Modular partition SD with removable claddings

GSP-0603-E/B

Modular partition made of a metallic stud frame and two individually removable skinned panels, allowing the easy incorporation of any services routing, wiring or components.
Partition of total thickness in standard 90 mm *3.5''*, can be increased to suit client's or site's request.
Non progressive installation.

Design

The galvanised steel structural frame consists of :

- metallic rails (top and bottom)
- Proprietary vertical notched metallic studs adjustable in height, placed every 1100 mm *3.6''* or 1200 mm *3.9''* (optional sub-module)
- noggins, cross-members, specific accessories available for incorporation of doors, glazing or specific equipment.

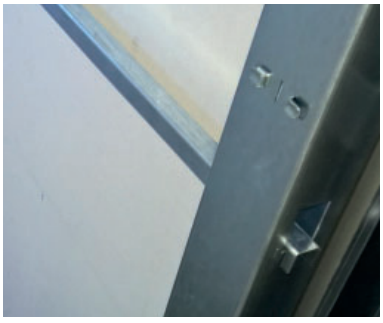
Removable claddings

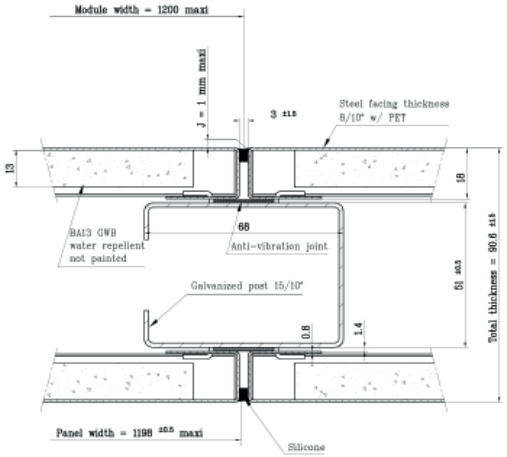
Metallic single or double sided panels, removable individually anywhere

Finished cladding made of thick galvanized steel sheets (0.8 mm *0.03''*) backed with plasterboard /GWB or aluminium honeycomb core, total thickness 18 mm *0.7''* , vertically clipped on the studs, with pre-set gap of 3 mm *0.1''* provided for silicone caulk (gap 0,5 mm *0.2''* for cold welded seal).

Dimensions:
Maxi height : 3 m *9.8'* (stackable if required)
Module 1100 mm *3.6'* in basis.

Various possible skins finishes:
- Galvanised steel 8/10th *0.3''* + PET complex 55 µm, iceberg white colour (close to RAL9010)
- Raw stainless steel sheet 8/10th *0.3''*
- Stainless steel sheet 8/10th *0.3''*+ PVC film 120 µm
- Stainless steel sheet 8/10th *0.3''*+ PVC+PET film 130 µm





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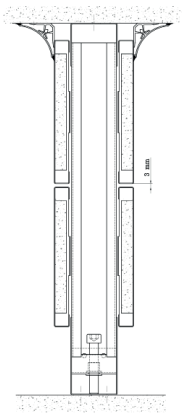
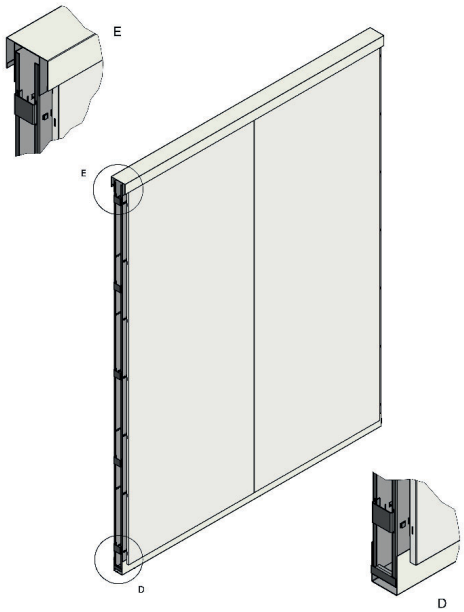
Airtightness



Tightness made by a bead of mastic (cleanroom grade Silicone caulk, MS Polymer, chemical cold weld..) applied on site in the calibrated gaps for all skins.



Doors

Hinged or sliding doors, with 1 or 2 leaves, adapt to this new concept:
- wide range of dimensions
- aluminium or lacquered steel door frame (heat-cured epoxy-polyester powder paint, choice of colour) stainless steel variant set flush on one side or the other, or centred in the partition thickness.
- leaves of thickness 60 mm *2.36″* with metallic or HPL facings, choice of colour.
- options : glazing or flush vision panel, selection of hardware, interlocking management, motorisation system, kick plates protections,...

Glazed modules

Airtight double glass window system with toughened laminated safety glass, double flush.
Dimensions on request according to the partitions layout.
Options: integrated (flush) manual or electrical blinds.

Alternate : single side lining partition or 2-lift panels

It is possible to realize a single cladding lining partition or 2-lift panels on the same stud frame.

Service door for SD90 partition

Flush frame for partition of thickness 90 mm, leaf 60 mm

GSP-0607-E/B

Service door with flush door frame on the 2 sides of the partition.
The leaf consists in aluminium honeycomb or mineral wool core bonded between 2 metallic facings.

Technical characteristics

Leaf
- 1 or 2 leaves thickness 60 mm
- sandwich structure
- aluminium honey comb or mineral wool core and aluminium structure profiles
- smooth galvanised steel sheet 8/10th mechanical welded and painted with epoxy-polyester powder, heat-cured, iceberg white coloured (close to RAL 9010), options : colours according to the chart (GSP-1208)

Door frame
- one-piece double flush frame for partition of thickness 90 mm
- lacquered aluminium frame, heat-cured epoxy-polyester powder coating

Options
- lifting impost 630, 730 or 830 mm for door 2040 x 1660 mm and 2040 x 2060 mm

Left or right opening.

Tightness
Closed profile sealant, 10 mm trimming at the bottom of the door.

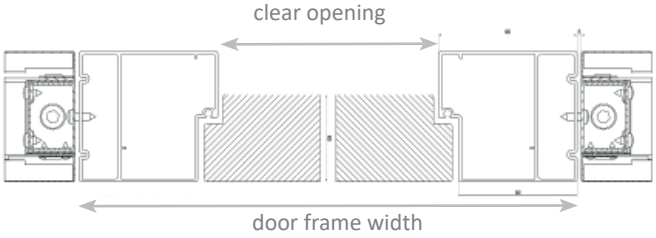
	standards equipment	options	see data N°
doors with 1 or 2 leaves	adjustable white lacquered aluminium hinges	adjustable stainless steel finishing aluminium hinges	GSP-0902-E/B
		stainless steel hinges (no adjustable)	
	white PVC handle with cylinder-type safety lock (single keyway)	coloured PVC handle with european profile lock (single keyway)	GSP-0901-E/B
		stainless steel handle with european profile lock (single keyway)	
		white PVC pull handle (without lock) with push plate	
		stainless steel pull handle (without lock) with push plate	
	stamped stainless steel strike		
		panic push bar	GSP-0903-E/B
		floor gasket	GSP-0906-E/B
		sweeper gasket	
		door stop	GSP-0905-E/B
		wall mounting door closer	GSP-0904-E/B
		double flush vision panel 640 x 350 mm, 800 x 500 mm, 1000 x 500 mm	GSP-0920-E/B
		grey PVC kick plate, height 850 mm on 1 or 2 faces	GSP-0911-E/B
		stainless steel sheet kick plate, height 850 mm on 1 or 2 faces	GSP-0912-E/B
		recessed magnetic lock	GSP-0914-E/B to GSP-0919-E/B
		airlock management	
doors with 2 leaves	lever bolt top and bottom on half fixed leaf		GSP-0907-E/B
		closing selector	GSP-0904-E/B

