

High Containment Laboratory

design considerations
ed 001

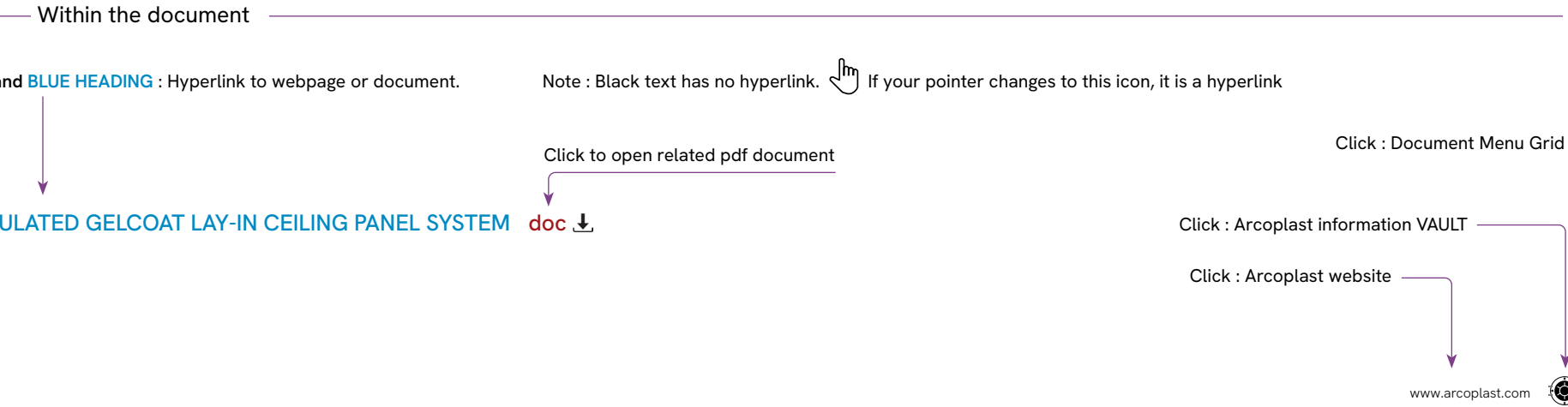
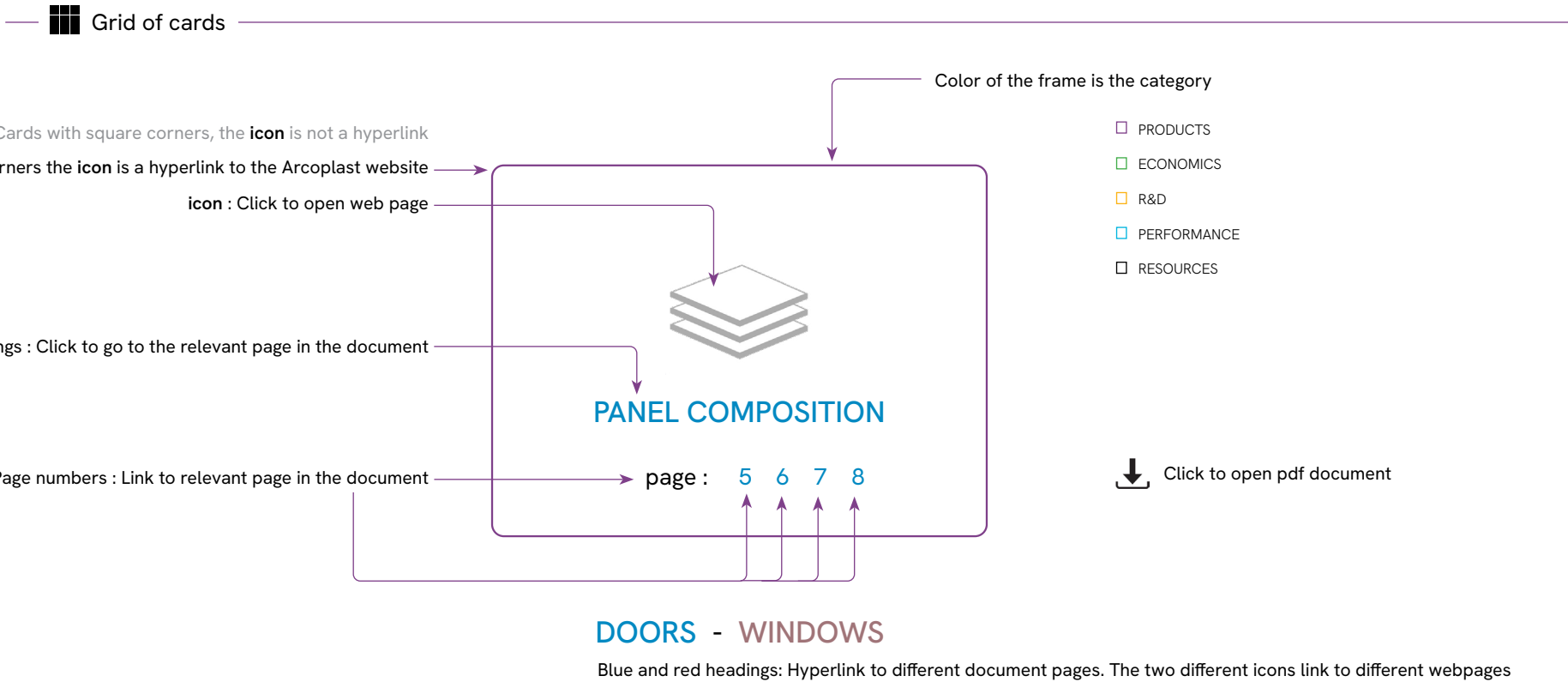
Arcoplast Resources document : Quick keys & menus for PDF presentations : [download](#) 

2025
22 June




To get the most out of this document and interconnected Arcoplast Website : Here are some insights how the hyperlinks work...

Please note : This document is an introduction to the R&D of Arcoplast, for a full reveal of information please visit the Arcoplast website or contact the Arcoplast team.



INDUSTRIES



BEVERAGES



BIOSECURITY / BIO SAFETY



FOOD



HEALTH



PHARMACEUTICAL



VIVARIUM

Knowledge Objectives

- 1 Design and applications of advanced composite materials.
- 2 Integration and performance of dry build construction integrated with metal framing systems.
- 3 High-level risk containment guidelines.
- 4 Guidelines for performance-base seismic design of architectural non-structural wall, partitions, ceilings and components.
- 5 High level risk containment in high level risk seismic zones.

