) glazing is used around areas such as swimming pools and ice rinks; and
- l)* glazing is used in internal partitions, within 2 100 mm of floor level, forming escape routes in buildings.

Note: Figures 2 to 4 illustrate the conditions where safety-glazing materials are required in terms of 1.8.2 above.

All repair and renovation glazing must comply with the provisions of Part N irrespective of the type of glazing used originally.

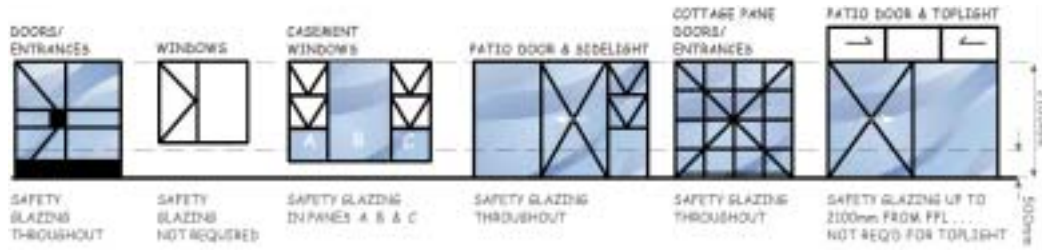


Figure 2 — Examples of safety glazing requirements in doors and windows

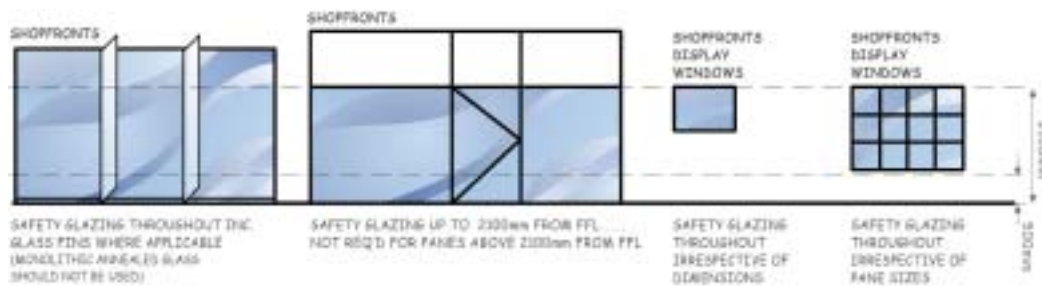


Figure 3 — Examples of safety glazing requirements in shop fronts and display windows

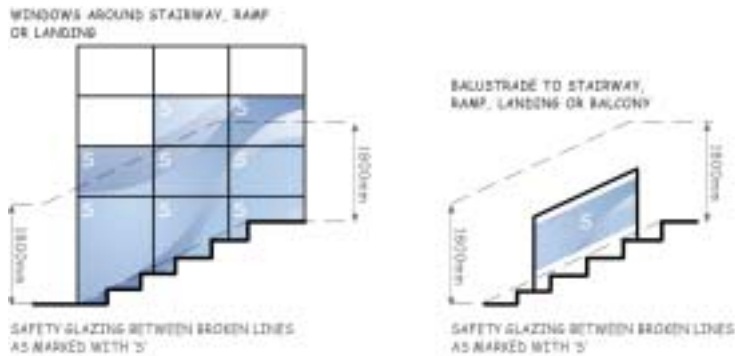


Figure 4 — Examples of safety glazing requirements around staircases and landings

2. CONSTRUCTION AND INSTALLATION

2.1 CONSTRUCTION

The drywall partitions and/or light weight internal wall system shall be capable of withstanding a nominal horizontal concentrated force of 500N acting normal to the wall surface over an area of 0.1 m x 0.1 m at any point at a height of 1.3 m above floor level or such lesser height as may be more critical, or a nominal horizontal distributed force of 500N/m at a height of 1.3m (SANS 0160).

The drywall partitions and/or light weight internal wall system shall be constructed and installed in strict accordance with the material suppliers recommendations including (but not limited to):

- i) Standard plaster board (including moisture resistant plaster board) used in conjunction with 51mm metal studs may only be used in drywall partitions and/or light weight internal wall systems with heights less than 3600mm.

Standard plasterboard used in conjunction with minimum 63mm metal studs may be used in heights up to 4200mm

- ii) Fire rated plasterboard must be used exclusively in drywall partitions and/or lightweight internal wall systems with heights in excess of 4200mm.
- iii) The minimum board thickness shall be:

PLASTERBOARD

12mm in case of standard, fire rated and moisture resistant plaster board when used in conjunction with metal/timber studs, and

NON ASBESTOS FIBRE REINFORCED CEMENT BOARDS

9mm in case of non-asbestos fibre reinforced cement board when used in conjunction with timber studs constructed in accordance with paragraph 1.4 above.

- iv) Unless otherwise specified the design allows for a door leaf thickness of 40mm.

The design of the vertical structural members of the drywall partition and/or lightweight internal wall shall be in strict accordance with the SABISA Drywall Partition and lightweight Internal Wall Selection Guide:

Annex 1 Pages 2, 3, 4, and 5 in respect of plaster board and Pages 6 and 7 in respect of non-asbestos fibre reinforced cement board.

Compliance with this Selection Guide will ensure conformance with appropriate deflection and fire rating requirements.

2.1.1 FIRE RATING

The National Building Regulations with particular reference to SANS 10400 Part T classifies the performance of materials in respect of fire resistance in categories of 20, 30, 60, 90, 120, 180 and 240 minutes.

Ceiling & Partitioning Contractors and glaziers are no fire experts and it is therefore the onus of the client/specifiers to indicate the partitioning requirements in respect of location and degree of resistance to fire in minutes.

The Architect/Engineer shall specify the partitioning requirements taking cognance of SANS 10400 Part T.

When the 3rd Edition of SANS 10400-Part T is published in the latter part of 2004 or early 2005 a Competent Person will also be able to specify the fire requirements of partitioning in respect of resistance to fire.

Materials may differ from manufacturer to manufacturer but should a material tested in accordance with SANS 10177 have a fire resistance of say 32 minutes and a similar material from an alternative source have a fire resistance of say 36 minutes both will be classified as having 30 minutes fire resistance.

Specifiers are encouraged to obtain relevant SABS Certificates from the material manufacturers to confirm the product performance.

Annex 1 contains the presumed fire resistance of hollow stud construction Drywall Partitions and Lightweight Internal Walls of metal and timber studs.

Aluminium framing will not resist fire when tested in accordance with SANS 10177 in excess of 30-minutes.

Framing required for fire resistance in excess of 30-minutes must be manufactured in steel or hard wood of appropriate volume.

When tested in accordance with SANS 10177 glazing materials may perform as stated in Table 4.

Table 4 – Fire Resistance performance of glass

Glass Type	Fire Resistance in minutes
Laminated safety glass having PVB/resin interlayer	3 to 6
Laminate glass having intumescent interlayers	Up to 120
Georgian wired glass	Up to 120
Borosilicate and calcium silicate glass	Up to 120
Toughened safety glass	3 to 6
SIGU (double glazing) having PVB/resin laminated safety glass	30

2.1.2 SOUND RATING

Due to the nature of manufacture *and installation* of plasterboard and non-asbestos fibre cement boards the sound rating for drywall partitions and lightweight internal walls may differ from *site to site*.

Specifiers are encouraged to obtain relevant Certificates from the material manufacturers to confirm the individual product performance.

In respect of Glass refer to AAAMSA Selection Guide for Glazed Architectural Aluminium Products.

2.2 INSTALLATION

The Drywall Partitions and lightweight internal walls shall be installed in strict adherence to the material manufacturers recommendations.

Specifiers are advised to elect degree of accuracy and level of finishing at time of tender in accordance with Table 5 and 6 respectively.

TABLE 5 – Permissible Deviations in drywall Partitions and Lightweight Internal Walls

DESCRIPTION	PD, mm	
	Grade	
	II	I
Position on plan PD of fair-faced specified side of wall from the designed position	±15	±10
Length Up to and including 5m	±15	±10
Over 5m, up to and including 10m	±20	±15
Over 10m	±25	±20
Height Up to and including 3m	±10	± 5
Over 3m, up to and including 6m	±20	±15
Over 6m	±25	±20
Straightness, max. In any 5m (not cumulative)	15	10
Verticality In any 2m	±10	± 5
In any 5m	±15	±10
Finished surfaces PD of any point from a 2m straight-edge placed in any direction of the wall, max.	6	3

- Notes:** ~ PD – Permissible Deviation.
 ~ Grade I and II are grades of accuracy defined in SANS 10155 as follows:
 Grade I accuracy may necessitate the use a special method, or materials, or both, and will require a close degree of supervision and control;
 Grade II accuracy is suitable for the major proportion of building work.

TABLE 6 – Selection of Surface Finishing for Drywall Partitions and Lightweight Internal Walls

LEVEL	APPLICATION	DESCRIPTION
1	Temporary constructions.	No jointing or finishing at all
2	Frequently used in plenum areas above ceilings and in areas that are generally concealed.	All joints shall have the tape embedded in jointing compound. Surface shall be free of excess jointing compound but tool marks and ridges are acceptable.
3	This finish is suitable where moisture resistant boards are used as a substrate for tiling and may be used in garages or warehouse storage where surface appearance is not of primary importance.	All joints, angles and accessories shall have one coat of jointing compound applied. All screw heads to be spotted. Surface shall be free of excess jointing compound but tool marks and ridges are acceptable.
4	This level is suitable for areas which are to receive heavy or medium textured paint finishes, or where heavy grade wall coverings are to be applied. Where lightweight vinyls are to be used all joints etc. should be carefully sanded to provide a smoother surface.	All joints, angles and accessories shall have two separate coats of jointing compound applied. All screw heads to be spotted. All jointing compound shall be smooth and free of tool marks and ridges. It is recommended that all the areas of jointing compound receive a coat of suitable* based Plaster Primer before finishing. *Refer to paint manufacturers recommendation.
5	This level should be used where gloss, semi-gloss or matt non-textured paints are specified. Any drywall that is subjected to critical lighting shall be finished to this level.	All joints, angles and accessories shall have two separate coats of jointing compound applied. All screw heads to be spotted. A thin skim coat of plaster shall be applied to the entire surface of the drywall. The surface shall be completely smooth and free of any marks and surface blemishes. The entire surface of the drywall shall receive a coat of oil based plaster primer before final decoration.