Service door for SD90 partition

Flush frame for partition of thickness 90 mm, leaf 60 mm

GSP-0607-E/B

Dimensions



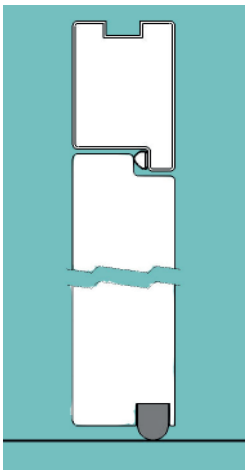
(mm)	designation H x W	clear opening H x W	door frame H x W	designation H x W	clear opening H x W	door frame H x W	designation H x W	clear opening H x W	door frame H x W
	2040 x 630	2039 x 609	2135 x 801	2240 x 630	2239 x 609	2335 x 801			
	2040 x 830	2039 x 809	2135 x 1001	2240 x 830	2239 x 809	2335 x 1001			
1 leaf	2040 x 930	2039 x 909	2135 x 1101	2240 x 930	2239 x 909	2335 x 1101	2440 x 930	2239 x 909	2535 x 1101
	2040 x 1030	2039 x 1009	2135 x 1201	2240 x 1030	2239 x 1009	2335 x 1201	2440 x 1030	2239 x 1009	2535 x 1201
	2040 x 1130	2039 x 1109	2135 x 1301						
	2040 x 1260	2039 x 1244	2135 x 1436	2240 x 1260	2239 x 1244	2335 x 1436			
	2040 x 1460	2039 x 1444	2135 x 1636						
2 leaves	2040 x 1660	2039 x 1644	2135 x 1836	2240 x 1660	2239 x 1644	2335 x 1836	2440 x 1660	2239 x 1644	2535 x 1836
	2040 x 1860	2039 x 1844	2135 x 2036						
	2040 x 2060	2039 x 2044	2135 x 2236	2240 x 2060	2239 x 2044	2335 x 2236	2440 x 2060	2239 x 2044	2535 x 2236

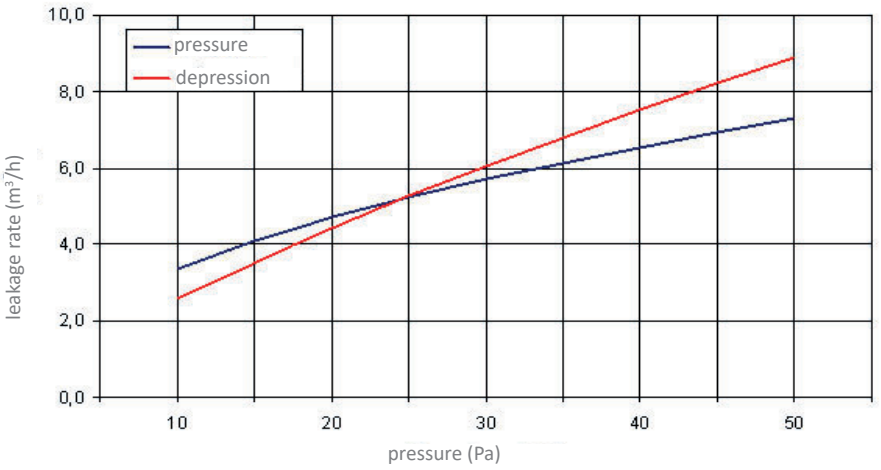
Permeability

Nota :
- a door is under pressure when the action of the air tends to stick the leaf on the door frame
- a door is in vacuum when the action of the air tends to spread the leaf of the door frame

Air leakage rate for single leaf hinged door with floor gasket

The permeability of the double flush doors with floor gasket is note in report n°2612115 made by CETIAT.





Double flush glazing 90 mm

GSP-0608-F/B

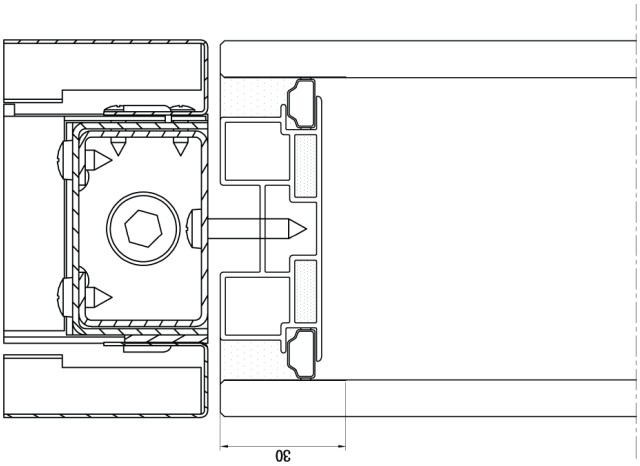
This glazing is designed for SD90 partition, it is mounted on aluminium peripheral frame and it consists of 2 laminated glasses 44.2 class 1B1.

Application

These glazings can be used in premises where the relative humidity not exceeded 75% and with a temperature between +10°C *50°F* and + 40 °C *104°F*.

Technical characteristics

Glazings are bi-glasses made of black (RAL 9005) aluminium profile on which is bonded 2 laminated glasses 44.2 (according to the standard NF EN14449) with 2 peripheral inserts (containing molecular riddle or dryer).
A silicon joint is extruded between glasses and aluminium profile in order to ensure the tightness, leaving the black (RAL 9005) peripheral aluminium profile visible. This profile enables the assembly between panels or glazings.



Glasses have the CE mark.

Weight 47 kg/m² *9.63 lb/f²*

Standard dimensions

Height x Width (mm)
800 x 900
800 x 1200
800 x 1800

Other dimensions on request.

Leaded service door

GSP-0609-E/B

The leaded door, designed for the passage of staff, provides a full protection in rooms like medical imaging rooms.

This door suits on Dagard leaded partitions.

Characteristics

Usual clear opening :
1 or 2 leaves = height 2025 mm *6.6'*
widths : from 600 mm *1.97'* to 1800 mm *5.9'*

Door frame

Metallic or red wood, section 100 x 70 mm *3.9'' x 2.8''* with lead* integrated during the manufacturing.

Leaf

Thickness : 40 mm *1.57'*

Filled core, red wood, with incorporation of two laminated lead* sheets guarantying the stability.

Two finishing :
- pre painted
- HPL 9/10

** protection lead sheets from 1 to 10 mm 0.04'' to 0.4'' (upper production on request) glued under hydraulic press.*

Fittings

4 reinforced hinges 160 x 80 mm *6.3'' x 3.1''* (option: ball bearing for heavy door)

Options

- X ray barrier vision panel - dimension from 300 x 400 mm *11.8'' x 15.7''* to 500 x 800 mm *19.7'' x 31.2''*
- PV CSTB : CF 1/2 hour -
  Isophonic 32 dB

Complies with the standard C15-160-161 - Approval LCIE

Leaded sliding door

X rays barrier

DAGARD

GSP-0610-E/B

Tight sliding door integrating lead sheet X-ray barrier, specially adapted for X-ray room, theatre block...

Technical characteristics

Leaf
- sandwich structure of thickness 60 mm *2.36''*
- insulating core
- 1 mm *0.04''* or 2 mm *0.08''* lead sheet on the inside face
- decorative high pressure laminated facing Reysipur®, flame retardant and with anti-bacterial treatment, thickness 4 mm *0.16''* (colour according to the card GSP-1209).

Door frame
- metallic frame in lacquered steel or stainless steel
- adapted to the supporting partition, integrating an X-rays barrier.