- PRODUCTS
- ECONOMICS
- R&D
- PERFORMANCE
- RESOURCES



PANEL COMPOSITION

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SEALANTS - PENETRATIONS

↓



DRY BUILD

↓



ARCOFORM

↓



DOORS - WINDOWS



HATCHES

↓



VLADS

↓



BUDGET COST



PANEL RESTORATION



CERTIFICATION & COMPLIANCE



BARRIER PERFORMANCE



FIRE & SMOKE

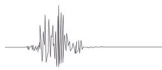


IMPACT STRENGTH



LOAD BEARING

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SEISMIC DESIGN

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RADIO FREQUENCY



SOUND TRANSMISSION



CLEANING DECON



CHEMICAL RESISTANCE



MOLD FUNGUS



VOC's



TOPOGRAPHY



INSTALLATION MANUALS



SHOP DRAWING LIBRARY



WHITE PAPERS



3 x ARCOPLAST PRIMARY BARRIER SYSTEMS

Panels can be cut from 1 foot square, up to the different sizes as described



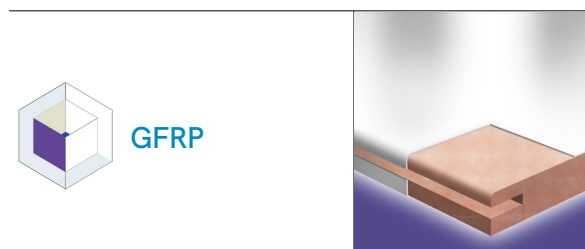
ACRYLOYL

Dimensions	Thickness	Weight
up to 4'-0" x 16'-0" 1200 x 4875 mm	1/4" 6mm	2.0 Lbs./Sq.Ft 9.7 Kg/M ²
up to 4'-0" x 16'-0" 1200 x 4875 mm	3/8" 9.5mm	3.5 Lbs./Sq.Ft 17.09 Kg/M ²
up to 4'-0" x 16'-0" 1200 x 4875 mm	1/2" 12.5mm	4.4 Lbs./Sq.Ft 21.48 Kg/M ²
Acrylic Resin Base - Mineral Fillers - ATH		



GFRMC

Dimensions	Thickness	Weight
up to 9'-0" x 45'-0" 2743 x 12192 mm	13/64" 5mm	1.1 Lbs./Sq.Ft 5.4 Kg/M ²
up to 9'-0" x 45'-0" 2743 x 12192 mm	3/8" 9.5mm	1.4 Lbs./Sq.Ft 6.8 Kg/M ²
Gelcoat - Resin - Glass Fibers - Mat Core - ATH		



GFRP

Dimensions	Thickness	Weight
up to 4'-0" x 12'-0" 1200 x 3000 mm	13/64" 5mm	2.0 Lbs./Sq.Ft 9.7 Kg/M ²
up to 4'-0" x 12'-0" 1200 x 3000 mm	3/8" 9.5mm	3.6 Lbs./Sq.Ft 17.5 Kg/M ²
up to 4'-0" x 12'-0" 1200 x 3000 mm	1/2" 12.5mm	4.6 Lbs./Sq.Ft 22.5 Kg/M ²
Gelcoat - Resin - Glass Fiber - ATH		

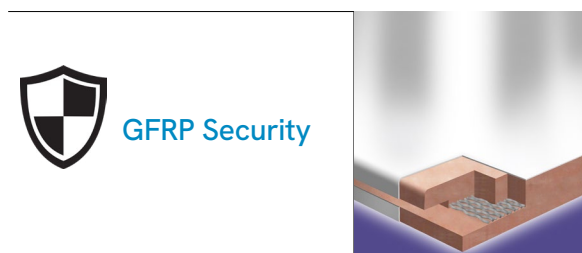
Note : ATH - Aluminum Hydroxide also known as Alumina Trihydrate : A halogen free, flame retardant and smoke suppressant additive.

3 x ARCOPLAST SPECIALIZED PRIMARY BARRIER SYSTEMS

Panels can be cut from 1 foot square, up to 4ft x 12 ft



Panel dimensions	Thickness	Weight
up to 4 ft x 12 ft 1200x 3000 mm	1/2 inch 12.5 mm	7.1 Lbs/Sq Ft 35.32 Kg/M ²
Designed for Radiology suits or Radiopharmaceutical cleanrooms. Note the lead sheet is available in three thicknesses - Designed for nuclear medicine and radiation containment.		

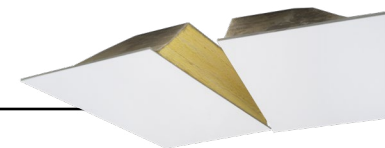


Dimensions	Thickness	Weight
up to 4 ft x 12 ft 1200x 3000 mm	3/4 inch 19 mm	7.8 Lbs/Sq Ft 38.3 Kg/M ²
Designed for maximin security cleanrooms, the GFRP Security panel has a layer of steel mesh embedded into the matrix of the panel.		



Dimensions	Thickness	Weight
up to 4 ft x 12 ft 1200x 3000 mm	3/4 inch 19 mm	6.7 Lbs/Sq Ft 32.5 Kg/M ²
GFRP Ultra HD heavy duty panels are designed for cleanrooms that require high impact primary barriers typically used where large animals are being housed.		
Click here for full report : ↓ Impact tests conducted by: Ronnal P. Reichard Ph.D.		

Note : When you click on the hyperlink, it takes you to the website page for GFRP... Scroll down to the menu for Specialized Panels



The i-Panel consists of a high density rigid glass fiber insulation core, encapsulated by a saturated chopped strand fiber mat shell. The shell and GelCoat surface protect the inner core from moisture, vermin, dust and contaminants. The closed-edge panel does not shed glass fibers, collapse or decompress over time.

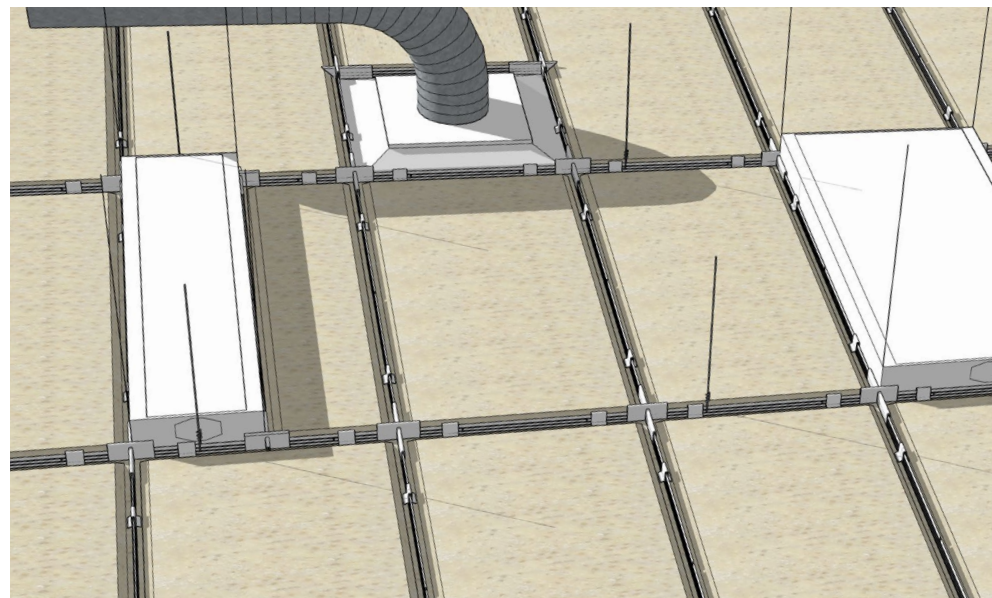
Standard panel sizes	
2x2 feet	600 x 600 mm
2x4 feet	600 x 1200 mm
4x4 feet	1200x1200 mm

Thickness		Weight per Sqft	Weight per Sq M	K Value	R Value
1/2 in	12.5 mm	1.15 lbs	5.61 Kg	K 0.276	R 2.368
1 in	25 mm	1.25 lbs	6.09 Kg	K 0.255	R 4.523
1 1/2 in	37.5 mm	1.35 lbs	6.58 Kg	K 0.252	R 6.648
2 in	50mm	1.45 lbs	7.07 Kg	K 0.260	R 8.344

i-Panel is a light weight lay-in ceiling panel designed to fit into the TR35 Grid or any other T Grid system. It is fire retardant, impermeable, chemical and stain resistant.

i-Panels are available in most PMS colors, standard color is Pristine White.