2.2.1 FINISHES (Final decorations)

2.2.1.1 WALL COVERING

Wall covering shall be (*Architect to specify*)

Wall coverings shall be of appropriate type to suit the expected traffic in the designated areas. Any specialised finishes are to be referred to manufacturers for their recommendations.

2.2.1.2 ANODIZING

All anodizing shall be executed in strict adherence to the latest edition of SANS 1407.

(*Architect to specify colour and anodic film thickness to a minimum of 10 microns*)

2.2.1.3 POWDER COATING

All powder coating shall be executed only by applicators approved by the specified powder manufacturers and shall be strictly in conformance with the latest edition of SANS 1247.

(*Architect to specify type (Interpon D, Vedoc or other) and colour*).

2.2.1.4 TILING

All tiling shall be executed on surfaces which are true, firm and free of dust and oil. Priming adhesive application and grouting shall all be done in strict accordance with the plasterboard and non-asbestos fibre cement manufacturers recommendations.

Ceramic tiles can be applied to drywalls or the surface of lightweight partition systems to dado level or above. Tiling can be carried out in any type of building either in dry areas or in areas subject to intermittent moisture conditions. Typical applications include shower areas, toilets, bathrooms, cloakrooms and kitchens.

Ceramic tiles – (by others) 12.5mm, 32kg/m² (maximum) for drywall construction.

Tile adhesive – (by others) suitable thin-bed adhesive.

Grouting – Shall be done with a waterproof grout.

Tiles – Only 1st grade glazed ceramic tiles to be used.

2.2.1.5 PAINTING

The painting of surfaces shall be executed in strict accordance with the *paint* manufacturers recommendations.

3. INSPECTION

Wall and ceiling areas abutting window mullions or skylights, long hallways, or atriums with large surface areas flooded with artificial or natural light are a few examples of critical lighting. Critical lighting (especially side-lighting) may reveal even minor surface imperfections. Light striking the surface obliquely, at a very slight angle, greatly exaggerates surface irregularities. If critical lighting cannot be avoided, the effects can be minimized by skim coating the entire wall or by decorating the surface with medium or heavy textures (paint or vinyls). The use of drapes and/or blinds can also be used to soften shadows. It is also important to remember that during the construction phase of a building the lighting is often not fully functional and the appearance of the drywall could vary considerably once this is switched on.

In general smooth non-textured finishes highlight surface defects and textures help to hide minor imperfections.

Inspection of installed Partition and glass shall, amongst others, be carried out according to the following criteria:

3.1 SCRATCHES AND BLEMISHES

This inspection will be viewed under lighting conditions applicable to the area as laid down in SANS 10114-1 Table 8.0 Illuminance and glare index, in particular the OHS Act Safety Lux value and at a distance of 3 metres. Refer Annex 3, which represents the values, stated in above-mentioned Table 8.0 of SANS 10114-1.

3.2 ALUMINIUM & PARTITION FINISHES

Scratches on aluminium and partition finishes are defined as being a mark on the surface which penetrates the powder coated or anodised surface, and/or Vinyl/painted partition panels thereby exposing the base material.

3.3 GLASS

In laminated glass interlayer bubbles larger than 1.5mm diameter will not be allowed. Larger clusters or close spacing of smaller bubbles will also be disallowed.

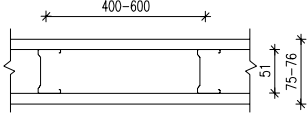
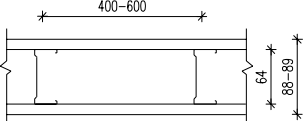
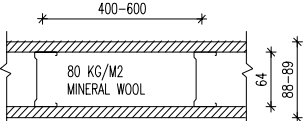
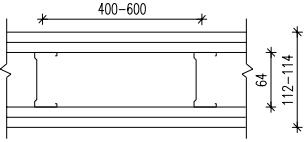
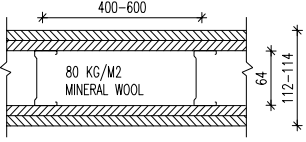
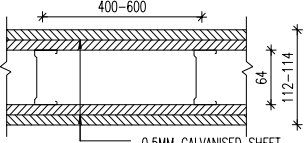
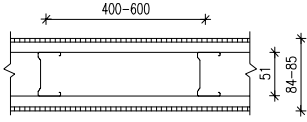
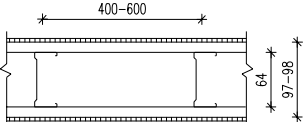
If visible when viewed from a distance of three metres under normal lighting conditions scratches in glass will not be acceptable.


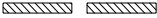



ANNEX 1

DRYWALL PARTITIONS AND LIGHTWEIGHT INTERNAL WALL SELECTION GUIDE

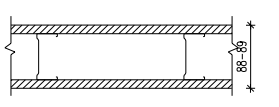
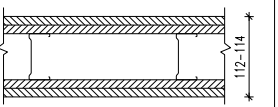
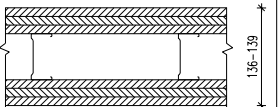
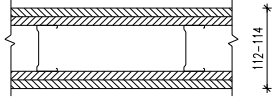
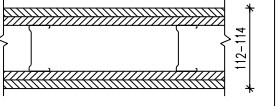
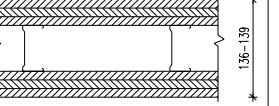
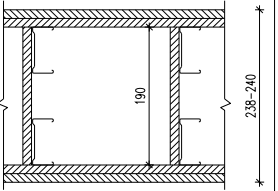
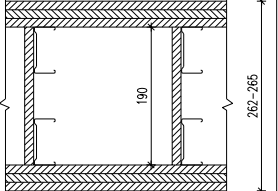
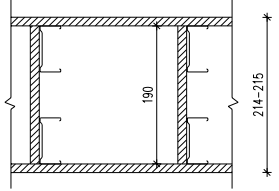
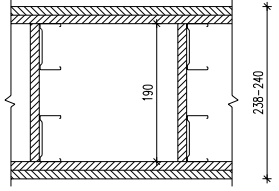
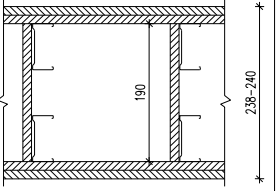
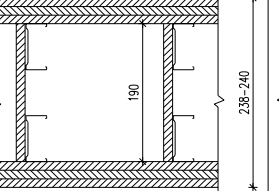
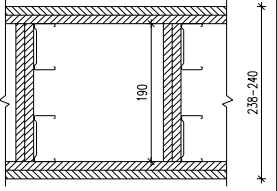
Part 1 – Plasterboard Partition up to 3600mm in height

DRYWALL PARTION SELECTION GUIDE – PART 1		
FIRE RATING	51MM GALVANISED STEEL STUDS MAXIMUM PARTION HEIGHT 3600MM	63.5MM GALVANISED STEEL STUDS MAXIMUM PARTION HEIGHT 3600MM
30 MINUTES		
60 MINUTES		
60 MINUTES		
120 MINUTES		
120 MINUTES		
TILED SURFACES		

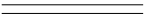
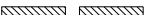

- KEY :
-  STANDARD PLASTERBOARD – ALL JOINTS TO BE STAGGERED
 -  FIRE STOP PLASTERBOARD – ALL JOINTS TO BE STAGGERED
 -  4.5MM COAT PLASTER OR GLAZED TILES
- ALL DRYWALLS SCREWS SPACED AT MAXIMUM 220 MM CENTRES
 ALL FIXINGS ACCORDING TO MANUFACTURERS SPECIFICATIONS
 PLASTERBOARD OF 12.5MM OR 12MM THICKNESS ARE USED IN THESE APPLICATIONS

NOTE: WE RECOMMEND THAT MANUFACTURERS ARE CONTACTED FOR SPECIFIC ADVICE.

Part 2a – Plasterboard Partition from 3600 to 8000mm in height

		DRYWALL PARTITION SELECTION GUIDE – PART 2			
		30 MINUTES	60 MINUTES	90 MINUTES	120 MINUTES
MAXIMUM PARTITION HEIGHTS	4500 MM				
	5500 MM				
	6000 MM				
	6500 MM				
	8000 MM				

KEY :

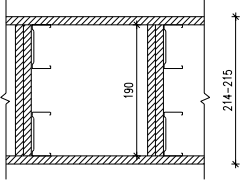
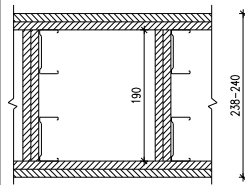
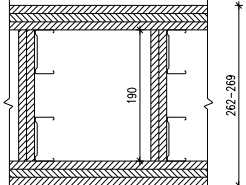
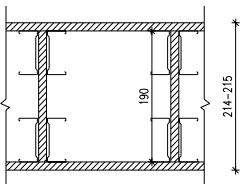
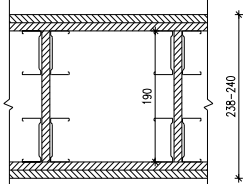
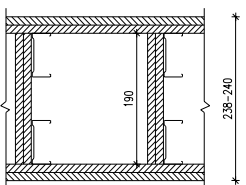
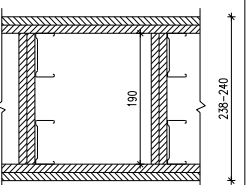
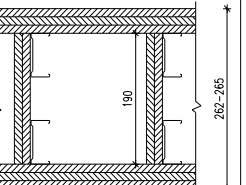
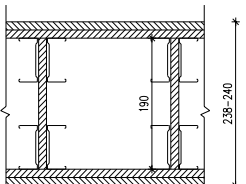
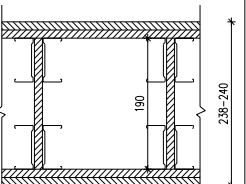
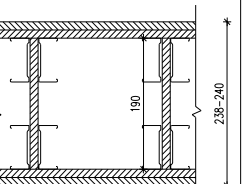
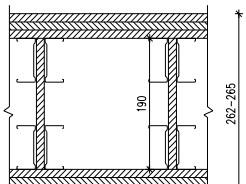
-  STANDARD PLASTERBOARD – ALL JOINTS TO BE STAGGERED
-  FIRE STOP PLASTERBOARD – ALL JOINTS TO BE STAGGERED
-  4.5MM COAT PLASTER OR GLAZED TILES