Left or right opening.

Tightness : airtight peripheral joint

Automatic system :
The rail forming a spandrel with ramps and butts integrated in.
Aluminium enveloping cover track, easy to clean.
Colour close to RAL 9010.

Automatism :
A LCD screen allowing the settings :
- time-out adjustments
- possible signalling adjustments
- adjustment of opening and closing speed

opening speed : 0,1 m/s *0.33 ft/s* à 1 m/s *3.28 ft/s* (stable load at mid-travel point)
closing speed : 0,1 m/s *0.33 ft/s* à 0,7 m/s *2.30 ft/s* (stable load at mid-travel point)
- partial opening or not

Safety on the leaf edge : electronic torque limiter integrated in the control unit.
Max. load on panel leaf: 15 daN *0.02 PSI* (in case of contact with the door, the static force on the person is limited to a value lower than 15 daN *0.02 PSI* avoiding to hurt the person).
Data output switches (dry switches) for airlock management as example (contact for opened or closed door, unlock and interlock switch) and fault detection display switch.
Optional: a safety battery can be connected to the supply box for an opening or closing of the door in the event of a power cut.

Opening order possible with proximity detector, push button, badge scanner, digital lock, etc,...

	standard equipment	options	see card N°
door with 1 leaf	aluminium pull handle outside recessed pull handle inside	stainless steel pull handle (without lock) on external side	GSP-0908-E/A
	anodized aluminium track with lacquered aluminium cover track		
	bottom door guides		
		double flush vision panel 640 x 350 mm *2.1' x 1.15'*, 800 x 500 mm *2.6' x 1.6'*, 1000 x 500 mm *3.3' x 1.6'*	GSP-0920-E/A
		grey PVC kick plate, height 850 mm *2.8'* on 1 or 2 faces	GSP-0911-E/B
		stainless steel sheet kick plate, height 850 mm *2.8'* on 1 or 2 faces	GSP-0912-E/B

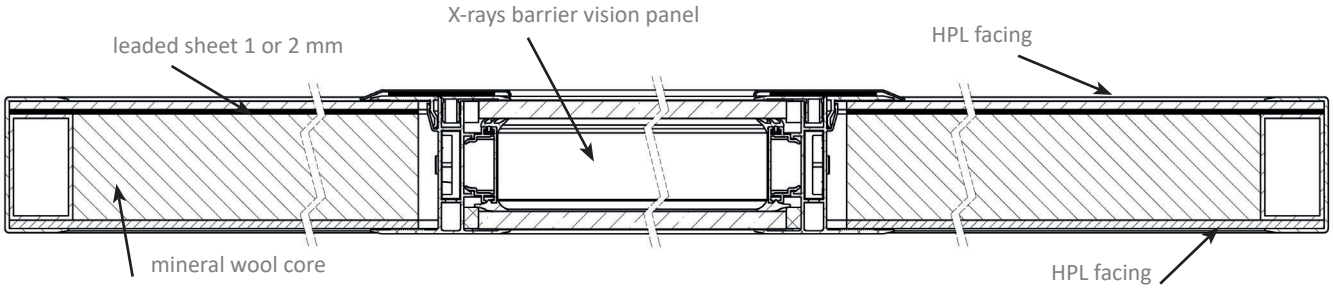
Leaded sliding door

X rays barrier

GSP-0610-E/B

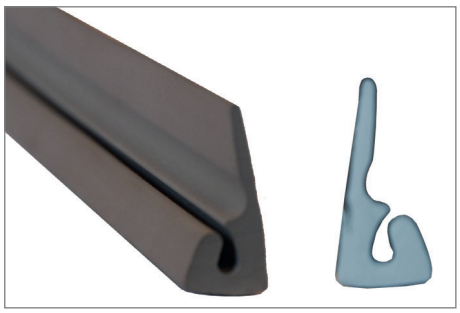
Dimensions

Maxi dimension : 1 leaf 2200 x 1400 mm *7.2' x 4.6'* (Overall dimensions Ht. 2545 x 3018 mm *8.3' x 9.9'*)
Other dimensions on request.



bottom guides easily washable

Thin and easy to clean rail cover

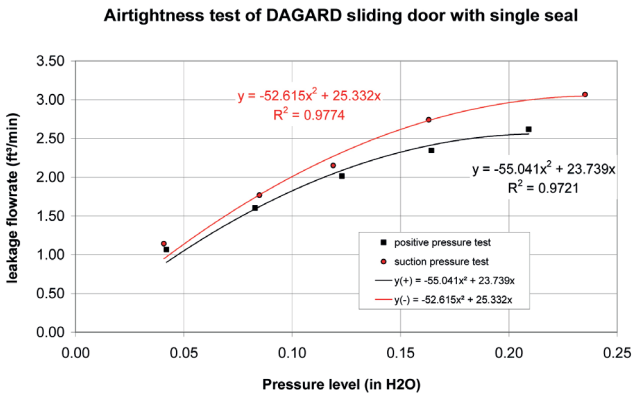


gasket easily washable

Permeability

The air permeability of the sliding doors has been measured and recorded in CETIAT test report N°1014119.

Permeability of sliding door in m^3/h depending on pressure or vacuum :



Nota :
- a door is under pressure when the action of the air tends to stick the leaf on the door frame
- a door is in vacuum when the action of the air tends to spread the leaf of the door frame

X-rays barrier glazing

GSP-0611-E/B

The X-rays barrier glazing consisted of 70% of lead oxyde are specially adapted to industrial or medical radiology rooms. They provide a protection against X-rays. They are used inside in ambiance where the atmosphere is dry and heated.

Technical characteristics

They set on a leaded metallic frame with a clipped aluminium glass stop.

X-rays barrier glass : equivalence Lead 2 mm *0.08''* , thickness from 7 to 8,5 mm *0.28'' to 0.33''*

Installation on a double skin partition

Standard dimensions

Height x Width (mm)
800 x 900 *2.6' x 2.95'*
800 x 1200 *2.6' x 3.9'*
800 x 1800 *2.6' x 5.9'*

Other dimensions on request.

Integrated accessories

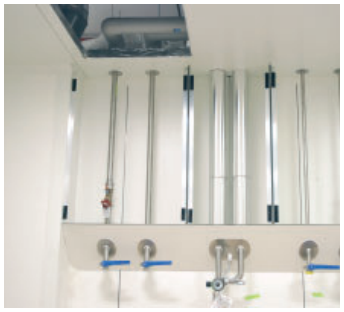
The bi-bloc partition makes easier the integration specific technical items.

Boxes

Horizontal channels

Raceways

Customized panels



Passages of fluids

Outlets, switches

Screens, control panels

Film viewers

Clocks

Technical partition with double removable metallic skins

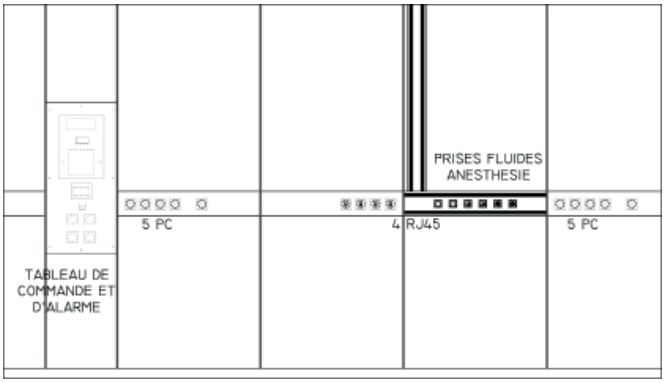
DAGARD

GSP-0602-E/B

This partition is recommended to separate 2 rooms, or for the incorporation of raceways, air ducts, negatoscopes, screens,... specially to separate operating theatres.