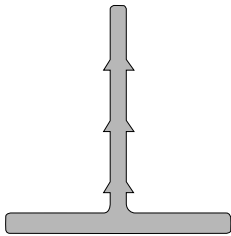
Conclusion : The i-Panel is the lightest panel in the TR35 system. The i-Panel performs exceptionally well in : Wet, dry, hot, cold, toxic and non toxic environments, where controlled temperatures and high standards of hygiene are essential. The i-Panel has a long life cycle with no rejuvenating maintenance programs making it easy to clean and efficient to decontaminate.



TR35 Suspended ceiling grid with i-Panel lay-in ceiling panels



TR-35 is Arcoplast's suspended lay-in ceiling panel grid system designed for use in high-demand wet and/or dry cleanrooms that typically have toxic or sterile environments. Unlike standard metal grid systems, the TR-35 grid rails are manufactured from *FRP (Pultruded Fiberglass thermoset polyester resin), hence there are no ongoing maintenance programs. The TR35 grid system is unaffected by galvanic action, corrosion, or oxidization, it does not flake, peel, blister, delaminate, or sag over time, and does not support microbial activity such as fungus, mold, bacteria, viruses.



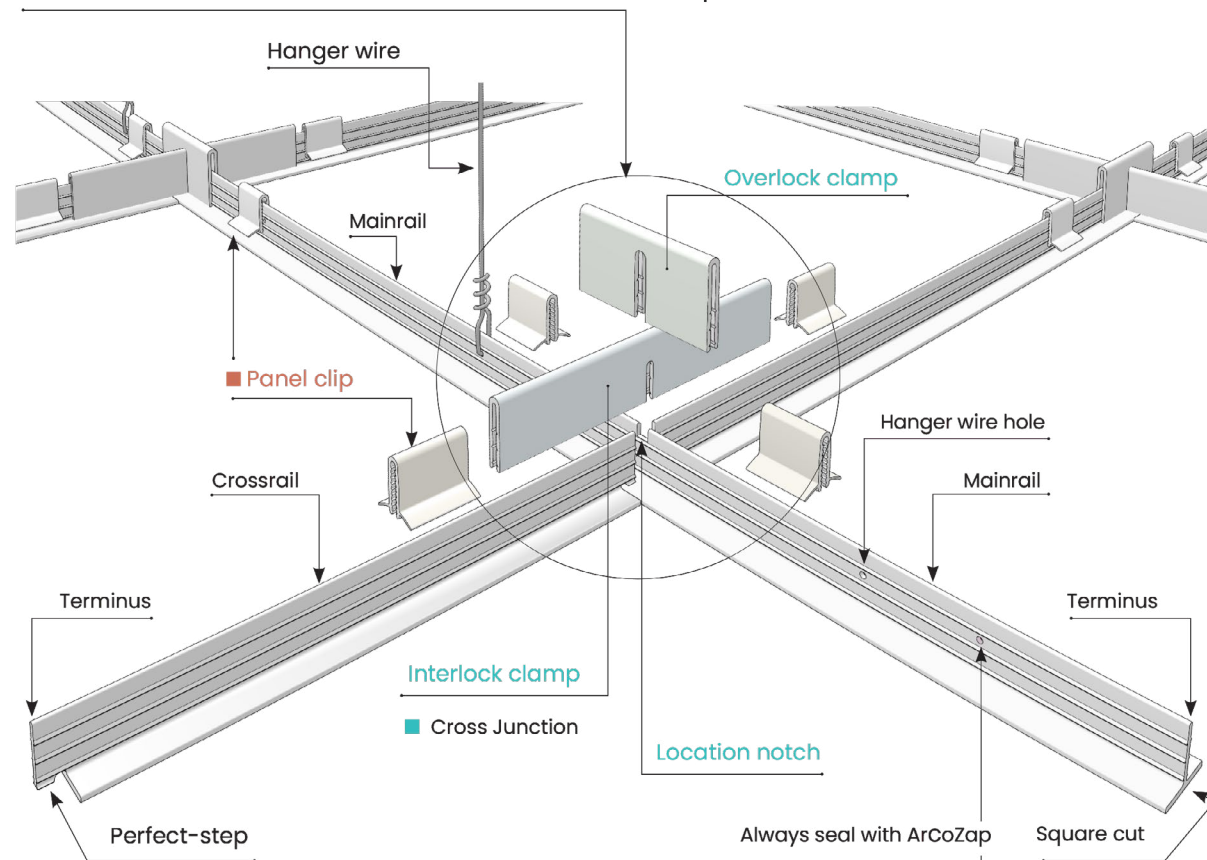
TR35 Rail * FRP : Pultruded Fiberglass thermoset polyester resin

The TR35 system is modular in design, comprising of clamps, rails, clips, it require no specialized tools to install. The grid is able to assemble in a variety of formats and it can be fitted with airtight, water-tight ceiling panel seals or gaskets.

A well trained crew will quickly and efficiently install the grid with minimal waste, resulting in an aesthetically pleasing flush to flush grid to panel interface.

TR35 is a fully engineered highly robust suspended ceiling system rated : BSL-2 and up to, but not including BSL-3.

TR35 Rail : Cross Junction : Interlock and Overlock Clamp



Note : On-site custom hanger wire holes can be drilled, no closer than 3 inches | 75 mm





ADHESIVES SEALANTS FINISHING COMPOUNDS & REPAIR KIT [doc](#)

Designed for high containment-critical environments, including BSL-3, BSL-3 Ag, BSL-4, pharmaceutical & nutraceutical applications, animal & life sciences, food and beverage processing facilities.

Three in one : Adhesive sealant finishing compound



A-1010 Bio-Seal



A-1010 Bio-Seal is a two-component, equal mix, bright white, high-strength urethane structural adhesive used to bond and seal Arcoplast fiberglass gel coated panels, fiberglass accessories, aluminum moldings and metal trim. Bonds and seals with a non-porous, non-yellowing, high-gloss finish. Environmentally neutral after curing. Has no odor, even while curing.

Color : Clear/ White. Twin Cartridge : 13.5 oz | 400ml mix ratio 1:1

Test Report Reference - NSF International - Determination of Extractives Residue in According to US FDA 21 CFR 177.2600

Structural adhesive : Two-part methacrylate



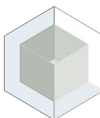
A-2020



A-2020 is a two-part methacrylate, structural bonding adhesive designed for structural bonding of interior architectural finishes such as wall and ceiling panels, finishing trims, moldings, complex applications and in doing so eliminates the need for exposed fasteners.

Color : Amber. Twin Cartridge : 13.5 oz | 400ml mix ratio 1:1

Surface restoration kit



A-5050



A-5050 is a two-component blended methacrylate compound developed specifically for filling Acryloyl Engineered Polymer panel surface scratches, cracks, deep gouges and various panel perforations including core inserts, facilitating a full panel surface restoration.