ALL DRYWALLS SCREWS SPACED AT MAXIMUM 220 MM CENTRES
 ALL FIXINGS ACCORDING TO MANUFACTURERS SPECIFICATIONS


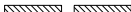

- ALL METAL STUDS TO BE 63.5 MM
- FOR INTERNAL APPLICATION WITH MAX. DEFLECTION 1/150
- MAXIMUM STUD SPACING 400MM THROUGHOUT
- ALL BOARDS TO BE FIRESTOP PLASTERBOARD STAGGER JOINTS
- ALL DRYWALL SCREWS SPACED AT MAXIMUM 200MM CENTRES
- ALL FIXINGS ACCORDING TO MANUFACTURERS RECOMMENDATIONS

NOTE: WE RECOMMEND THAT MANUFACTURERS ARE CONTACTED FOR SPECIFIC ADVICE.

Part 2b – Plasterboard Partition over 8000mm in height

		DRYWALL PARTITION SELECTION GUIDE – PART 2 – CONTINUED			
		30 MINUTES	60 MINUTES	90 MINUTES	120 MINUTES
MAXIMUM PARTITION HEIGHTS	8100 MM				
	9000 MM				
					
	10 700 MM				
	12 500 MM				

KEY :

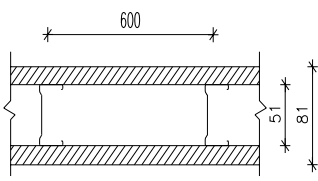
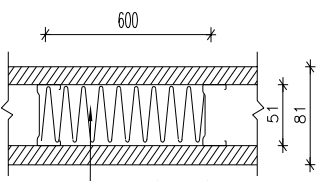
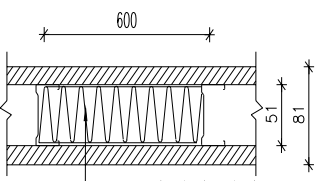
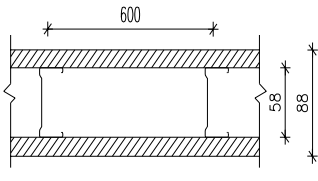
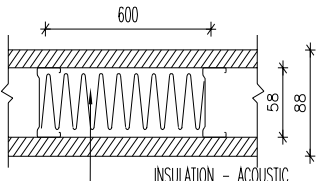
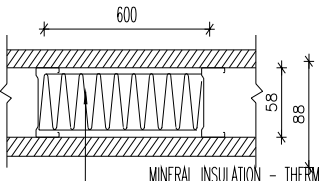
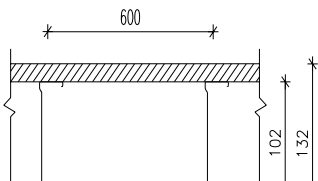
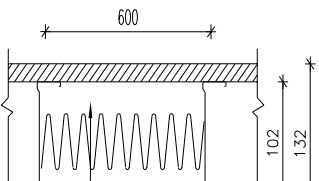
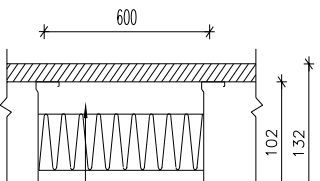
-  STANDARD PLASTERBOARD – ALL JOINTS TO BE STAGGERED
-  FIRE STOP PLASTERBOARD – ALL JOINTS TO BE STAGGERED
-  4.5MM COAT PLASTER OR GLAZED TILES

ALL DRYWALLS SCREWS SPACED AT MAXIMUM 220 MM CENTRES
 ALL FIXINGS ACCORDING TO MANUFACTURERS SPECIFICATIONS

- ALL METAL STUDS TO BE 63.5 MM
- FOR INTERNAL APPLICATION WITH MAX. DEFLECTION 1/150
- MAXIMUM STUD SPACING 400MM THROUGHOUT
- ALL BOARDS TO BE FIRESTOP PLASTERBOARD STAGGER JOINTS
- ALL DRYWALL SCREWS SPACED AT MAXIMUM 200MM CENTRES
- ALL FIXINGS ACCORDING TO MANUFACTURERS RECOMMENDATIONS

NOTE: WE RECOMMEND THAT MANUFACTURERS ARE CONTACTED FOR SPECIFIC ADVICE.

Part 3 – Plasterboard Partition up to 4200mm in height

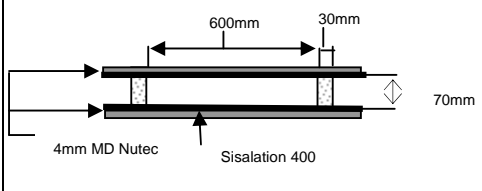
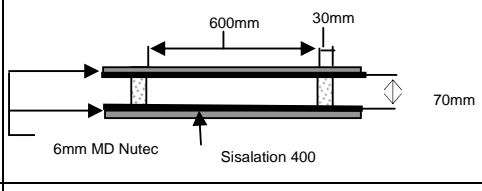
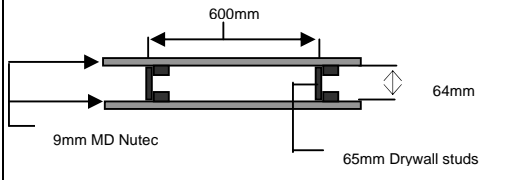
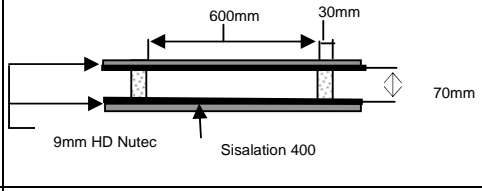
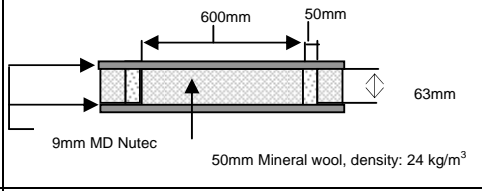
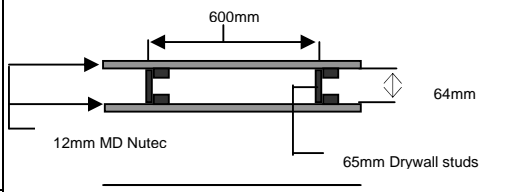
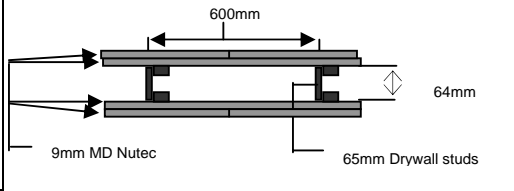
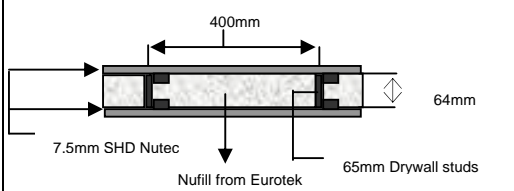
DRYWALL PARTION SELECTION GUIDE – PART 3			
	1 HOUR FIRE RATING (RESIDENTIAL TYPE WALL) 43db	ACOUSTIC WALLING 47db	ACOUSTIC WALLING 52db
51MM STUD 15MM PLASTERBOARD		 <p style="text-align: center; font-size: small;">INSULATION – ACOUSTIC 12Kg/m³</p>	 <p style="text-align: center; font-size: small;">MINERAL INSULATION – THERMAL 80Kg/m³</p>
58MM STUD 15MM PLASTERBOARD		 <p style="text-align: center; font-size: small;">INSULATION – ACOUSTIC 12Kg/m³</p>	 <p style="text-align: center; font-size: small;">MINERAL INSULATION – THERMAL 80Kg/m³</p>
102MM STUD 15MM PLASTERBOARD		 <p style="text-align: center; font-size: small;">INSULATION – ACOUSTIC 12Kg/m³ REINFORCED BACKING</p>	 <p style="text-align: center; font-size: small;">MINERAL INSULATION – THERMAL 80Kg/m³</p>