Design

Of variable thickness (150 mm *5.9″* is generally used), it is made up of 2 removable metallic skins on a double frame with an horizontal channel for dispensing fluids.



Removable claddings

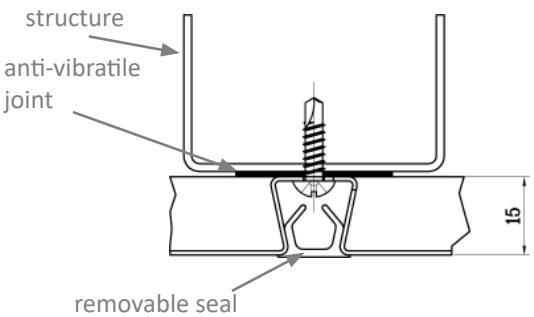
Fixing on the structure with screws

Metallic facings made of sheet stuck on plasterboard.

A choice of facings:

- galvanised steel sheet 8/10th *0.03″* coated with PET complex 55 µm
- stainless steel sheet, polished S4 8/10th *0.03″*
- stainless steel sheet 8/10th *0.03″* + PVC film
- stainless steel sheet + PVC + PET film, thickness 160 µm, white colour

Mechanical fixing by screwing on the stiles and rails composing the structure and with integration of an anti-vibratile joint.



Tightness with antibacterial elastomer seal, removable and washable, grey colour.

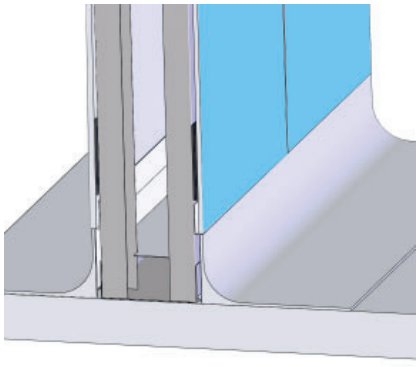
Technical partition with double removable metallic skins

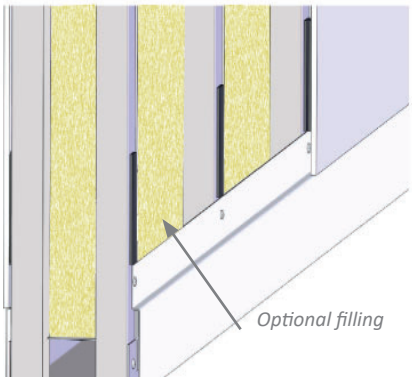
DAGARD

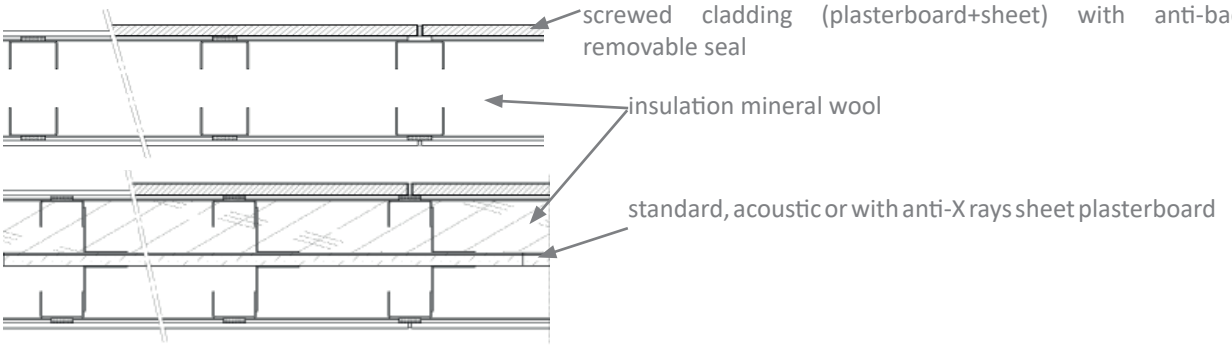
GSP-0602-E/B

Optional filling

Specific elements like lead sheets to stop X-rays (of thickness from 1 mm *0.04''* to 4 mm *0.16''* depending on the constraints) or items for acoustic performances (glass wool, plasterboard plates,...) can be integrated.







Acoustic performances

Depending on the filling elements: Rw (C;Ctr) = until 61 (-8;-16) dB

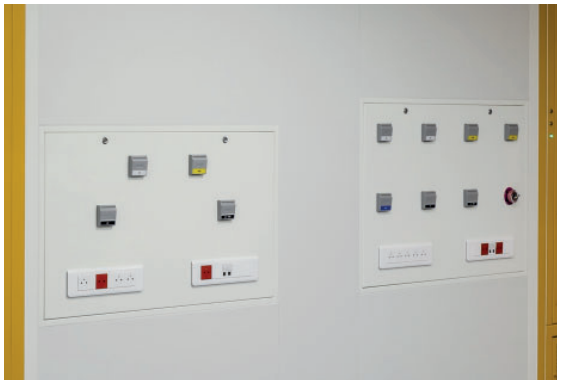
Technical boxes

GSP-0613-E/B

The technical box is a specific technical panel allowing the vertical passage of electrical cables and/or fluids.

Technical Characteristics

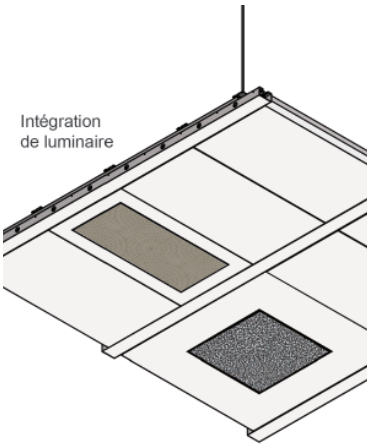
The technical box consists in one back box in polyester lacquered sheet and one covering sheet.



Ceiling SD100

Modular ceiling with removable claddings

GSP-0604-E/B



The walkable modular ceiling, of total thickness 100 mm *3.9''*, consists of metallic structure profiles and removable claddings (cassettes) allowing initial or future incorporation of cables or various equipment, light fittings or HVAC terminals.

Structure

Structural bearers are in lacquered steel sheet, with a section 100 x 60 mm *3.9'' x 2.36''*, and modular span 1100 mm *3.6'* or 1200 mm *3.9'*.
They are regularly pre-punched on the edge for perpendicular cables routing. Brackets for suspensions by M10 rods are integrated very 2400 mm *7.9'* /(1100 mm *3.6'*) 1200 mm *3.9'*.

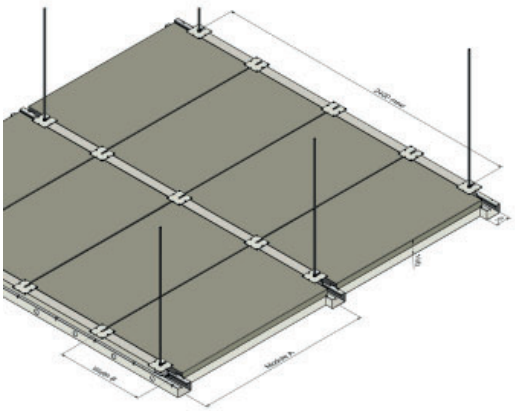
Claddings (Cassettes)

Lower claddings

The lower claddings are in lacquered steel of thickness 0,8 mm *0.03''* and clamped on the structural bearers.
Modular widths : 600 mm *1.97'* - 900 mm *2.95'*
Span 1200 mm *3.93'*
Cassettes dimensions 600 x 1100 *1.97' x 3.6'* - 900 x 1100 *2.95' x 3.6'*

System totally flush on under part of the bearers.