Color : White. Twin Cartridge : 2.5 oz | 50ml mix ratio 1:10

Note : For further information relating to sealants and the repair kit, refer to - Volume 1 The Science of Sealants, Adhesives and Penetrations

DIRECT ATTACHMENT and SEAMLESS PENETRATIONS

A-1010 Bio-Seal is a three in one, adhesive sealant finishing compound designed to create seamless penetrations and is used to direct attach fixtures to walls.

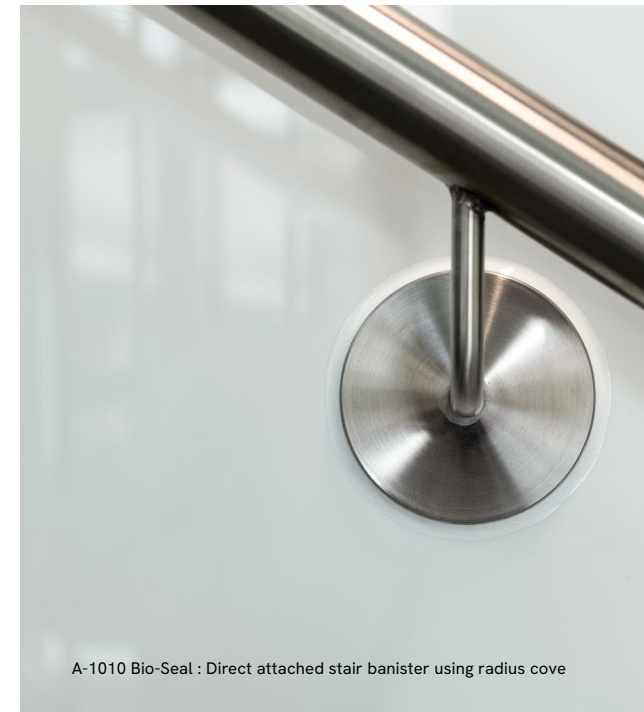
A-2020 structural adhesive and A-1010 Bio-Seal are designed to work in a staggered combination. Meaning A-2020 structural adhesive is used to bond different materials together such as panels to framing or to substrates. Four hours later once cured, A-1010 Bio-Seal is used to seamlessly seal and finish the : Joint, radius cove and sealed penetration.



A-1010 Bio-Seal : Direct Attach and seamless penetration



A-1010 Bio-Seal & A-2020 : Direct Attach and seamless penetration



A-1010 Bio-Seal : Direct attached stair banister using radius cove

A-1010 Bio-Seal has a perm rate of 0.002 and depending on the surface, it has an impressive Lap Shear strength ranging from : 681.1 psi to 1164.2 psi.

A-2020 Structural Adhesive, depending on the surface has an impressive Lap Shear strength ranging from : 976 psi to 2088.1 psi.



Animal & Life Sciences ▪ Bio-security / Bio-Safety ▪ Food & Beverage ▪ HealthCare ▪ Pharmacy USP 797-800 ▪ Vivarium

Questions often asked by Architects, Designers, Contractors, Owners :

- 1/ Can Arcoplast primary barrier panels meet Biosafety containment standards for high level risk laboratories in high level risk seismic zones?
- 2/ Are Arcoplast primary barrier panels suitable for lab renovations or only in new instruction?
- 3/ Can Arcoplast be installed over substrates such as : Metal framing, concrete, gypsum board, ceramic finishes?

Features of Arcoplast Primary Barriers :

- 1/ Arcoplast primary barriers are a fully engineered system incorporating doors and window housings, flooring finishes, MEPs and monitoring systems, that are able to be configured to meet high level risk seismic code compliance.
- 2/ The Arcoplast Dry Build System consists of ready to install CBS (Construction by Components) and customized on-site installation practices. The advantage of on-site customization offers an element of flexibility when changes and modifications are needed, ensuring the system can be adapted to meet evolving requirements throughout the construction process.
- 3/ Arcoplast high containment primary barriers have no rejuvenating maintenance programs. There is no surface deterioration, no costly upgrades or ongoing hidden costs.



Chemical stain resistant surface

Compliant to high level risk containment

Dry Build methodology

Impact and stain resistance

Integration : Floors. Windows. Doors

Load Bearing capabilities

Reduced risk environment

Seismic design compliance Cat A, B, C, D, E, F

Surface restoration

Seamless penetrations, joints and integration of MEP's

Tested for RF frequencies

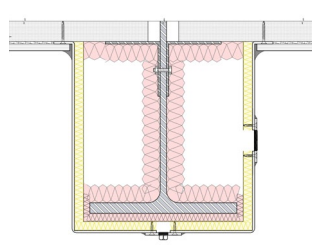
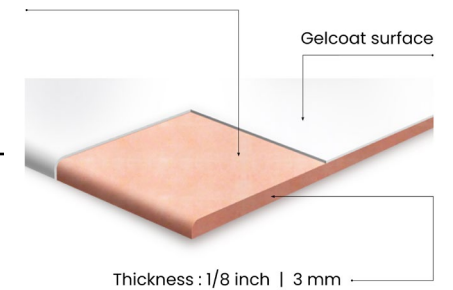
Ultra smooth surface topography



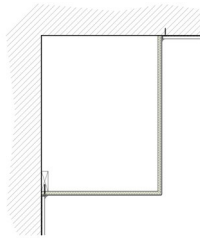
ARCOFORM : PROTECTIVE SHROUDS [doc](#) ↓

Designed for high containment facilities rated : BSL-3, ABSL-3, BSL-3Ag, BSL-4
Arcoform shrouds are available : Insulated or Uninsulated

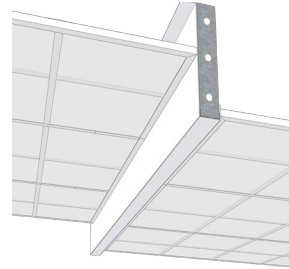
Arcoform : Fire retardant resin embedded glass strand fiber-mat matrix substrate.