KEY :   FIRE STOP PLASTERBOARD – ALL JOINTS TO BE STAGGERED

ALL DRYWALLS SCREWS SPACED AT MAXIMUM 220 MM CENTRES
ALL FIXINGS ACCORDING TO MANUFACTURERS SPECIFICATIONS

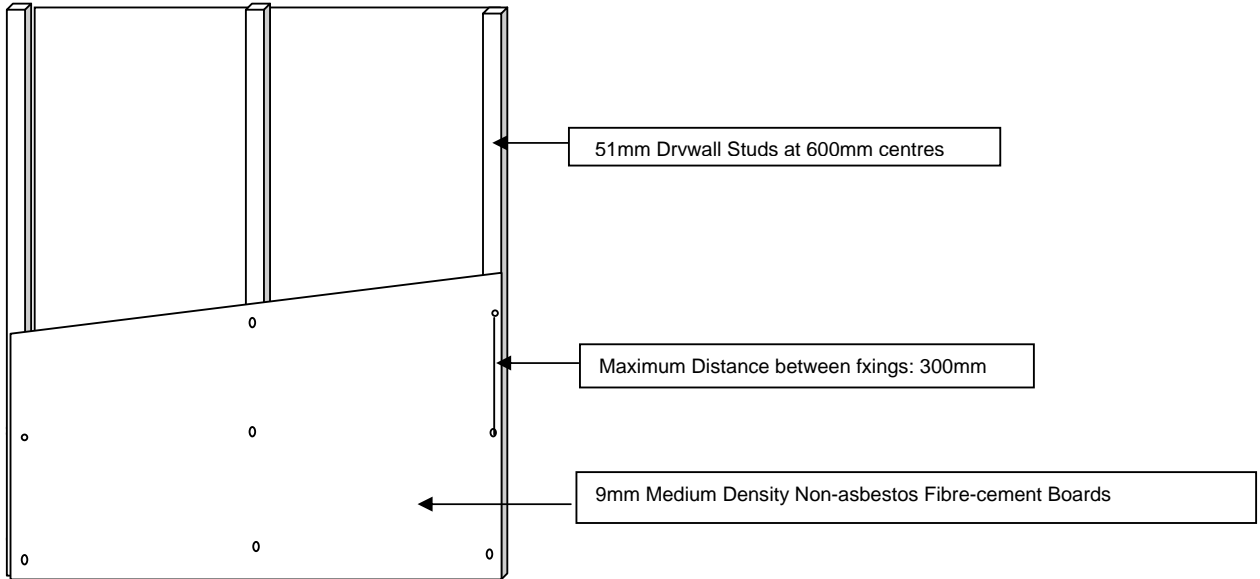
NOTE: WE RECOMMEND THAT MANUFACTURERS ARE CONTACTED
FOR SPECIFIC ADVICE.
ACOUSTIC TESTED UNDER LABORATORY CONDITIONS

Part 4 – Fire Resistance – Non-Fibre Reinforced Cement Boards in Wall Systems

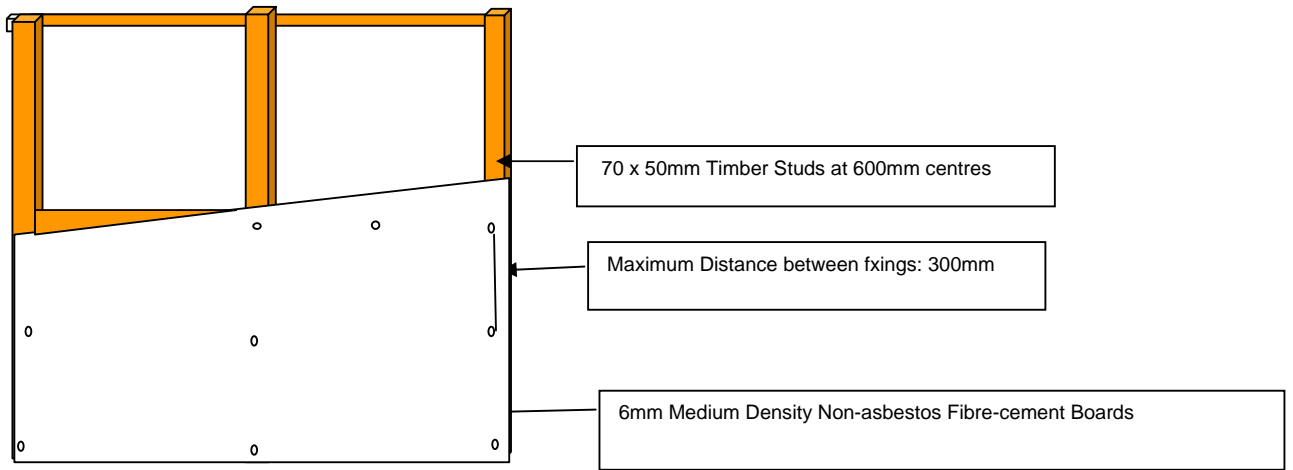
Fire Rating	Timber Frame Systems	Galvanized Steel Stud Systems
20 minutes	 <p style="text-align: center;">4mm MD Nutec Sisalation 400</p>	
20 minutes	 <p style="text-align: center;">6mm MD Nutec Sisalation 400</p>	
27 minutes		 <p style="text-align: center;">9mm MD Nutec 65mm Drywall studs</p>
30 minutes	 <p style="text-align: center;">9mm HD Nutec Sisalation 400</p>	
33 minutes	 <p style="text-align: center;">9mm MD Nutec 50mm Mineral wool, density: 24 kg/m³</p>	
41 minutes		 <p style="text-align: center;">12mm MD Nutec 65mm Drywall studs</p>
60 minutes		 <p style="text-align: center;">9mm MD Nutec 65mm Drywall studs</p>
153 minutes		 <p style="text-align: center;">7.5mm SHD Nutec Nufill from Eurotek 65mm Drywall studs</p>

Face layer joints to be taped and plastered.
 Drywall screws spaced at ± 250mm centres
 All fixings according to Everite Building Products' recommendations

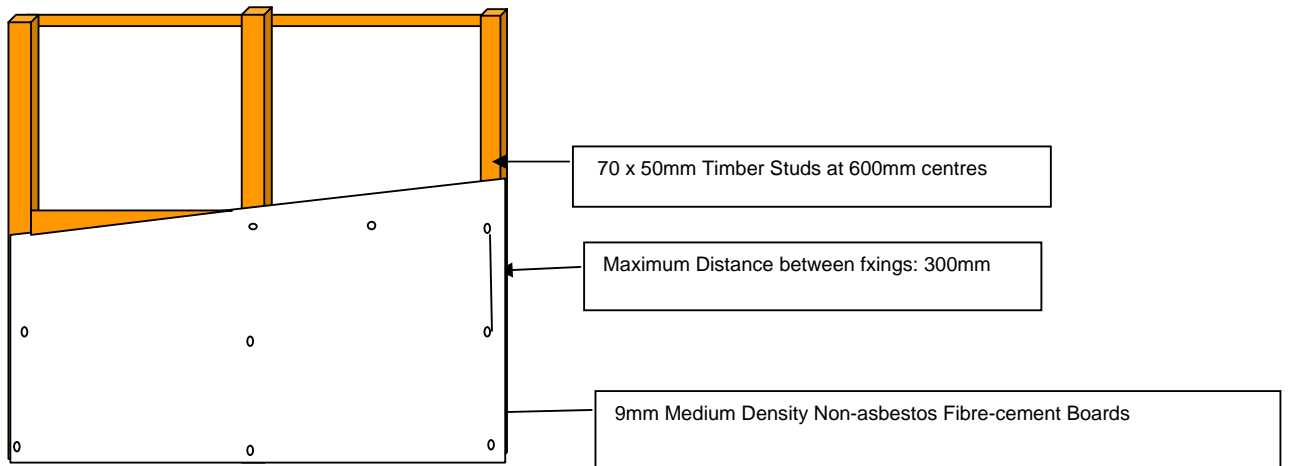
Part 5 – Internal Walls on Galvanized Steel – (Non-Fibre Reinforced Cement Boards)



Internal Walls on Timber Studs (Non-Fibre Reinforced Cement Boards)



External Walls on Timber Studs (Non-Fibre Reinforced Cement Boards)



Material Properties – Non-Asbestos Fibre Reinforced Cement

PARAMETER	UNIT	HIGH DENSITY	MEDIUM DENSITY	TEST METHOD
Dimensions				
Thickness Tolerance:				
Up to 6mm	mm	± 0,5	± 0,5	-
7,0mm to 12,9mm	mm	± 0,8	± 0,8	-
13mm and over	mm	± 1,0	± 1,0	-
9mm or 12mm	mm	-	-	-
Length Tolerance:				
All lengths	mm	± 3 or -5	± 3 or -5	-
Width Tolerance:				
All widths	mm	± 3 or -5	± 3 or -5	-
Squareness				
All sizes	mm	5	5	-
Edge Trueness				
All sizes	mm	5	5	-
Physical Properties				
Minimum MCR: With Grain	MPa	9,00 ⁽²⁾	7,40 ⁽¹⁾	SANS 803:1998
Minimum MCR: Across Grain	MPa	13,00 ⁽²⁾	10,60 ⁽¹⁾	SANS 803:1998
Density	q/cm ³	1,50	1,26	ISO 8336-1993
Maximum Hygral Linear Expansion	mm/m	2,47	2,47	SANS 803:1998
Typical Values				
Thermal Conductivity	W/mK	0,30	0,19	ASTM C518
Thermal Expansion Coefficient	(20-70)	Negligible	Negligible	SAS Document 722/W 1009
Moisture Movement				
With Grain	%	0,03	0,06	ASTM C1185
Across Grain	%	0,06	0,06	ASTM C1185
Moisture Content				
	%	6,92	6,25	ASTM C1185
Water Absorption				
	%	22,05	37,72	ASTM C1185
Permeability				
	-	No droplets formed	No droplets formed	SABS 685 – 1985
pH				
	-	10 – 12	11 – 12	-
Mechanical Properties				
MCR: With Grain	MPa	-	4,20 ⁽²⁾	ASTM C1185
MCR: Across Grain	MPa	14,40 ⁽²⁾	7,50 ⁽³⁾	ASTM C1185
	MPa	-	7,75 ⁽²⁾	ASTM C1185
	MPa	24,05 ⁽³⁾	12,10 ⁽³⁾	ASTM C1185
Classification in accordance to ASTM C1186				
	-	1	1	
Compressive Strength Parallel to Surface of Board				
MCR: With Grain	MPa	15,21 ⁽²⁾	10,86 ⁽²⁾	ASTM C1186 ASTM D1037
MCR: Across Grain	MPa	24,62 ⁽³⁾	15,57 ⁽³⁾	ASTM D1037
	MPa	20,61 ⁽²⁾	11,54 ⁽²⁾	ASTM D1037
	MPa	37,22 ⁽³⁾	19,58 ⁽³⁾	ASTM D1037
Tensile Strength Parallel to Surface of Board				
MCR: With Grain	MPa	3,47 ⁽²⁾	2,11 ⁽²⁾	ASTM D1037
	MPa	5,12 ⁽³⁾	3,26 ⁽³⁾	ASTM D1037
MCR: Across Grain	MPa	4,34 ⁽²⁾	2,24 ⁽²⁾	ASTM D1037
	MPa	5,95 ⁽³⁾	2,88 ⁽³⁾	ASTM D1037
Tensile Strength Perpendicular 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)				
MCR: With Grain	MPa	9898 ⁽³⁾	5337 ⁽³⁾	ASTM C120
	MPa	7747 ⁽²⁾	3974 ⁽²⁾	ASTM C120
MCR: Across Grain	MPa	11645 ⁽³⁾	6474 ⁽³⁾	ASTM C120
	MPa	7903 ⁽²⁾	4681 ⁽²⁾	ASTM C120
Block Shear Strength				
	MPa	3,30 ⁽²⁾	1,60 ⁽²⁾	ASTM D143
	MPa	3,17 ⁽³⁾	1,32 ⁽³⁾	ASTM D143
Other Properties				
Fire Properties				
Fire Index	Class	1	1	SANS 10177:Part 11, BS476 BS 476:Part 4, SANS 10177: Part 5
Non-Combustibility		Non-combustible	Non-combustible	
Continuous Temperature	-	150°C	150°C	-
Frost Resistance				
Cycles Completed	-	50	50	ASTM C1185
Strength Ratio	%	97,5	78,5	ASTM C1185
Biological Resistance				
Rodent Resistance	Class	B1	B1	SABS Method 419
Termite Resistance		No Damage	No Damage	SABS Method 471
Resistance to Bacteria		-	No Growth	BS 5980:1980