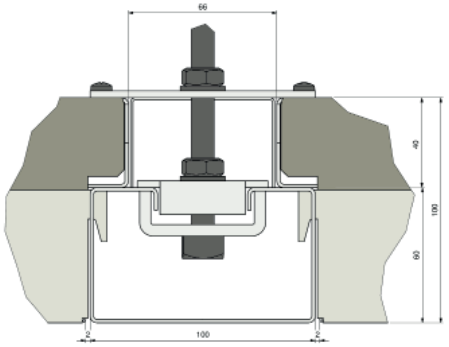
Various possible finishings:
- polyester lacquer 25 microns, iceberg white colour (close to RAL9010)
- PET complex 55 microns, iceberg white colour (close to RAL9010)



Precutting for incorporation are made in factory.

Upper claddings

The upper claddings in galvanised steel of thickness 2 mm *0.08''* are laid and secured on the structural bearers, independently removable.
Modular widths : 600 mm *1.97'* - 900 mm *2.95'*
Span 1200 mm *3.93'*
Cassettes dimensions 600 x 1100 *1.97' x 3.6'* - 900 x 1100 *2.95' x 3.6'*



Precutting for incorporation are made in factory or on site.

Airtightness

Airtightness by mastic (silicone caulk, MS Polymère,...).
Upper joint cover totally flush.

Optional infill

Optional infill in order to improve acoustics or thermal performances.

Mechanical performances

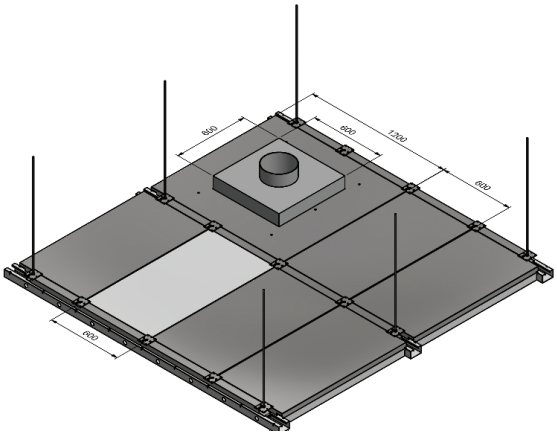
Allowed load uniformly distributed UDL : 2,5 KN/m² *52 lbf/ft²*.

Tight light fitting modules

A light fitting module is a set of flush light fitting with lamps or LED totally integrated in a ceiling cassette.
For the maintenance, the light fitting is accessible from the rear part of the ceiling.
Wide choice of lighting components and order or safety options (refer to the light fittings data sheet)

HVAC terminal modules

Specific ceiling modules for the perfect integration totally flush of various HVAC terminals filters, air entrance or extraction with our without filters.
Realisation case by case with the project.



Variants

- Grid ceiling frame work with crossed noggins.
- Non walk-able ceiling variant (without upper cladding)

Cleanline light fitting for SD ceiling

GSP-0606-E/B

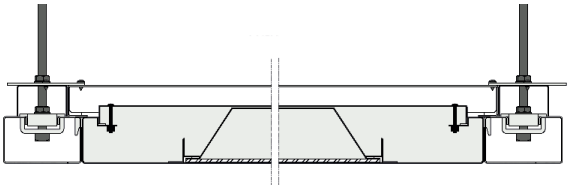
The DAGARD Cleanline light fittings are specifically designed for clean room environments.
This variant is dedicated to SD ceiling.

Composition

• Tight light fittings (IP 65) integrated into cassettes of module 1200 x 600 mm *3.93' x 1.97'* or 1200 x 900 mm *3.93' x 2.95'* for SD ceiling, totally flush with the other cassettes.
Directly fixed to the main runners of the structural grid, can be positioned at any location in the modular ceiling initially or in case of refurbishing.
• Walkable top cover galvanized steel sheet, totally flush to the upper part of the other blank panels (cassettes).
• 500/500 mm *1.6' x 1.6'* flush diffuser centred in the "cassette" with peripheral lacquered steel finish, same colour and aspect as blank panels (close to RAL 9010).
• High efficiency and long durability set of LED, various power and lumens are offered.

Technical characteristics

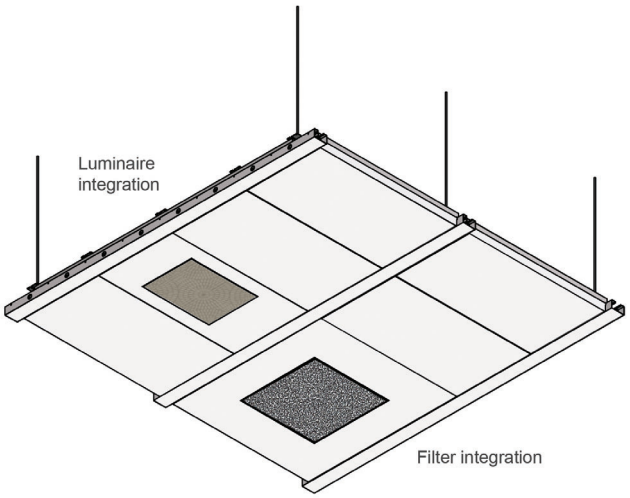
Installation is both quick and simple. It can be done by one person.
Rear access for an easy maintenance.



Power supply 220-240 V AC- 50/60 Hz

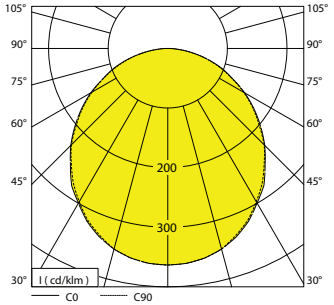
Dimensions of cassettes 1100 x 600 mm *3.61' x 1.97'* and 1100 x 900 mm *3.61' x 2.95'*

Options:
• integral 3 hour emergency
• HF dimmable DALI
• toughened glass



Photometry

CLEANLINE safety Performance



Key performance indicators
Ll/cw = 142
Power per m²/100 lux = 1.12 w

SAVING ENERGY AND REDUCING PAYBACK PERIOD

The benefits of LED Cleanline luminaires are:

- Less energy consumed, efficiencies of 142 II/cw (luminaire lumens per circuit watt)
- Less luminaires required, saving both luminaire and utilisation cost
- Less CO2 emissions, efficient lighting reduces carbon emissions.
- Less maintenance, LED lifespan can be over 60,000 hours.
- Increasing savings, LED luminaires meet the criteria for ECA (Enhanced Capital Allowances)
- Instant light, LEDs have no ‘run-up’ period or re-strike delay.
- Durability, LEDs have no fragile tube or filaments.
- Glass & mercury free, the ideal choice for cleanrooms and food safe environments.

Non walkable modular ceiling SD35

GSP-0605-E/B

Non walkable metallic ceiling designed for controlled environments.

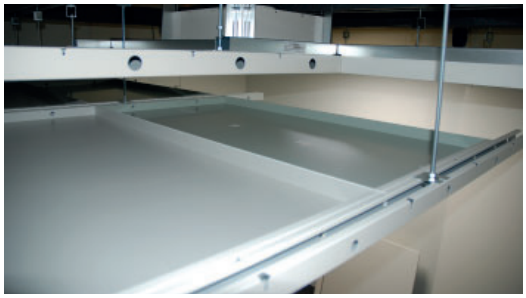
Principle

This ceiling consists of metallic structural bearers of section 50 x 35 mm *1.97'' x 1.38''*, length 3 m *9.8'* and of removable cassettes in lacquered steel 1150 x 600 mm *3.78' x 1.97'*, iceberg white colour (close to RAL9010).
Flush finishing.
Tightness by mastic.
Frame 1200 x 600 mm *3.93' x 1.97'*
Module 1200 mm *3.93'* between bearers profile axis.