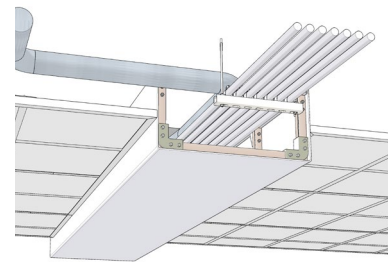
Beam / Column Cover



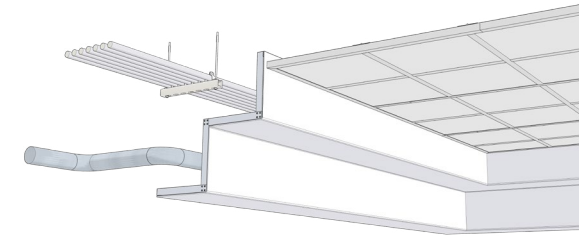
Corner Cover



Fascia



Utility Chase



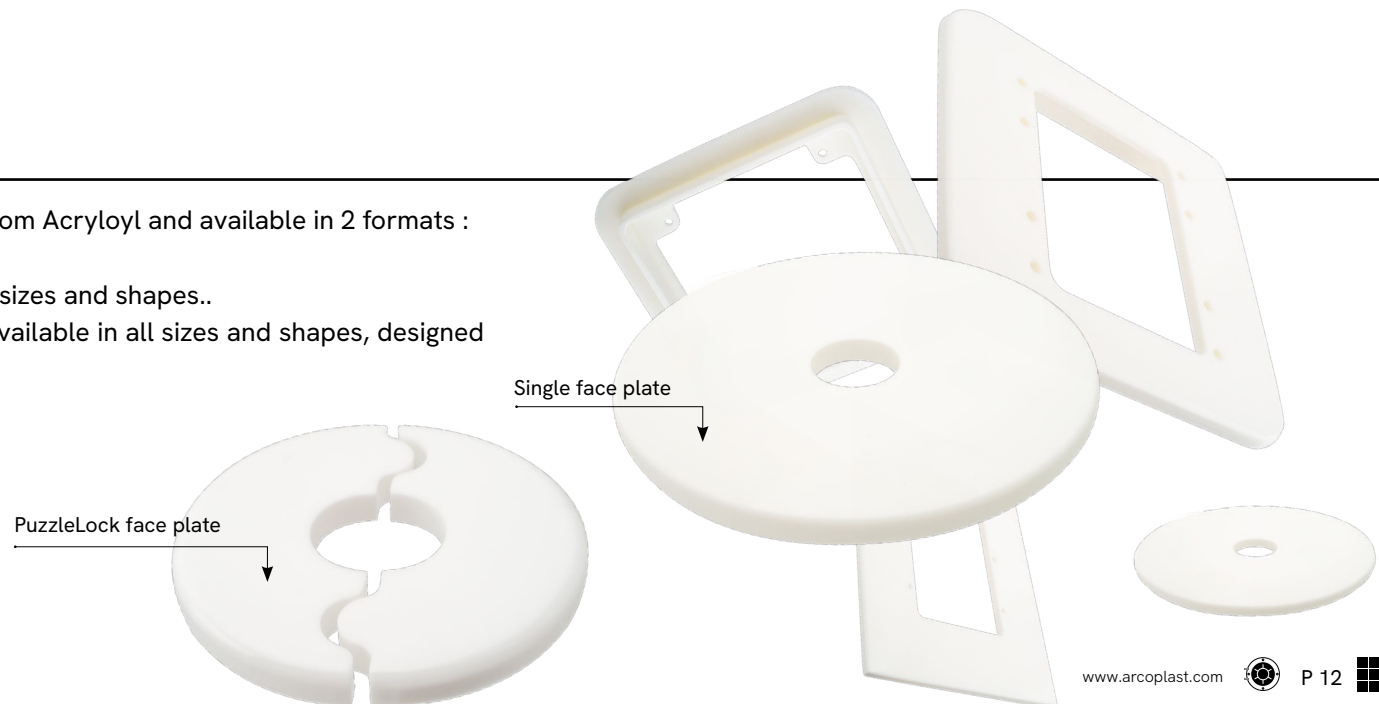
Utility Step Chase

Arcoform GelCoat fiberglass shrouds are quick to install, robust, lightweight and has a long-life cycle and requires no rejuvenating maintenance programs. One of the features of the Arcoform shroud system is it is capable of limitless design configurations.

ARCOPLAST FACE PLATES AND GROMMETS

Arcoplast face plates are 6mm to 19mm in thickness, made from Acryloyl and available in 2 formats :

- 1/ Solid face plates are a single piece plate available in all sizes and shapes..
- 2/ PuzzleLock face plates : Two piece interlocking plates, available in all sizes and shapes, designed to interlock around MEPs and fixtures.





DOORS, FRAMES & HARDWARE

Designed for high containment facilities rated : BSL-3, ABSL-3, BSL-3Ag, BSL-4

Doors	Aluminum. Composite. Glass. Metal. Stainless Steel
Frames	Aluminum. Composite. Metal. Stainless Steel
Hardware	Standard operating hardware. Concealed door closure. Maglock. Security entrance controls

Arcoplast composite wall and partition systems interface with a large configuration of door frame designs and a multiplicity of dimensions including various levels of security controls.



WINDOWS : FLUSH GLAZED

Designed for high containment facilities rated : BSL-3, ABSL-3, BSL-3Ag, BSL-4

Arcoplast window housing/glazing section “Passed” the formal test criteria leakage rate ≤ 12.5 Pa/min at 500 Pa

Aluminum concealed window frame, double wall construction for increased strength. The window stile is designed to house desiccant pillow packs

cGMP Compliance	Mullion divider	Throat opening	Standard Glazing/Pane Options
Flush face with primary barrier surface	3 5/8 in 92.5mm	3 5/8 in 92.5mm	Glazing available on one or two sided window
No exposed window header	6 in 150 mm	6 in 150 mm	Glass thickness 3/8 inch (9.5mm) - 1/2 inch (12.5mm)
No exposed window sill			Printed border unit - Black or gray available
No exposed window stiles			Tempered Glass/Pane

Arcoplast composite wall and partition systems interface with a large range of custom window frame designs of multiple dimensions and glazing options.

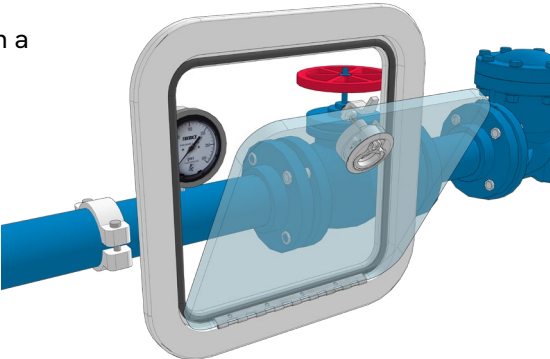


ACCESS & SERVICE HATCHES [doc](#)

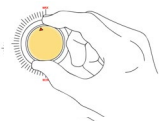
Designed for high containment facilities rated : BSL-3, ABSL-3, BSL-3Ag, BSL-4

Factory fabricated and fully assembled ready to install. Arcoplast hatches range in size and function, from full size access hatches, to small service hatches.

The hatch frame and door are made from high gloss cast acrylic. The primary barrier surface frame is fitted with a continuous hollow rubber bubble gasket that seats and seals the hatch, fitted with noncorrosive hardware.



Access hatch dimensions		Service hatch dimensions	
24 x 24 inch	609 x 609 mm	8 x 8 inch	203 x 203 mm
24 x 36 inch	609 x 915 mm	12 x 12 inch	305 x 305 mm
24 x 48 inch	609 x 1220 mm	16 x 16 inch	406 x 406 mm
24 x 60 inch	609 x 1525	20 x 20 inch	508 x 508 mm



VLADS : UNIFIED COMMAND AND MONITORING CONSOLE [doc](#)

Designed for high containment facilities rated : BSL-3, ABSL-3, BSL-3Ag, BSL-4



Arcoplast VLADS :

- V - Vaporized Hydrogen Peroxide Decon
- L - Laboratory Display Unit (LDU)
- A - Access & Management Control Device
- D - Differential Pressure Indicator
- S - Safety, Signage, and Monitoring Device

All-encompassing centralized dashboard, providing staff with both environmental operational information and secure access

Command and monitoring console is the ultimate tool in building automation and information systems

VLADS modules seamlessly interface with Arcoplast primary and secondary barrier systems



COSTS

Note : Costs are for materials and freight in the USA for the year 2025. Pricing in all other markets, please consult Arcoplast.