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



South African Building
Interior Systems Association

ANNEX 2

Voluntary Certificates Required in terms of The Construction Regulations 2003

Tel
(011) 805-5002
Fax
(011) 805-5033

Postal Address:
P O Box 7861
Halfway House 1685

**The SABISA
Partitioning
Certificate**

Issued in terms of the Construction Regulations 2003
Only valid when duly signed by party concerned



Not Transferable

Certificate #: C 0.....

This Certifies that the materials used in the partitioning installation installed by:

Contractor/Installer:

Company Stamp:

AAAMSA Membership #:.....

for the Partitioning work at:

Project Name/Address:

has been installed in accordance with the requirements of SANS 10400 Part N and SANS 10137
(√ tick which is appropriate)

Signed:
For and on behalf of the Contractor/Installer who by Signature
hereof warrants authorization hereto

Date:

1 FRAME WORK

Track

51mm	58mm	63,5mm
Other		

Manufacturer

Distributor/Supplier

Studs

51mm	58mm	63,5mm
Other.....		

2 Boards

12mm	12,5mm	15mm	Other
------	--------	------	-------

Manufacturer

Distributor/Supplier

Standard	Fire Rated	Moisture resistant
----------	------------	--------------------

3 Fire Rating

20min	30min	60min	120min	Other
-------	-------	-------	--------	-------

Manufacturer

Distributor/Supplier

4 Cavity Infill

Glasswool	Mineral Wool	Polyester Wool
.....kg/m ³kg/m ³kg/m ³

Manufacturer

Distributor/Supplier

5 Level Of Finish

1	2	3	4	5	Refer table 6 General Specification of Drywall Partitions and Lightweight Walls
---	---	---	---	---	---

6 Doors

Light Duty	Medium Duty	Heavy Duty	Fire rating
		 Minutes

7 Glass

Refer attached Glass and Glazing Certificate #.....

8 Finishes

Paint	Tiles	Wall Paper	Other
-------	-------	------------	-------

Because the actual use of this certificate is beyond the control of AAAMSA such use is within the exclusive responsibility of the user, AAAMSA cannot be held responsible for any loss incurred through the incorrect or faulty use of this Certificate.

Tel
(011) 805-5002
Fax
(011) 805-5033

**The AAAMSA
Glass & Glazing
Certificate**



Postal Address:
P O Box 7861
Halfway House 1685

Issued in terms of the Construction Regulations 2003
Only valid when duly signed by party concerned

Not Transferable

Certificate #: G 0.....

This Certifies that the Glass & Glazing used in the installation of the Architectural Products installed by:

Contractor/Installer:

Company Stamp:

AAAMSA Membership #:.....

for the Architectural Glazing Work at:

Project Name/Address:

.....

has been installed and marked in accordance with the requirements of SANS 10137/SANS 10400 Part N
(√ tick which is appropriate)

Date:

Signed:

For and on behalf of the Contractor/Glazier who by Signature hereof warrants authorization hereto

1 Monolithic	(√ which is appropriate)	Thickness mm	Manufacturer	Distributor/Supplier
<input type="checkbox"/> Clear Float		_____	_____	_____
<input type="checkbox"/> Tinted Float		_____	_____	_____
<input type="checkbox"/> Clear Patterned Glass		_____	_____	_____
<input type="checkbox"/> Tinted Patterned Glass		_____	_____	_____
<input type="checkbox"/> Georgian Wired Cast		_____	_____	_____
<input type="checkbox"/> Georgian Wired Polished		_____	_____	_____
<input type="checkbox"/> Performance Coated Glass		_____	_____	_____
<input type="checkbox"/> Mirror		_____	_____	_____

2 Laminated Glass	(√ which is appropriate)	Thickness mm	Manufacturer	Distributor/Supplier
PVB Laminates <input type="checkbox"/> (√ which is appropriate)				
Resin Laminates <input type="checkbox"/> (√ which is appropriate)				
<input type="checkbox"/> Clear		_____	_____	_____
<input type="checkbox"/> Tinted		_____	_____	_____
<input type="checkbox"/> Tinted Reflecting		_____	_____	_____
<input type="checkbox"/> Patterned		_____	_____	_____
<input type="checkbox"/> Multi-Laminated		_____	_____	_____
<input type="checkbox"/> Bullet Resisting		_____	_____	_____

3 Toughened	(√ tick which is appropriate)	Thickness mm	Manufacturer	Distributor/Supplier
<input type="checkbox"/> Clear	<input type="checkbox"/> Laminated	_____	_____	_____
<input type="checkbox"/> Tinted		_____	_____	_____
<input type="checkbox"/> Patterned		_____	_____	_____
<input type="checkbox"/> Surface Coated Heat Reflecting		_____	_____	_____

4 SIGU	(Sealed Insulated Glass Units)	Thickness mm	Glass Type	Manufacturer
Description:	Outer Pane	_____	_____	_____
	Inner Pane	_____	_____	_____
	Air Gap	_____	_____	_____
	Gas filled <input type="checkbox"/> Yes <input type="checkbox"/> No			

5 Other	(√ tick which is appropriate)	Details/Type	6 Glass Processing	Details/Type
<input type="checkbox"/> Gaskets		_____	<input type="checkbox"/> Polished Edges	_____
<input type="checkbox"/> Sealant		_____	<input type="checkbox"/> Unpolished Edges	_____
<input type="checkbox"/> Setting Blocks		_____	<input type="checkbox"/> Arrissed Edges	_____
<input type="checkbox"/> Weather stripping		_____		

Because the actual use of this certificate is beyond the control of AAAMSA such use is within the exclusive responsibility of the user, AAAMSA cannot be held responsible for any loss incurred through the incorrect or faulty use of this Certificate.

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South African Building
Interior Systems Association

ANNEX 3

ILLUMINANCE AND GLARE INDEX SABS 0114-1:1996

Great care has been taken to ensure that the information provided is correct. No responsibility will be accepted by AAAMSA for any errors and/or omissions, which may have inadvertently occurred.

ANNEX 3

ILLUMINANCE AND GLARE INDEX

SABS 0114-1:1996
CODE OF PRACTICE : INTERIOR LIGHTING
PART 1 : ARTIFICIAL LIGHTING OF INTERIORS

NOTES

The following is an extract from the regulations to the Occupational Health and Safety Act, 1993 : quote:"

3. LIGHTING

1. Every employer shall cause every workplace in his undertaking to be lighted in accordance with the illuminance values specified in the Schedule to these regulations. Provided that where specialized lighting is necessary for the performance of any particular type of work, irrespective of whether that type of work is listed in the Schedule or not, the employer of those employees who perform such work shall ensure that such specialized lighting is available to and is used by such employees.
2. The chief inspector may, by notice in the Gazette, from time to time modify the Schedule to these regulations, as he deems necessary.
3. With respect to the lighting to be provided in terms of subregulation (1), the employers shall ensure that:-
 - a. the average illuminance at any floor level in a workplace within five metres of a task is not less than one fifth of the average illuminance on the task;
 - b. glare in any workplace is reduced to a level that does not impair vision;
 - c. lighting on rotating machinery is such that the hazard of stroboscopic effect is eliminated; and
 - d. luminaires and lamps are kept clean and, when defective, are replaced or repaired forthwith." Unquote

In the inhabited environment, safe conditions are essential. It is therefore important to design lighting installations to compensate for human limitations. Any factor that aids visual performance increase the probability that a person will detect a potential accident hazard and act to avoid it.

In many cases where illumination has been associated with accidents, the following associated factors have also been found to have contributed. These are glare, both direct and reflected visual fatigue, and harsh shadows. Many accidents can be attributed to the adaptation state of the eye of a person when that person moves from a bright environment to a dark one and vice versa.

The light levels listed in the OHS Act, 1993, are the absolute minimum legal average light levels that may exist in a workplace at any time in the life of that workplace. If, at any time, the average falls below the OHS Act minimum, for any reason, i.e. failed lamps, dirty lenses or covers, or circuit failure, then the employer, in terms of the Act, is guilty of an offence. To ensure that these values are exceeded at all times, higher initial levels have to be provided for as required by the service and maintenance conditions that exist on site.

The minimum average productivity levels recommended are figures that are the result of many years of research gathered from experimentation and field trails. The levels are generally accepted as being cost effective values that will ensure the comfort, welfare and productivity of the workers in the environment. The productivity levels are therefore the levels that have to be used for lighting design along with the relevant glare index.