Options

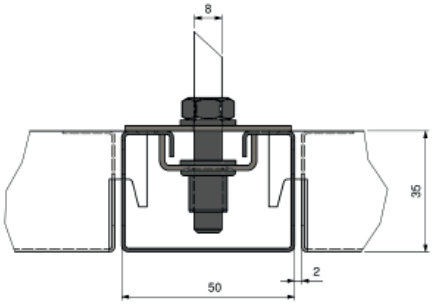
• Variant PET

• Adhesive foam for acoustic absorption, integrated into cassettes in factory.



Installation

Edge profiles
Bearers every 1200 mm *3.93'* hanging to the main or the second (to provide) structure by threaded rods M8 every 1200 mm x 1200 mm *3.93' x 3.93'*.
Infill cassettes



Integration of accessories or equipment :
All heavy components (more than 5 kg *11 lb*), light fittings, HVAC terminals, etc,..., must be hanging to the structure.

Ceiling fixings for panels SI-SM-ST

Ceiling panels can be :

• self-supporting rests on the vertical partitions with, eventually, strengthening by «Omega» profiles or mesh wire frames

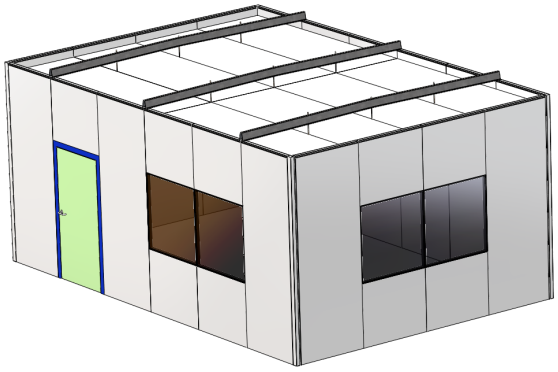
or,

• suspended according to the span depending to the accessibility or not of the ceiling, to the size and the frequency of openings made for accessories integration.

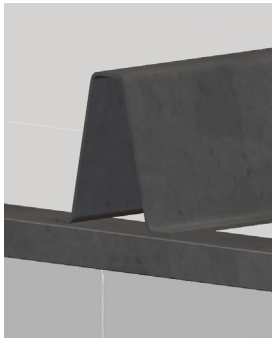
Warning:
Ceilings cannot be used as walkways. They cannot be used as storage areas, temporary or definitively. They only support the occasional passage of one person for maintenance.

Ceiling secured by «Omega» fitting

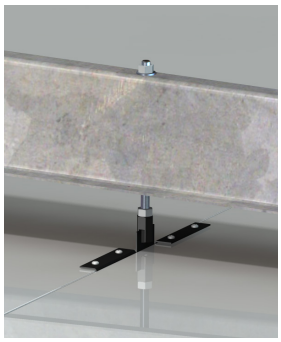
Principle: Setting up of Omega fitting perpendicular or parallel to right of sealants.
The center distance between profile is according to the acceptable span of panels (limited at 2,40 m *7.87'*) or by the Omega capacity.



View of construction with suspension by Omega



Repartition piece



Panel fixing to the Omega

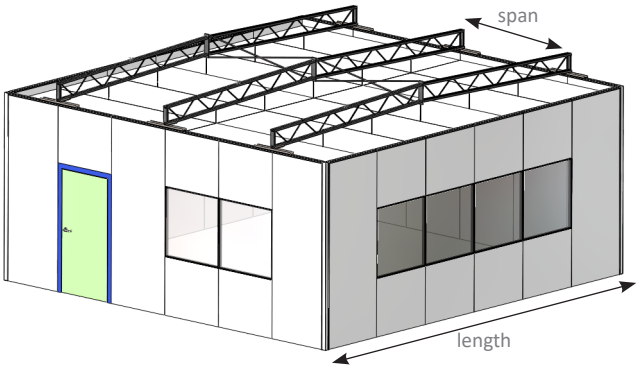
Omega height = 120 mm *4.7"* or 170 mm *6.7"*

	Omega height 120 mm *4.7"* **thickness 3 mm** *0.11"* **I = 154 cm⁴** **I/v = 25 cm³** **maxi length = 6 m** *19.7'*	**Omega height 170 mm** *6.7"* **thickness 3 mm** *0.11"* **I = 392 cm⁴** **I/v = 44 cm³** **maxi length = 7 m** *23'*
Omega span	**Maximum centre distance between Omegas**	**Maximum centre distance between Omegas**
until 4 m 13.1'	2,40 m 7.9'	2,40 m 7.9'
4,40 m 14.4'	2,00 m 6.6'	2,40 m 7.9'
4,80 m 15.7'	1,50 m 4.9'	2,40 m 7.9'
5,20 m 17'	1,20 m 3.9'	2,40 m 7.9'
5,60 m 18.4'	1,20 m 3.9'	2,20 m 7.2'
6,00 m 19.7'	1 m 3.3'	1,80 m 5.9'
6,50 m 21.3'	-	1,40 m 4.6'
7 m 23'	-	1,20 m 3.9'

Base of calculation:
Without clear elements, take into account ***Uniformed load : 80 kg/m²*** *Safe deflection : 1/200th of span*

Ceiling with mesh wire frame

Principle: Setting up of supporting mesh wire frames, braced together (at least 2) to make the ceiling self-supporting.
The center distance between the frame elements is function of the acceptable span of panels (limited at 2,40 m *7.87'*) or the frame elements capacity.



View of a construction with secured to supporting frame

Repartition piece

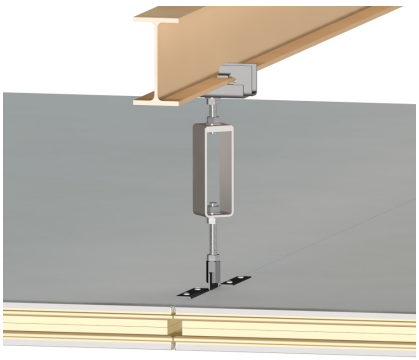
Framework height = 320 mm *12.6''*

Fixing panel to frame

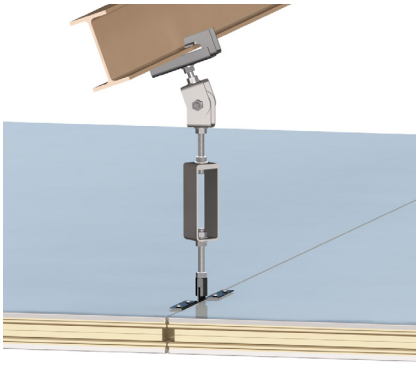
Frame length	Maximum span between frameworks	Frame length	Maximum span between frameworks
6,40 m *21'*	2,40 m *7.87'*	10,80 m *35.4'*	2,20 m *7.21'*
6,80 m *22.3'*	2,40 m *7.87'*	11,20 m *36.7'*	2,00 m *6.56'*
7,20 m *23.6'*	2,40 m *7.87'*	11,60 m *38.1'*	1,80 m *5.9'*
7,60 m *24.9'*	2,40 m *7.87'*	12,00 m *39.4'*	1,70 m *5.58'*
8,00 m *26.2'*	2,40 m *7.87'*	12,40 m *40.7'*	1,50 m *4.92'*
8,40 m *27.6'*	2,40 m *7.87'*	12,80 m *42'*	1,40 m *4.59'*
8,80 m *28.9'*	2,40 m *7.87'*	13,20 m *43.3'*	1,25 m *4.10'*
9,20 m *30.2'*	2,40 m *7.87'*	13,60 m *44.6'*	1,15 m *3.77'*
9,60 m *31.5'*	2,40 m *7.87'*	14,00 m *45.9'*	1 m *3.28'*
10,00 m *32.8'*	2,40 m *7.87'*		
10,40 m *34.1'*	2,40 m *7.87'*		