Material Costs : Includes panel and accessories, excluding framing members.

***Labor costs :** Hourly rate based on \$100.00 per man hour.

Acryloyl	1/2 inch 12.5mm	\$34.00 Sq.Ft	Ceiling Liner \$33.00 / Sq.Ft Wall Liner \$25.00 / Sq.Ft
GFRMC	3/8 inch 9.5mm	\$25.00 Sq.Ft	Ceiling Liner \$33.00 / Sq.Ft Wall Liner \$25.00 / Sq.Ft
GFRP	3/8 inch 9.5mm	\$54.00 Sq.Ft	Ceiling Liner \$33.00 / Sq.Ft Wall Liner \$25.00 / Sq.Ft

Labor factor is expressed in man hour production rate for typical installation without factor of difficulties or changes.

The labor factor does not consider the contractor's administrative, overhead, operating expenses and anticipated profit margin.

Mobilization : Costs to be calculated as per construction schedule.

Packaging ▪ Crating ▪ Freight Costs : \$2.00 Sq.Ft.



RISK MANAGEMENT

- ✓ **Third-Party Scrutiny :** Lab tested. Onsite certified, compliant.
- ✓ **Fully Engineered :** Architecturally designed dry-build construction system, complete with installation support.
- ✓ **Quality Controlled Manufacture :** Guaranteed, BTS Built to Specification, ready-to-install primary barrier.
- ✓ **Long Life Cycle :** Robust no rejuvenating maintenance programs.
- ✓ **National and International :** Partnerships, fully supported.



RESTORATION

Note : Arcoplast primary barriers do not have any rejuvenating maintenance programs. The Arcoplast primary barrier systems does not : Oxide, rust, flake, blister, shed or delaminate. There are no resurfacing processes or surface coatings required during the life span of the Arcoplast primary barrier. However in the event of accidental damage the following procedures are recommended.

SCUFF MARKS : Minor scratches and protrusions

***SEVERE PANEL DAMAGE**

Acryloyl	A-5050 filler	Sand, buff, & polish. Create filler plug, sand, buff & polish	Remove damage panel, install new panel
GFRMC	GelCoat putty	Sand, buff, & polish. Create filler plug, sand, buff & polish	Remove damage panel, install new panel
GFRP	GelCoat putty	Sand, buff, & polish. Create filler plug, sand, buff & polish	Remove damage panel, install new panel

***Arcoplast full panel restoration :** Requires the replacement of A-1010 Bio-Seal at the panel joint and cove sections of the wall to wall, wall to ceiling and wall to floor base.



CERTIFICATIONS and COMPLIANCE

Certifications :

		 EPD	 HPDC	 ILFI
 Acryloyl	3/8 inch 9.5mm	 Compliant	 Compliant	 Compliant
 GFRMC	3/8 inch 9.5mm	Not tested	Not tested	Not tested
 GFRP	3/8 inch 9.5mm	Not tested	Not tested	Not tested

-  EPD Environmental Product Declaration
-  HPDC Health Product Declaration Collaborative
-  ILFI Declare Label Living Building Challenge Compliance

Acryloyl Engineered Polymer Panel products conform to the following specifications

ISFA-2-01 (2013)	Classification and standard for solid surfacing material
ISO 19712-1	Classification and specification of solid surfaces
ISO 19172-2	Classification and specification of sheets
ISFA -2-02 (2013)	Fabrication standard for solid surfacing material
NSF/ANSI 51	Food equipment materials



CSI : CONSTRUCTION SPECIFICATION INSTITUTE

Primary Barrier Panels	CSI
 Acryloyl Wall & ceiling panel	 068315
 GFRMC Wall & ceiling panel	 068324
 GFRP Wall & ceiling panel	 068318
 GFRP Lead shield panel	 068322

Components	CSI
 Acryloyl Lay-in ceiling panel	 095810
 i-Panel Lay-in ceiling panel	 095800
 TR35 Pultruded suspended ceiling grid system	 095820
 Arcoform Molded architectural profiles	 068320
 Door Solid core service doors	 095810
 Glazing Flush window systems	 085645



BARRIER PERFORMANCE

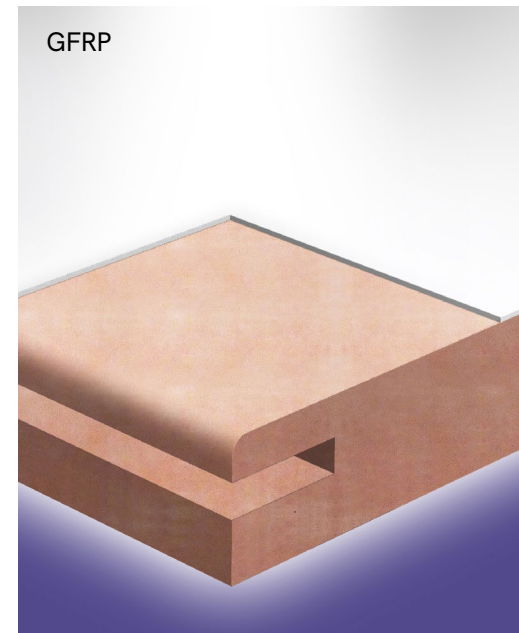
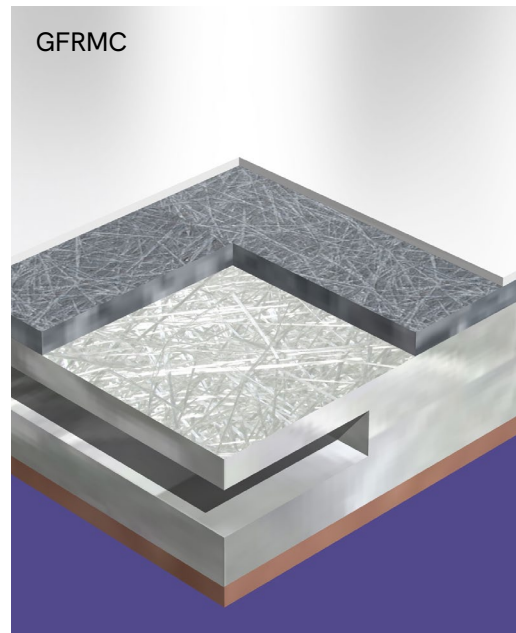
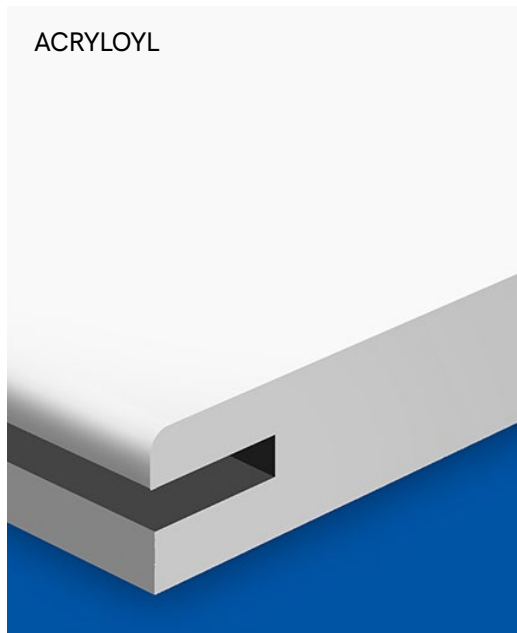
BSL-2, BSL-3, ABSL-3, BSL-3Ag, BSL-4,