ILLUMINANCE AND GLARE INDEX

LOCATION / INDUSTRIES	TYPE OF WORK, TASK OR ACTIVITY	OHS ACT SAFETY lux	Productivity value (min. av) lux	GLARE RATING (MAX.)
Abattoirs	Cold Store, casting and stunning pen	100	150 ³⁾	25
	Bleeding area	150	200 ³⁾	25
	Dressing, evisceration, washing tripery and skin sorting	200	300 ³⁾	25
	Inspection and grading	300	500 ^{1,2)}	25
	By-products manufacture, i.g. digesters, grinding, etc.	100 – 200	200 ³⁾	25
Ablutions	Wash-rooms, toilets, and change rooms	100	150 ³⁾	-
Abrasive blasting	Sand or other	200	300 ³⁾	25
Aircraft	Stock parts production	300	400 ³⁾	25
	Drilling, sheet aluminium layout and template work, wing sections cowling, etc., welding, subassembly, final assembly, inspection, riveting, screw fastening	200	400 ^{2,3)}	22
	Maintenance and repairs (Hangars)	200	400 ²⁾	22
	Engine testing	200	400 ³⁾	22
Assembly plants	Rough work, i.e. frame assembly. Assembly of heavy machinery	100	300	25
	Medium work, e.g. machined parts, engine assembly, vehicle body assembly	200	400	22
	Fine work, e.g. radio and telephone equipment, typewriter and office machinery assembly	500	750	19
	Very fine work, e.g. small precision assembly	1 000	1 500 ^{2,4)}	19
Banking	Mixing and make-up rooms, oven rooms, wrapping rooms	100	200 ³⁾	22
	Decorating and icing	200	400	22
	General work area	100	160	25
Blacksmith	General work areas	75	250	28
	Tempering	50	200	25
Boiler houses (industrial)	Coal and ash handling	75	100 ³⁾	28
	Boiler rooms	100	100	25
Bookbinding	Folding, pasting, punching, stitching	200	400	22
	Cutting, assembling, embossing	300	500	22
	Finishing, blocking, inlaying and inspection	500	500	22
Boot and shoe	Sorting and grading	500	1 000 ¹⁾	19
	Clicking and closing: preparation operations	500	800	22
	Cutting tables and presses, stitching	500	1 000 ²⁾	22
	Bottom stock preparation lasting and bottom finishing	500	800	22
	Shoe rooms	500	800	22
Brewing and Distilling	General work areas	100	200 ³⁾	22
	Brewhouse, bottling and canning plants	300	300 ³⁾	22
	Bottle inspection	300	750 ³⁾	-
Building and Construction	Industrial building plant	200	300	25
	Concrete shops	150	200	25
	General work areas	20	100	25
	Walkways and access	5	50	28
Canning and Preserving	Inspection of produce	300	500 ¹⁾	22
	Preparation: kettle areas, mechanical cleaning, dicing, trimming	200	400	25
	Canned and bottled goods: retorts	150	200	25
	High speed labeling lines	200	400	25
	Can inspections	300	400	22
	Automatic process	25	200	25
Car parks (indoor)	Car parking: entrance	-	150	28
	Traffic lanes	-	40	28
Carpet	Winding, beaming	150	250 ³⁾	25
	Design, jacquard card cutting, setting, pattern, tufting, topping, cutting, hemming, fringing	200	400 ³⁾	22
	Weaving, mending, inspecting	300	500 ^{1,3)}	22
	Inspection : general	-	800	19
	Dyeing	400	500	22
Cement	Control room, milling, conveying, drying, pumping, burners, platform coal plant milling, feeding, bagging, bulk filling, loading	150	200 ³⁾	25
	Vertical control panel face (vertical illuminance)	200	200/400 ⁶⁾	19
Cement, asbestos, gypsum, chalk, products and moulded goods	Fibribizing, mixing, shredding, agitating, flat and corrugated sheets and moulded goods manufacture	200	300	25
	Pipe and pole manufacture: mixing, spinning, reinforcing, stripping	150	200	25
Ceramic	See Pottery and clay products			
Chemical	Hand furnaces, boiling tanks, stationary driers, stationary or gravity crystallizers	-	150 ³⁾	22
	Mechanical driers	-	150 ³⁾	22
	Evaporators, filtration plants	-	150 ³⁾	22
	Mechanical crystallizing, bleaching	-	200 ³⁾	22
	Extractors, percolators, nitrators, electrolytic cells	100	200 ³⁾	22
	Controls, gauges, valves, etc.	100	100 ^{2,3)}	22
	Control rooms: vertical control panel face (vertical illuminance)	200	400 ^{6,3)}	19
	Control desks	200	400 ³⁾	19
General work area	100	150 ³⁾	22	
Clothing	Matching up	300	500 ^{1,2)}	19
	Cutting, dewing	300	500	22
	Pressing	200	350	22
	Inspection	500	1 000 ¹⁾	19
	Hand tailoring	500	1 000 ¹⁾	19
Cold stores	General work areas	150	150 ³⁾	
Confectionery	Mixing, blending, boiling chocolate	100	200 ³⁾	25
	Husking, winnowing, fat extraction, crushing and refining, feeding, bean cleaning, sorting, milling,	150	250 ³⁾	25
	Hand decorating, inspection, wrapping, packing	200	400	22
Dairies	General work areas	150	200 ^{2,3)}	25
	Bottle inspection	300 ²⁾	500 ³⁾	22
	Bottle filling	300	500 ³⁾	25
	Dispatching	100	150	25
Die sinking	General	200	350	25
	Fine	500	1 000	19
	Hand engraving	500	1 000	19



LOCATION / INDUSTRIES	TYPE OF WORK, TASK OR ACTIVITY	OHS ACT SAFETY lux	Productivity value (min. av) lux	GLARE RATING (MAX.)	
Dry cleaning	See laundering and dry cleaning				
Dye works	Reception, "Grey" perching	500	600	200	
	Wet process	150	300 ^{2,3)}	25	
	Dry processes	150	300 ^{2,3)}	25	
	Dryers' office	500	800 ^{1,8)}	19	
	Final perching	1 500	2 000 ^{1,2)}	16	
Electrical goods (manufacture)	Impregnating process, mica work	150	300	25	
	Coil and armature processes: general	200	400	25	
	Fine (e.g. instrument coils)	400	600	19	
Electricity generating stations (indoor)	Turbine halls (operating floors)	200	300 ²⁾	25	
	Blowers, auxiliary generators	100	150	25	
	Cable, screens and transformer chambers	75	100	25	
	Cable tunnel, covered ways, storage tanks	50	50	25	
	Battery and charging equipment rooms	100	150 ³⁾	25	
	Boiler front (operating floor)	150	150 ²⁾	25	
	Between boilers (operating floor) stairs, galleries, operating platforms, and precipitator high-voltage chamber	100	150 ²⁾	25	
	Pulverizers, feeders, ash plant, conveyors (turner, junction tower)	75	100 ³⁾	25	
Electricity generating stations (indoor)	Boiler house and turbine house basements	100	150	25	
	Pump houses and rooms, water treatment plant	100	150 ³⁾	25	
	Overland conveyor housing walkways	50	100	25	
	Control rooms: vertical control panel face (vertical illuminance)	200	300 ⁶⁾	19	
	Control desks	200	400	19	
	Rear of control panels	100	150	22	
	Computer room	500	500	19	
	Switch houses and rooms	150	200	25	
	Relay and telecommunications rooms	200	300	22	
	Nuclear reactors and steam raising plants: reactor areas, boilers, galleries	150	200	25	
	Gas circulator bays	150	200	25	
	Reactor charge/discharge face	150	200	25	
	High-voltage substations	100	200	25	
	Hand	500	1 000	19	
Engraving	Machine (see Die sinking)				
Explosives	See Chemical				
Forging	General	100	250	28	
Fire stations	Appliance rooms	100	150	25	
	External apron	30	50	-	
Foundries	Charging floors, tumbling, cleaning, pouring, shaking out, rough moulding and rough core making	100	300 ³⁾	22	
	Fine moulding and core making inspection	200	400	25	
Furniture Factories	Raw material store	50	100	25	
	Finished goods store	75	100	25	
	Wood-machining and assembly	150	300 ³⁾	22	
	Rough sawing and cutting	150	200 ³⁾	22	
	Machining, sundry and assembly of components	250	350 ³⁾	22	
	Cabinet making:	Veneer sorting and preparation	500	500 ¹⁾	22
		Veneer pressing	250	400	22
	Components store	75	100	25	
	Fitting, final inspection	400	500 ¹⁾	22	
	Upholstery:	Cloth inspection	750	800 ¹⁾	22
		Filling, covering	250	500	22
	Slipping	Slipping	400	500	22
		Cutting, sewing	400	500	22
	Mattress making:	Assembly	250	400 ³⁾	22
		Tape edging	500	500	22
	Tools rooms:	General	250	300	25
		Benches	400	400	22
	Spray booth:	Colour finishing	250	400 ^{1, 3)}	22
		Clear finishing	150	400 ³⁾	22
	Garages	Parking areas (interior)	50	50	28
Washing and polishing, greasing		100	200 ³⁾	25	
Servicing pits		100	200 ^{1, 7, 3)}	22	
Repairs		200	350 ^{2, 3)}	22	
Workbenches		200	400	22	
Fuel pumps		100	200 ³⁾	28	
Gas works	Retort house, oil gas plants, water gas plants, purifiers, coke screening and coke handling plants	50	50 ^{2, 3)}	28	
	Governor, meter, compressor, booster, and exhaustor houses	75	250 ^{2, 3)}	25	
Gauge and tool rooms	General	500	800 ^{2, 4)}	19	
General factory areas	Canteens	100	200		
	Cloakrooms	100	200		
	Entrances	100	200		
	First-aid rooms	100	300	22	
Glass processing	Furnace rooms, bending, annealing ovens, mixing rooms, forming (blowing, drawing, pressing, rolling)	100	200	28	
	Cutting to size, grinding, polishing, touching	150	300	25	
	Finishing (beveling, decorating, etching, silvering)	200	500	22	
	Brilliant cutting	500	800	19	
	Inspection:	General	150	300 ⁴⁾	19
Fine		500	800 ⁴⁾	19	
Glove making	See Clothing				
	General work area	100	300	22	
Hat making	Stiffening, braiding, cleaning, refining, forming, sizing, pouncing		300	22	
	Flanging, finishing, ironing	100	400	22	
	Inspection		1 000 ¹⁾	19	
	General work area	100	400	22	
	Other processes (See clothing)				
Hazardous locations	Refer to SABS 0108				
Hosiery and knitwear	Circular and flat knitting machines, universal winders, cutting out, folding and pressing	200	400 ³⁾	22	
	Lock stitch and overlocking machines	300	500	22	