Base of calculation: ***Without clear elements, take into account*** ***Uniformed load : 80 kg/m²*** *Safe deflection : 1/200th of span*

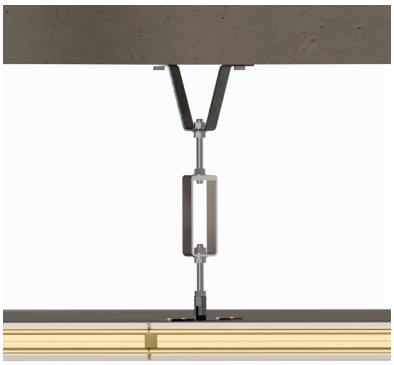
Ceiling fixings from building



Suspension to metallic framework parallel to ceiling by single tensioner (threaded rod, nut, socket, pliers, tensioner, ceiling support)

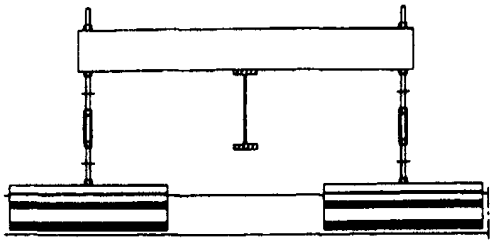


Suspension to frame with swivelling fitting nonparallel to ceiling by tensioner and adjusting hanger



Suspension under concrete slab by fastened with bracket fixed with 2 plugs

Other type of suspension : double fixing by rudder on purlin.



Coatings

You must define your project indoor and the outdoor type of atmosphere in order to select the most appropriate types of panel facings.

Indoor atmosphere

With no clean room specific data, we have to reply on food and food processing industries classification for metallic panel facing types.

Aggressivity	Cleaning	Hygrometry	Temperature	Examples	Minimum category of appropriate coatings (NF P34.301)	Recommended coatings
Ai 1 Non-aggressive environment	Regular maintenance	Low	-40°C to +25°C -40° to +77°F	Storage of wrapped dry products	I	Polyester 25 µm PVDF 35 µm PVC 120 µm PET 55 µm Stainless steel 304 Stainless steel 304 + PVC + PET
Ai 2 Non-aggressive environment	Regular maintenance	Average	0°C to +25°C +32° to +77°F	Storage in controlled atmosphere	II	
Ai3 Non-aggressive environment	No Intensive cleaning	High	0°C to +25°C +32° to +77°F	Storage, processing moist ambient	IIIa	
Ai4 Slightly aggressive environment	No Intensive cleaning	High	0°C to +30°C +32° to +86°F	Preparation of pre-cooked foods	IVb	PVDF 35 µm PVC 120 µm PET 55 µm Stainless steel 304 Stainless steel 304 + PVC + PET
Ai5 Aggressive environment	Intensive cleaning	High	0°C to +35°C +32° to +95°F	Cooking rooms, dryers	Vc	PVC 120 µm PET 55 µm Stainless steel 304 Stainless steel 304 + PVC + PET
Ai6 Very aggressive environment	Very intensive cleaning	Saturated	0°C to +40°C +32° to +104°F	Showers washrooms	(*)	Stainless steel 304 + PVC + PET Stainless steel 316L

Extract from DTU 45.1 – Food handling facilities

N.B. :
- The table is provided as a guide only, the classes must be appropriate to the controlled conditions of each facility.
- A single parameter could justify the selection of ambient conditions (hygrometry, cleaning frequency, chemical aggressivity, salinity)

Aggressivity criteria

1 – No aggressive ambient conditions: environment presenting no aggressivity due to corrosive chemical components and/or microorganisms.

2 – Slightly aggressive ambient conditions: environment with no aggressive ambient conditions but whose walls could occasionally be splashed with slightly aggressive liquids.

3 – aggressive ambient conditions: environment where acid, basic or saline acid vapours occur and/or with presence of microorganisms and/or likely to be subjected to disinfection.

4 – very aggressive ambient conditions: environment where acid, base or saline acid vapours or gas occur and/or with presence of microorganisms and/or frequent risk of splashing of walls and/or likely to be subjected to disinfection with aggressive products.

Cleaning criteria

1 – regular maintenance: this involves regular supervision and occasional cleaning (frequency from one to several years according to the use of the facility) using non-aggressive methods and resources (no pressure washing).

2 – non-aggressive cleaning (usually on monthly basis): cleaning performed with neutral products at temperature of < 30°C *86°F* and low pressure spraying of ≤ 0.3Mpa *6 266 lbf/sq.ft*.

3 – intensive cleaning (usually on daily basis): cleaning performed with neutral products (ph 5 to 9) at temperature of <40°C *104°F* and pressure of 3.5 Mpa *73 099 lbf/sq.ft* (pressure of spray nozzle).

4 – very intensive cleaning (usually on daily basis): cleaning performed with occasional use of extreme pH (<5 or >9) and/or high temperature (<60°C *140°F*) and/or high pressure washing (pressure <5Mpa *104 430 lbf/sq.ft* at output from nozzle and impact pressure <0.04Mpa *835 lbf/sq.ft*).

Humidity criteria

1 – humidity ambient conditions: ambient conditions are said to be «humid» where the hygrometry of the facility is high and if under the operating conditions of the facility there is a risk of condensation.

2 – very humid ambient conditions: ambient conditions are said to be very humid where the hygrometry of the facility is very high and if under the operating conditions of the facility the risk of condensation is frequent.

3 – saturated ambient conditions: ambient conditions are said to be saturated where the hygrometry of the facility is very high and if there is a permanent risk of condensation in the operating conditions of the premises.

Outdoor atmosphere

Outdoor atmospheres are classified by categories in order to comply with NF P 34-301 specifications for the selection of panel facings.

	Rural or no polluted atmosphere III	Urban or industrial atmosphere		Marine atmosphere				Specific atmosphere	
		normal III	harsh	20 to 10 km *12.43 to 6.22 mi* III	10 to 3 km *6.22 to 1.87 mi* IV	< 3 km *1.87 mi* V	mixte	high UV	special
Galvanized or coated with alloy (zinc and aluminium) steel									
Polyester 25 µm *1mil*	●●	●●	●	●●	-	-	-	-	●
PVDF 35 µm *1.3mil*	●●	●●	●	●●	●●	-	-	-	●

- unsuitable
● consult maker
●● suitable

N.B.: the PET and PVC system are unsuitable for exterior use.