ASME N510 Nuclear : Helium Supplemental Performance

Test	 ACRYLOYL	 GFRMC	 GFRP
Aseismic Joint Seal	Pass	Pass	Pass
Expansion Joint Seal	Pass	Pass	Pass
Fastener Seal	Pass	Pass	Pass
Gang Box Face Plate	Pass	Pass	Pass
Test Chamber Mock-up	Pass	Pass	Pass

The Public Health Agency of Canada, "The Laboratory Bio-safety Guidelines: 3rd Edition 2004", request an AP containment level room 4 exhibit a maximum of 12.5 Pa per minute pressure decay drop @ 500 Pa over a twenty-minute period.

Testing was conducted as a timed decay from 1000 Pa- 200 Pa. The equivalent water column height to a vacuum of 1000Pa is 4 inches IWG.





FIRE & SMOKE

Smoke index	 ACRYLOYL 1/2in 12.5mm	 GFRMC 3/8in 9.5mm	 GFRP 3/8in 9.5mm
Fire Index ASTM E 84	10 Class A	20 Class A	20 Class A
Smoke Index ASTM E 84	0 Class A	300 Class A	145 Class A
ISO 9705 B Full Scale Room	Pass	Not tested	Pass
Classification EN 13501-1	B-s1-d0	Not tested	B-s1-d0

EN 13501-1 - European fire classification system of construction products.

Canada - Europe - Asia - International.

ISO 9705 Annex B - Reaction to fire test - Room test for wall and ceiling lining products - Test method for small room configuration 8'x12'.

UL S102 - Standard Method of Test for surface Burning Characteristics of Building Materials and Assemblies.

USA : ASTM - E 84 American Standard Testing Method for assessing the surface burning characteristics of building products.



IMPACT STRENGTH

Test	 ACRYLOYL	 GFRMC	 GFRP
Barcol Hardness	58	55.4	56.8
Compressive Strength	12502	5046	15920 *
Impact Ball Drop 2 lbs	13 Ft	1.5 Ft	18 Ft

Note : Barcol Hardness - This testing method assesses how the panel surface will resist forces from other harder materials ie : scratching or denting of the panel surface finish.

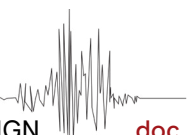




LOAD BEARING [doc](#)

Test	 ACRYLOYL	 GFRMC	 GFRP
Lateral	29.9 kPa = 120.25 IWG	Not tested	Not tested
Partition Axial *Load	Visible 86,500 Lbf. – Joint 95,300 Lbf.	Not tested	Visible 86,600 Lbf. – Joint 102,900 Lbf.
Partition	4,167 Lbf. = 4.34 Psi	Not tested	Not tested

*Test module 4'-0" wide x 2'-0" high – 16 Gauge steel stud on 16" c/c/ Acryloyl / GFRP full panel one side – 2 panel section on opposite side.



SEISMIC DESIGN [doc](#)

Arcoplast Wall and Ceiling Systems, constructed with Acryloyl and/or GFRP primary barrier panels, have successfully met design criteria for wall partitions under suspended ceilings, under slab/soffit construction, and between floor levels in both metal and wood framing assemblies.

 ACRYLOYL	* BSL-3, BSL-4 Air Pressure Decay Test	IBC 2012 Seismic Design Cat. A-F	ICC-ES _AC156 - NZS 4219 (2009)
 GFRMC	Not tested	IBC 2012 Seismic Design Cat. A-F	Not tested
 GFRP	BSL-3, BSL-4 Air Pressure Decay Test	IBC 2012 Seismic Design Cat. A-F	ICC-ES _AC156 - NZS 4219 (2009)
 Seismic Spline	Seismic Spline Design Test Report St. Louis Test Lab No. 15P-0362 ATS Engineering FEA Report Designing CW-17 & CWL-21 Project X-210394 Seismic spline design demonstrated an increase in joint strength by 30%		
TR35	Awaiting test results	Seismic Design Cat. A-F	Awaiting test results

*Subjected to cyclic displacement



RF : ELECTROMAGNETIC COMPATIBILITY

RF Electric field attenuation tests conducted in five different Arcoplast 1M square cube chambers

Report No : 105789756GRR-001 Rev

Calibrations set at 900MHz - 2.437GHz - 5GHz - 6.51Ghz

Chamber 1	Acryloyl	1/2 inch	12.5 mm	Tested low frequencies 900MHz - 2.437GHz - 5GHz - 6.51Ghz
Chamber 2	Acryloyl	3/8 inch	9.5 mm	Tested low frequencies 900MHz - 2.437GHz - 5GHz - 6.51Ghz
Chamber 3	GFRP	3/8 inch	9.5 mm	Tested low frequencies 900MHz - 2.437GHz - 5GHz - 6.51Ghz
Chamber 4	GFRMC	5/16 inch	5 mm	Tested low frequencies 900MHz - 2.437GHz - 5GHz - 6.51Ghz
Chamber 5	i-Panel	5/8 inch	15.8 mm	Tested low frequencies 900MHz - 2.437GHz - 5GHz - 6.51Ghz

Note : Cell phone, WIFI services typically perform better at Low Frequencies 2.437, 5, and 6.515 GHz
Emergency Response at 0.9 GHz band width



STC : SOUND TRANSMISSION CLASS



ACRYLOYL - 1/2 inch | 12.5mm Result : Sound Transmission Class 59db

Construction : Steel stud 16 inch c/c with 3 inch sound attenuation blanket (SAFB) and Acryloyl 1/2 inch | 12.5 mm lined both sides



GFRP - 3/8 inch | 9.5 mm Sound Transmission Class result : 57db

Construction : Steel stud 3 5/8 inch with 3 inch sound attenuation blanket (SAFB) and GFRP 3/8 inch | 9.5 mm lined both sides

Note : Sound Transmission is particularly important in animal housing / laboratory - STC of 60 is considered extremely good.
Drywall partition with 5/8 inch wallboard and 3 1/2 insulation = *STC 46. Masonry bloc 8 inch = STC 48, grouted bloc has an average STC 55.



CLEANING DECON

Decon gas resistance tests conducted by : TSS Laboratories # NC-ARC 16910A0-1



ACRYLOYL - 3/8 inch | 9.5mm



GFRP - 3/8 inch | 9.5mm

Chemical	Test time	Result
Hydrogen Peroxide	12 Hour Exposure	No visible change
Ammonium	72 Hour Exposure	No visible change
Chlorine Dioxide	12 Hour Exposure	No visible change
Formaldehyde	12 Hour Exposure	No visible change

Chemical	Test time	Result
Hydrogen Peroxide	12 Hour Exposure	No visible change
Ammonium	72 Hour Exposure	No visible change
Chlorine Dioxide	12 Hour Exposure	No visible change
Formaldehyde	12 Hour Exposure	No visible change

Note : A-1010 Bio-Seal finishing compound was included in all chemical and stain resistant tests.