LOCATION / INDUSTRIES	TYPE OF WORK, TASK OR ACTIVITY	OHS ACT SAFETY lux	Productivity value (min. av) lux	GLARE RATING (MAX.)
Hosiery and knitwear	Mending: Light goods	800	1 000 ^{1,4)}	19
	Dark goods	1 000	1 500 ^{1,4)}	19
	Examining and hand finishing: Light	400	600 ¹⁾	19
	Dark	800	1 000 ¹⁾	19
	Linking or running on	300	500	19
Inspection areas	Rough work e.g. counting, rough checking of stock parts, etc.	100	300	25
	Medium work, e.g. "go" and "no-go" gauges	200	400	22
	Subassemblies	200	400	22
	Fine work, e.g. radio and telecommunication equipment, calibrated scales, precision mechanisms, instruments	500	600	19
	Very fine work, e.g. gauging and inspection of small intricate parts	1 000	1 200/1 600 ^{2,4)}	19
	Minute work	1 500	1 200/1 600 ^{2,4)}	19
Iron and steel	Slab yards, melting shops, ingot stripping soakingpits, blast furnaces, work areas, pickling and cleaning lines, mechanical pump houses, slabbing and large section rolling mills	75	100 ²⁾	28
	Mould preparation, light section, wire and cold strip mills, mill motor rooms, slab and bloom inspection and conditioning, sheet and plate finishing, tinning, galvanizing and roll shops	100	100 ^{2,5)}	28
	Plate inspection	200	300 ²⁾	25
	Tinplate inspection and pulpits (control rooms)	200	500 ⁵⁾	22
	General work area	75	200	25
Jewellery and Watchmaking	Fine processes	500	800 ²⁾	19
	Minute processes	3 000	4 000 ^{1,5)}	10
	Gem cutting, polishing	1 000	1 500 ^{1,5)}	19
Laboratories and Test rooms	General laboratories, balance rooms	200	500	19
	Electrical and electronic instrument laboratories	300	500	19
	Calibration scales, precision mechanical instruments	300	700	19
Laundering and dry Cleaning	Receiving, sorting, washing, drying, ironing (calendering), dispatch	150	200	25
	Dry cleaning, bulk machine work	150	300 ³⁾	25
	Fine head ironing, pressing, inspection, mending, spotting	200	400 ²⁾	25
Leather and tanning	Vats, cleaning, tanning, stretching, cutting, fleshing and stuffing	100	300 ³⁾	28
	Finishing, staking, splitting	150	300	28
	Pressing and glazing	300	500	22
	Cutting, scarfing and sewing	500	800	22
	Grading and matching	500	1 000 ¹⁾	19
Lifts	Car interior	100	100	
	Motor room	300	500	25
Machine and fitting	Rough bench and machine work	100	200 ³⁾	28
	Medium bench and machine work, ordinary automatic machines, rough grinding, medium buffing and polishing	200	400 ³⁾	25
	Fine bench and machine work, find automatic machines, medium grinding, find buffing and polishing	500	700 ^{2,3)}	22
	Extra find bench and machine work, find grinding	800	1 000	22
Materials handling shops	Wrapping, packing and labeling	150	200	28
	Sorting stock, classifying, loading	100	200	
Milling (flour and maize)	Roller, purifier, silks and packing floors	150	300 ³⁾	25
	Wetting tables	200	400 ³⁾	25
Mining (surface buildings)	Preparation plants: Working areas	-	200 ³⁾	25
	Picking belts	-	300 ^{3,3)}	25
	Winding houses	-	200	28
	Lamp rooms	-	200	28
	Weigh cabins	-	200	28
	Fan houses	-	200	28
Motor vehicle	General assemblies, chassis assemblies, car assembly, trim shops, body subassemblies, body assembly	200	400	25
	Final inspection	300	500 ¹⁾	22
	Upholstery	400	500 ¹⁾	22
	Spray booths (See Paint shops and spraying booths)			
Outdoor areas	Abattoirs: Lairage	20	*	*
	Race	50		
	Ash handling, precipitator, and fan area	20		
	Bulk loading/unloading areas where manual operations are performed	50		
	Bulk loading/unloading areas	100		
	Cooling water screens	20		
	Fuel pumps	100		
	Storage areas (excluding big dumps)	5		
	Water clarification plant and storage tanks (operating area)	50		
	Marshalling yards	10		
	Main entrance and exit	20		
	Transformer and reactor compounds	20		
	Roads, outdoor car parks and internal roads			
	High-voltage yard, distribution and substations	10		
Outdoor plants	Gangways, catwalks, stairways, etc	20	*	*
	Conveyor structures	10		
Paint	General, automatic processes	150	200 ²⁾	25
	Special batch mixing	300	400 ^{1,3)}	22
	Colour matching	300	600 ^{1,3)}	19
Paint shops and Spraying booths	Rubbing, dipping, ordinary painting, spraying and finishing	200	400 ^{1,3)}	22
	Fine painting, spray and finishing	300	700 ^{1,3)}	22
	Retouching and matching	500	1 000 ^{1,3)}	22
Paper	Paper And board making; machine houses, calendering, pulp Mills, preparation plants, cutting, finishing, trimming	150	300 ³⁾	25
	Inspection and sorting (overhauling)	200	400 ^{1,2,3)}	25
	Paper converting process: General	150	300	25
	Associated printing	200	300	22
Paper bag and Carton box making	Corrugated boards, cartons, containers and paper box manufacture	150	200	25
	Coating and laminating process	200	300	22
	Associated printing	200	300 ¹⁾	22



LOCATION / INDUSTRIES	TYPE OF WORK, TASK OR ACTIVITY	OHS ACT SAFETY lux	Productivity value (min. av) lux	GLARE RATING (MAX.)
Pharmaceutical and fine chemical	Raw metal storage	150	200	28
	Control laboratories and testing	200	500 ^{1,3)}	19
	Pharmaceuticals manufacture: grinding, granulating, mixing and drying, tableting, sterilizing and washing	-	500 ³⁾	-
	Preparation of solutions and filling, labeling, capping, inspection	200	400 ^{1,3)}	25
	Fine chemical manufacture: Plant processing	150	200	25
	Fine chemical finishing	200	500 ^{1,3)}	25
Plastics	Processing: Calendering extrusion	200	300	25
	Moulding – compression, injection	150	300	25
	Sheet fabrication: Shaping	150	240	25
	Trimming, machining, polishing	200	400 ³⁾	25
	Cementing	150	300 ³⁾	25
	Colour matching and inspection	500	1 000 ¹⁾	19
Plating	Vats and baths, buffing, polishing, burnishing	200	400 ³⁾	22
	Final buffing and polishing	200	600 ²⁾	22
Pottery And clay products	Grinding, filter pressing, kiln rooms, moulding, pressing, cleaning, trimming glazing, firing	200	400	25
	Enameling, colouring, decorating	300	600 ¹⁾	19
Printing	Type foundries: Matrix making, dressing type, hand and machine casting	150	300	25
	Front assembly, sorting	300	500 ¹⁾	22
	Printing plants: Machine composition, imposing stones	150	300	25
	Presses	200	400 ³⁾	25
	Composition room	300	400	19
	Proof reading casting	300	500 ¹⁾	19
	Electrotyping: Block-making, electroplating, washing, backing	150	500	25
	Moulding, finishing, routing	200	400	25
	Photo-engraving: Block-making, etching, masking	200	400	25
	Finishing, routing	300	500	25
Colour printing: Inspection area	500	1 000 ¹⁾	19	
Refrigeration	Chilling and cold rooms, ice-making	100	200 ³⁾	25
Rubber processing	Fabric preparation creels	150	200 ³⁾	25
	Dipping, moulding, compounding calenders	150	500 ³⁾	25
	Tyre and tube making	200	400 ³⁾	25
	Curing and inspection	300	400 ³⁾	22
Sheet metal	Benchwork, pressing, punching, shearing, stamping, spinning, folding	150	300	25
	Scribing	200	400	25
	Sheet inspection	300	500 ²⁾	25
Soap manufacturing	All processes, e.g. kettle houses and ancillaries, batch or continuous soap rooting, soap stamping, etc.	150	300	25
	General areas	100	300	25
	Auto process	-	200	25
	Control panel face (vertical illumination)	200	200 ⁶⁾	25
	Edible product processing and packing	150	200 ¹⁾	25
Stairs, escalators and ramps	General	100	150	22
Structural steel fabrication	General	100	200	28
	Marking off	200	400	28
Sugar	Manufacture: Crushing, settling, evaporating, boiling, curing	-	-	-
	Drying, packing	100	200 ³⁾	25
	Refining: Centrifuging, metering, filtering, condensing	100	200	25
	Panning, mixing, drying	200	300 ³⁾	25
	Grading, colour matching	500	600 ¹⁾	25
Tailoring	Hand tailoring	500	1 000 ¹⁾	19
Textile (cotton or linen)	Bale breaking, blowing, carding	100	300 ³⁾	25
	Roving, slubbing, spinning (ordinary counts), winding, hackling, spreading, cabling	100	300 ³⁾	25
	Warping, slashing, dressing and dyeing, doubling (fancy), spinning (fine counts)	150	300 ³⁾	25
	Healing (drawing in)	500	800 ³⁾	19
	Weaving: Patterned cloths	500	800 ^{1,3)}	19
	Plain "grey" cloth	150	800 ³⁾	19
	Cloth inspection	500	1 000 ^{1,2,3)}	19
Textile (jute)	Weaving, spinning flat, Jacquard carpet looms, cop winding	150	300 ³⁾	25
	Yard calender	100	400 ³⁾	25
Textile (silk or synthetic)	Soaking, fugitive tinting, conditioning or setting of twist	150	500 ^{1,3)}	25
	Spinning	300	500 ³⁾	25
	Winding, twisting, rewinding and coning, quilling, slashing	200	350 ³⁾	25
	Warping	200	400 ³⁾	25
	Healding (drawing in)	500	800 ³⁾	22
	Weaving	500	800 ³⁾	19
	Inspection	500	1 000 ^{1,2,3)}	19
Textile (woolen)	Preparing, raising, brushing, pressing, backwashing, gilling, grabbing and blowing	100	300	25
	Blending, carding, combing (white) tendering, drying, cropping	150	300 ^{1,3)}	25
	Spinning, roving, winding, warping, combing (coloured), twisting	300	500 ³⁾	25
	Healding (drawing in)	500	800 ³⁾	22
	Weaving: Fine worsteds	500	800 ³⁾	19
	Medium worsteds, find woolens	300	500 ³⁾	19
	Heavy woolens	200	400 ³⁾	19
	Burling and mending	500	800 ³⁾	19
	Perching: "Grey"	500	800 ³⁾	19
		Finals	1 000	2 000 ^{1,2,3)}
Tobacco	Primary manufacture: Weighing, blending, conditioning, threshing, cutting	100	250 ^{1,2,3)}	22
	Cigarette making: Making machines, filter plugmakers	500	500 ³⁾	22
	Catcher (inspection)	500	1 000 ¹⁾	22
	Hand processes	-	750 ²⁾	-
	Cigarette or tobacco packing	500	600	22
Upholstering	Furniture and vehicles	200	350 ³⁾	25