Technical characteristics of the supports

- z225 hot-galvanized **pre-powder coated or lined steel sheet**, mini shade s280 GD+Z, according to standard NF EN 10326, thickness 0,50 mm *0.019''*, 0,63 mm *0.024''* or 0,75 mm *0.029''*

- **Stainless steel sheet** shades, thickness 0,60 mm *0.023''* or 0,80 mm *0.031''*
  * x5CrNi 18-10 (EN 1-4301 or AISI 304)
  * x2CrNiMo17-12-2 (EN 1-4404 or AISI 316L)

- **Pre-powder coated aluminium** shade EN AW.3004 H46 according to standard EN 1396, thickness 0,67 mm *0.026''*

Test types and results of various panel facings on galvanized steel sheets

	Testing standards and conditions	Polyester powder coat 25 µm	Conductive powder coat	PVDF powder coat 35 µm	PVC film 120 µm	PET 55 µm system
Category	XP P 34-301	IIIa		IVb	Vc	Vc
Gloss	ISO 2813 (ECCA-T2) incidence 60°	30 ± 6%	30 ± 6%	30 ± 6%	25%	30 ± 6%
Shock resistance	ISO 6272 (ECCA-T5)	No loss of panel face adherence				
Adherence by bending	ISO 1519 (ECCA-T7)	3t	3t	2t	0t	1t
Resistance to humidity	ISO 6270 (ECCA-T9)	≥ 1000 h	≥ 1000 h	≥ 1000 h	≥ 1000 h	≥ 1500 h
Resistance to neutral salt spray	ISO 7253 (ECCA-T8)	≥ 360 h	≥ 360 h	≥ 500 h	≥ 500 h	≥ 500 h
Chalk hardness	ISO 3270 (ECCA-T4)	H	H	HB	2H	2H
Adherence to panel face (grid pattern)	ISO 2409		Class «0»			
Panel face resistance to heat	ISO 3270 (ECCA-T13)	100 h to 80°C *176°F* ΔE ≤ 0,1		100 h to 70°C *158°F* ΔE ≤ 0,1	100 h to 70°C *158°F* ΔE ≤ 0,1	
Resistance to abrasion	ISO 7784	40 mg	5.6 mg	30 mg	10 mg	
Reaction to fire	NF P 92-507	M0	M0	M0	M1	M0
Surface resistivity	ASTM D257	10^{11} Ω/□	10^{7} Ω/□			

Special warning for HPL panel face

Compact laminated sheets are very sensitive to hygrometry conditions : high variation of dimensions under extreme high or low ambient humidity can occur.
For that reason, several precautions must be taken at the different production or delivery stages : HPL sheets or finished HPL panels must be stored under tight controlled ambient conditions: from 10 to 30°C *50°F to 86°F* and relative humidity 40 to 60 %). Finished HPL panels should not be used under high temperature and/or high relative humidity conditions.
Storage and working conditions : The 2 sides of the HPL panels must remain aerated and within the average temperature range of 10 to 30°C *50°F to 86°F* and relative humidity from 40 to 60 %.
Ignoring these warnings, bending or twisting of the HPL panels may occur.

Coatings

Resistance of panel faces to chemical products

Information given as a guide only

Coatings		Polyester lacquer	Conductive lacquer	PVDF 35 µm *1.38 mils*	PVC 120 µm *4.7 mils*	PET 55 µm *2.16 mils*	Compact laminated	Stainless steel 304 + PVC + PET	Stainless steel 304	Stainless steel 316L
Chemical products	**Chemical family**									
Acetone	Ketone	⛔	⛔	⛔	⛔	⛔	☺	☺	☺	☺
Acetic acid (CH_3COOH) (vinegar) 10%	Acid	⛔	⛔	☺	☺	☺	☺	☺	☺	☺
Hydrochloric Acid (HCl) 10%	Acid	⛔	⛔	⛔	⛔	☺	☺	✓	⛔	☺
Nitric acid (H_2NO_3) 10%	Acid	⛔	⛔	☺	☺	☺	☺	☺	☺	☺
Phosphoric acid (H_3PO_4) 10%	Acid	⛔	⛔	☺	☺	☺	☺	☺	☺	☺
Sulphuric acid (H_2SO_4) 10%	Acid	⛔	⛔	☺	☺	☺	☺	☺	☺	☺
Ethyl alcohol – Methylated spirit	Alcohol	☺	☺	☺	☺	☺	☺	☺	☺	☺
Isopropyl alcohol	Alcohol	☺	☺	☺	☺	☺	☺	☺	☺	☺
Ammonia - NH_4OH	Base	⛔	⛔	☺	☺	☺	☺	☺	☺	☺
Ammonium bisulphite	Salt	☺	☺	☺	☺	☺	☺	☺	☺	☺
Buthanol	Alcohol	☺	☺	☺	☺	☺	☺	☺	☺	☺
Sodium hypochlorite - NaClO (Javel water) high concentration		⛔	⛔	⛔	⛔	☺	☺	✓	☺	☺
Therebentine	Alcohol	☺	☺	☺	☺	☺	☺	☺	☺	☺
MEK (Methyl ethyl Ketone)	Ketone	⛔	⛔	⛔	⛔	⛔	☺	⛔	☺	☺
Methanol	Alcohol	☺	☺	☺	☺	☺	☺	☺	☺	☺

Caption ⛔ Prohibited ☺ Recommended ✓ Suitable To be studied case by case

Resistance of panel faces to chemical products

Information given as a guide only

Coatings		Polyester lacquer	Conductive lacquer	PVDF 35 µm *1.38 mils*	PVC 120 µm *4.7 mils*	PET 55 µm *2.16 mils*	Compact laminated	Stainless steel 304 + PVC + PET	Stainless steel 304	Stainless steel 316L
Chemical products	**Chemical family**									
Phenol	Alcohol	☺	☺	☺	☺	☺	☺	☺	☺	☺
Potash - Potassium hydroxide - KOH - 10%	Base	⛔	⛔	☺	☺	☺	☺	☺	☺	☺
Alkaline industrial soap	Base soap	⛔	⛔	☺	☺	☺	☺	☺	☺	☺
Chlorinated industrial soap	Neutral soap	⛔	⛔	☺	☺	☺	☺	☺	☺	☺
No chlorinated industrial soapé	Neutral soap	☺	☺	☺	☺	☺	☺	☺	☺	☺
Kitchen salt (Sodium chloride - NaCl)	Salt	⛔	⛔	⛔	⛔	⛔	☺	☺	☺	☺
Kitchen salt + use of acidic cleaning agents	Salt + Acid	⛔	⛔	⛔	⛔	⛔	⛔	✓	⛔	☺
Sodium hydroxide - NaOH - 10%	Base	⛔	⛔	⛔	☺	☺	☺	☺	☺	☺

Panel face resistance to hydrogen peroxide H2O2 (oxygenated water) (fogging tests)

Materials / Decontamination frequency	Pre-coated sheet - polyester 25 µm *0.98 mil* - PVDF 35 µm *1.38 mil* - lacquer thk. ≤ 50 µm *1.97 mil*	Painted sheets - paint 50 µm *1.97 mil* ≤ thk. < 80 µm *3.15 mil*	Painted sheets - paint thk. ≥ 80 µm *3.15 mil*	Film clad sheets (process) - PET 55 µm *2.16 mil* - PVC 120 µm *4.7 mils*	Compact laminated	Stainless steel 304 + PVC + PET	Untreated stainless steel 304, 316L,
Low	⛔	⛔	✓	☺	☺	☺	☺
Average	⛔	⛔	✓	☺	✓	☺	☺
High	⛔	⛔	⛔	✓	✓	✓	☺

Refer to Chapter 12 – Panel face shade chart for further information.

Doors and door frames colour chart

DAGARD

GSP-1208-E/B

Midnight blue
RAL 5011

Pacific blue
RAL 5010

Horizon blue
RAL 5015

Glacier blue
Pantone 278C

Lagoon green
RAL 6027

Meadow green
RAL 6018

Forest green
RAL 6029

Ours colours are close to RAL and Pontone references.

Sulphur yellow
RAL 1016

Pale orange
Pantone 1495

Bright pink
RAL 3015

Molten red
RAL 3020

Canyon red
RAL 3013

Storm grey
RAL 7040

Pebble white
RAL 9002

Iceberg white
RAL 9010