CHEMICAL & STAIN RESISTANCE



ACRYLOYL



GFRMC



GFRP

Tests	Test Lab
85 tests	Element Lab Report ESP041169P-1R4

Tests	Test Lab
55 tests	Avomeen Lab 2014
10 tests	Avomeen Lab 2014

Tests	Test Lab
55 tests	Avomeen Lab 2014
10 tests	Avomeen Lab 2014

Note : A-1010 Bio-Seal finishing compound was included in all chemical and stain resistant tests.



FUNGUS MILDEW MOLD TESTS

Accugen Laboratories tests

Panel	ASTM D3274-09	ASTM D3273-16	ISO 846
 ACRYLOYL	No fungal growth - Lab#130822	No Surface Defacement - Lab#13082	No Fungal/Bacteria Growth - Lab#130821
 GFRMC	No Fungal Growth - Lab#99755	No surface defacement Lab#99756	No Fungal/Bacteria Growth - Lab 99754
 GFRP	No Fungal Growth - Lab#99755	No Surface Defacement - Lab#99756	No Fungal/Bacteria Growth - Lab 99754

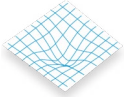


VOC : VOLATILE ORGANIC COMPOUNDS

Eurofins lab test report : #V1NNW211

 ACRYLOYL	(S1) No VOCs detected- (S1) VOCs detected	(S2) No VOCs detected	(S3) No VOCs detected
 GFRMC	(S1) No VOCs detected- (S1) VOCs detected	(S2) No VOCs detected	(S3) No VOCs detected
 GFRP	(S1) No VOCs detected- (S1) VOCs detected	(S2) No VOCs detected	(S3) No VOCs detected
 A-1010 Bio-Seal	(S4) No VOCs detected	(S4) No VOCs detected	(S4) No VOCs detected
 A-2020 Adhesive	(S5) No VOCs detected	(S5) No VOCs detected	(S5) No VOCs detected





SURFACE TOPOGRAPHY

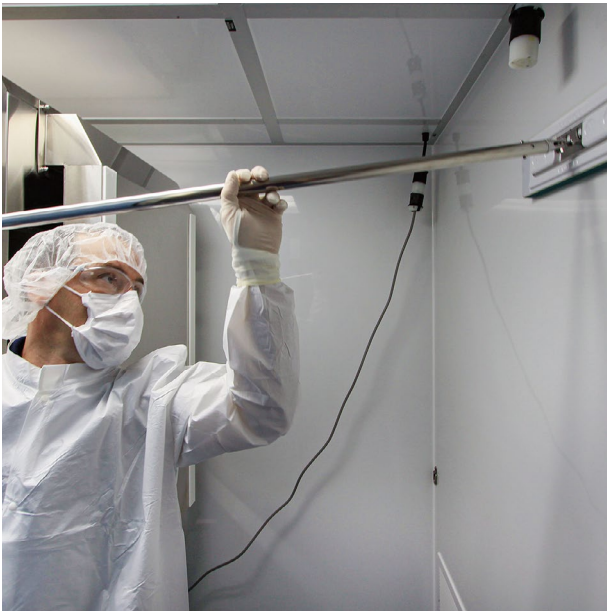
Panel	 ACRYLOYL	 GFRMC	 GFRP
Test Result	Ra 0.02	Ra 0.01	Ra 0.082

Ra – Roughness Average – measures surface roughness, referred to as “topographical variations.” It is a measure to quantify quality control and the working performance of a panel’s surface condition.

Surface analysis of wall and ceiling panels is critical in high containment and food processing facilities. In the full test report Ra, Rq, Rz, Rp, Rv, Rt tests were conducted.



ACRYLOYL : PC 3 Bio Safety Laboratory



GFRMC : BSL 3 Mobile Laboratory



GFRP : BSL 3 Forensic Laboratory



INSTALLATION MANUAL

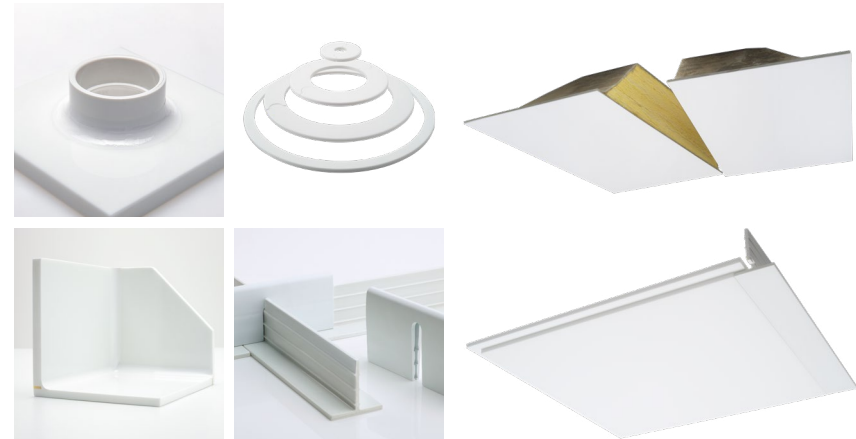


Manuals are available as hard copy or digital PDF files

System	Installation manual	Version
	↓ ACRYLOYL : Installation manual	V.3
	GFRMC is based on the GFRP installation manual	V.2
	↓ GFRP : Installation manual	V.2
	↓ iPanel - TR-35 : Suspended ceiling installation manual	V.1

TECHNICAL DOCUMENTS & VOLUMES

↓ RPT	Energy Saving Analysis	TR35 case studies
↓ TK1	Technical Document	Wall Ceiling Linings
↓ TK2	Technical Document	Arcoform Shroud System
↓ TK3	Technical Document	TR35 Suspended Ceiling Grid
↓ VLADS	Command Console	Information overview
↓ Volume 1	Science of sealants, adhesives & penetrations	
↓ Volume 2	The Science of Primary Barriers	
↓ Volume 3	The Science of seismic design	



Note : Arcoplast have a wide range of samples available on request



SHOP DRAWINGS LIBRARY

Access Doors	12 x DWG
Accessories	14 x DWG
Beam Covers	12 x DWG
Bulkhead	1 x DWG
Ceiling Direct Attached	32 x DWG
Ceiling Inverted Tee	23 x DWG
Chases	1 x DWG
Ceilings TR35	27 x DWG
Ceiling Walk-on	9 x DWG
Control Joints	19 x DWG
Counter Tops	2 x DWG
Door Frames	39 x DWG
Door - Removable	13 x DWG

Floor Base	44 x DWG
Metal Splines - Starter - Termination	2 x DWG
Panels	16 x DWG
Panels Liner - Partitions	141 x DWG
Penetrations	19 x DWG
Pultruded Shapes	6 x DWG
Structural Support	2 x DWG
VLADS	1 x DWG
Window Frames	27 x DWG
Window Glazing	1 x DWG
Windows	16 x DWG



WHITE PAPERS

- ↓ [7 Foundations of High Containment](#)
- ↓ [New Options in Primary Barrier Construction](#)
- ↓ [Life Cycle Cost High Containment Facilities](#)
- ↓ [Structural Performance of Installed Arcoplast Systems](#)