LOCATION / INDUSTRIES	TYPE OF WORK, TASK OR ACTIVITY	OHS ACT SAFETY lux	Productivity value (min. av) lux	GLARE RATING (MAX.)
Warehouses and bulk storing	Small material, racks, packing and dispatch	150	200	25
	Issue counters	200	300	19
	Loading bays, large material	75	100	28
	Inactive storage and automatic stores	20	50	28
Welding and	Gas and arc welding	150	250 ²⁾	28
Soldering	Medium soldering, brazing and spot welding, e.g. domestic hardware	200	350 ²⁾	25
	Fine soldering and spot welding, e.g. instruments, radio set assembly	500	800	22
	Very fine soldering and spot welding, e.g. printed circuits	1 500	1 500 ³⁾	19
Woodworking and Sawmilling	Rough sawing and bench work, sizing, planing, rough sanding	150	250 ³⁾	25
	Medium machine and bench work, bluing, veneering, cooperage	200	300 ³⁾	25
	Fine bench and machine work, fine sanding and finishing	200	500 ³⁾	22
PUBLIC BUILDINGS, OFFICES, SCHOOLS, ETC.				
Ablutions	Wash-rooms, toilets and change rooms	100	150 ³⁾	25
Assembly and Concert halls	Foyers	-	100	-
	Auditoria (other than during performances)	-	100	-
	Platforms	-	200 ³⁾	-
	Stairs and corridors	100	150	22
	Booking offices	200	300	25
Banks	Counters (See also Offices)	300	500	19
	General work areas	200	500	-
Churches	Body of church	-	150	19
	Pulpit and lectern areas, chancel, choir	-	200 ³⁾	19
	Altar, communion table	-	200 ³⁾	19
	Vestries	-	200	19
Cinemas	Projection room	150	200	22
	Corridors, stairs	100	150	22
	Foyers	-	100	25
	Auditoria (other than during performances)	-	100	22
	Booking area	200	300	25
Courtrooms	Seating	100	200	22
	Court	300	500	25
Libraries	Shelves (stacks) (on vertical surfaces)	100	300	22
	Carrels, reading room (newspapers and magazines,) reading tables	-	500	19
	Binding	300	500	22
	Cataloging, sorting, stock rooms	200	300	22
	General work areas	100	300	22
Multipurpose recreation halls	General	-	500	-
	Badminton	-	-	-
	Table tennis: Club	-	-	-
	Championship	-	-	-
	Spectators	-	-	-
	Gymnasia	-	-	-
Museums and art Galleries	General	-	200 ³⁾	16
	Displays	-	-	-
	Paintings	-	-	-
Offices	Entrance halls and reception areas	100	200	22
	Conference rooms, general offices, typing and filing	300	500	19
	Computer and business machine operation	500	500	19
	Drawing offices	500	750	16
Passages and lobbies	All areas	75	150	22
Photographic	Safety-light dark rooms	5	10	-
Post Offices	Circulation	100	200	22
	Counters	200	500	22
	Sorting of mail	300	500	25
Schools and Colleges	Assembly halls: General	-	200	19
	When used for examination	-	500	16
	Platforms	-	500	19
	Class and lecture rooms	200	300	19
	Chalk boards (on vertical surfaces)	-	500 ^{1, 2)}	19
	Embroidery and sewing rooms	-	500 ¹⁾	19
	Art rooms	-	500	19
	Laboratories	-	400	19
	Libraries: Shelves, stacks (on vertical surfaces)	-	300	22
	Reading tables	-	400 ²⁾	19
	Manual training	-	-	-
	Offices	-	-	-
	Staff rooms, common rooms	-	300	22
	Dormitories	100	100	25
	Corridors, stairs	100	150	28
General work areas	-	300	25	
Gymnasia	-	-	-	
Telephone Exchanges	Manual exchange rooms (on desk)	100	300 ²⁾	16
	Main distribution frame rooms in automatic exchanges	200	300	25
	Battery rooms	100	150 ³⁾	25
Theatres	Foyers	-	150	25
	Auditoria (other than during performances)	-	100	25
	Corridors, stairs	100	150	22
Transport terminals (air, bus, rail, sea)	Reception areas (desks), customs and immigration halls, lounges	-	300	22
	Check-in counters	-	500	22
	Circulation, platforms and dispatch	-	150	25



LOCATION / INDUSTRIES	TYPE OF WORK, TASK OR ACTIVITY	OHS ACT SAFETY lux	Productivity value (min. av) lux	GLARE RATING (MAX.)
Surgeries, hospitals and clinics	Reception and waiting rooms	-	150	19
	Wards: General	-	100 ⁹⁾	13
	Beds	-	200 ^{1, 5)}	19
	Operating theatres: General	-	400 ¹⁾	10
	Tables	-	1, 2, 5)	
	Laboratories	-	500 ¹⁾	19
	Radiology	-	500 ⁵⁾	19
	Casualty and outpatient departments	-	200 ¹⁾	19
	Stairs, corridors (in-patient areas)	100	150	22
	At night time	-	10	
Dispensaries	-	400 ¹⁾	19	
Surgeries, hospitals and clinics	Other rooms: With specific visual tasks	-	400 ³⁾	19
	Without specific visual tasks	-	200	19
Surgeries	Waiting rooms	-	150	19
	Consulting rooms	-	500 ²⁾	19
	General examination	-	400 ¹⁾	22
	Dental chairs	-	2), 5)	
	Laboratories	-	400 ¹⁾	19
	Corridors and stairs	100	150	22
	Sight testing (acuity): Wall charts and near vision types	-	500 ¹⁰⁾	22
Homes	Kitchens	-	200	25
	Bathrooms	-	100 ¹¹⁾	28
	Stairs	-	100	22
	Workshops	-	400 ²⁾	22
	Garages	-	200	25
	Sewing, darning	-	600	19
	Study and reading	-	500	22
	Other rooms	-	200 ^{2, 5)}	25
	Hotels and Restaurants	Entrance halls	100	200
Reception and accounts		200	300	22
Dining and bars		-	1), 5)	-
Lounges		-	150	19
Bedrooms: General		-	100	-
Dressing tables, bed heads, etc.		-	200 ^{1, 11)}	-
Writing rooms (tables)		-	300 ²⁾	19
Corridors		100	100	22
Stairs		100	150	22
Billiard Rooms: General		-	200	22
Tables		-	5)	
Card rooms		-	300 ²⁾	22
Laundries		150	300	25
Kitchens		150	500 ^{2, 3)}	25
Goods and passenger lifts		-	100	-
Cloakrooms and toilets		-	150 ¹¹⁾	-
Bathrooms		-	100 ¹¹⁾	-
Self-service counters		-	300	22
General work areas	50	300	22	
Shops and stores	General work areas	-	300 ^{1, 2)}	22
	Stairs and corridors	100	200	22
	Stockrooms	-	200	25
Stairs, escalators and ramps	General	100	150	22
Storage	General	100	200	25
1.	Special attention required in respect of colour rendering.			
2.	Supplementary local lighting might be required.			
3.	Protected equipment to meet special conditions such as the presence of dust, moisture, corrosive or flammable substances, vibration, etc			
4.	Optical aids should be used where necessary.			
5.	Special lighting should be used where necessary.			
6.	With dimmer control in continuously attended areas.			
7.	Illumination on underside of vehicle.			
8.	Care should be taken to minimize reflected glare.			
9.	Care should be taken to screen all bright luminaires and areas from view of patients in bed.			
10.	Charts should be illuminated to have uniform brightness over whole area.			
11.	Supplementary local lighting should be provided at mirrors			

Great care has been taken to ensure that the information provided is correct. No responsibility will be accepted by AAAMSA for any errors and/or omissions, which may have inadvertently occurred.