arcoplast®
WALL AND CEILING SYSTEMS

the Science of Primary Barriers

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arcoplast®
WALL AND CEILING SYSTEMS

welcome

Welcome to Arcoplast and thank you for taking the time to read about what we do.

If you are not familiar with our different primary barrier systems. Think of Arcoplast as a giant kitset, constructed using **4** different components that can be shipped any where in the world and when installed creates the highest standard, seamless single membrane primary barrier system, compliant to : BSL-2, BSL-3, ABSL-3, BSL-3Ag, BSL-4. CL3, CL4. PC3, PC4. CGMP facility class A, B C, D.

seamless single membrane primary barriers

different types of primary barriers

To address the ever changing world of todays modern industries and science, Arcoplast have developed a series of different types of primary barriers with attributes and qualities that make possible the construction of a diverse range of modern cleanroom environments, designed to accommodate dedicated or multipurpose applications.

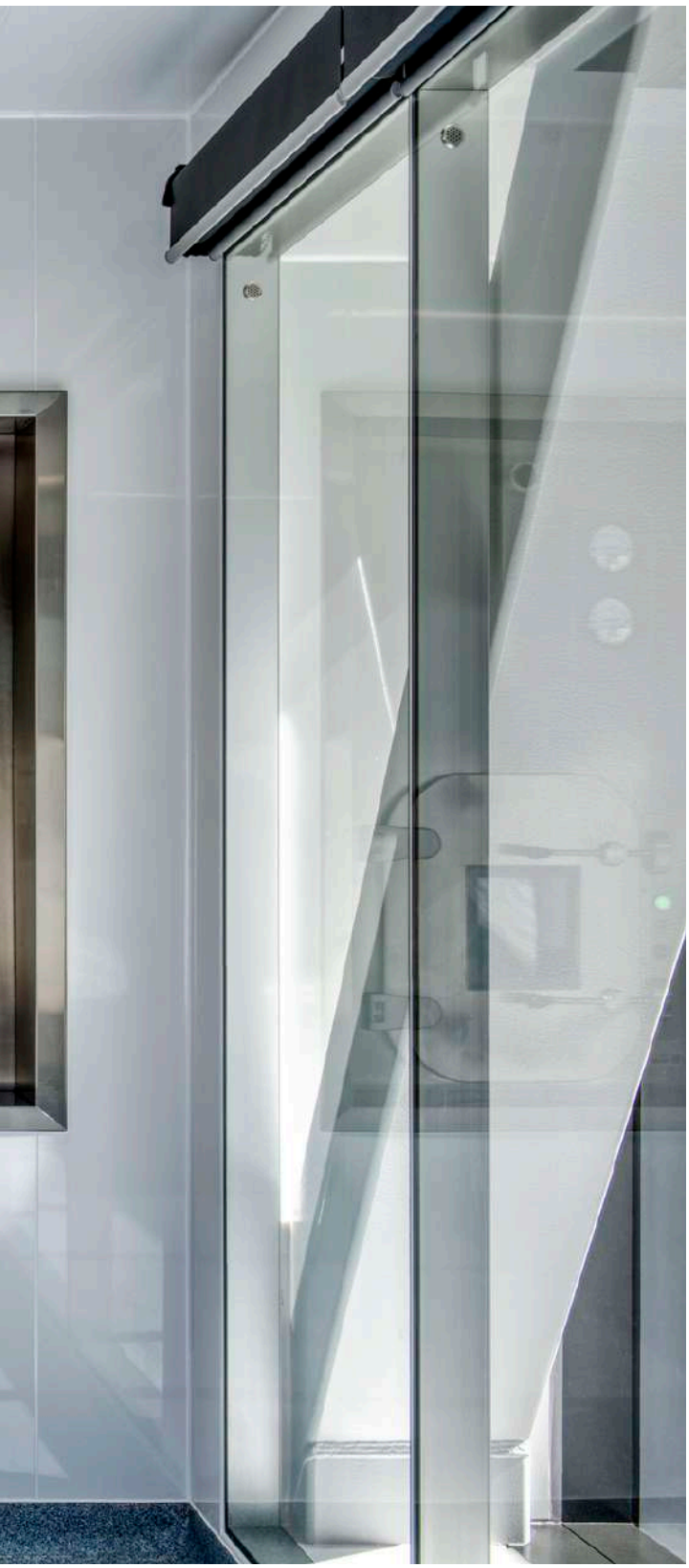
The different Arcoplast primary barrier systems are based on over 35 years of R&D, backed by extensive laboratory testing and the use of mock-up cleanrooms to assess various scenarios in a real world environment. This work is ongoing...

We have engaged in these complex procedures to develop knowledge and skills that mitigate risk and ensure quantifiable, predetermined end results, backed by scientific data; as it is important our clients are able to verify and trust what we do.

For more information, please visit **www.arcoplast.com**

A-1010 Bio-Seal : In the world of cleanrooms, perfection is a perfect seamless seal. | PC3 Laboratory.

note : A-2020 structural adhesive is used to chemically weld panels to the building frame. A-1010 Bio-Seal adhesive sealant finishing compound, joins and finishes panels together, forming a monolith seamless single membrane primary barrier.



First impressions

What is very apparent about a facility with an Arcoplast primary barrier, is how good it looks. Many many years later what will become apparent is how great it still looks. This is not something to dismiss as a minor feature, longevity has a quality of its own and brings with it many advantages, be it not noticed at first glance.

What is not easy to see is the topography of the primary barriers surface. Why this is interesting, is the roughness of a surface plays a significant part in the attachment of bacteria and microbial activity.

The efficacy of sterilization, cleaning and decontamination of the primary barrier is more efficient when the topography of the surface is smooth. A close examination of the Arcoplast primary barrier presents many other features : Seamless seismic joints, seamless penetrations and integration of MEPs, the direct attach of fixtures etc...

look closely at the surface

The largest surface area in any cleanroom is the primary barrier. A critical aspect in the 24/7 performance and longevity of the primary barrier is the quality of the surface...

Dr Tim Sandle
To lower the likelihood of microbial attachment, it is critical to specify surface roughness as well as surface finish in equipment specifications, with an Ra value <0.8um providing control. Dr Tim Sandle added that down to an ****Ra value of 0.16um benefits can be seen,*** *after which anything smoother ceases to be significant.*

The benefit of Arcoplast's ultra smooth seamless primary barrier surface is it inhibits the attachment of most forms of microbial activity, therefore reducing the risk of contamination, while increasing the efficiency of the cleaning decon sterilization processes. Other benefits of an ultra smooth surface are seen in the quality of air and the air filtration systems.

To substantiate these claims, Arcoplast commissioned a series of **lab tests** to assess the topography and other qualities of the three different Arcoplast panel systems and their respective surfaces.

Summary : Information based on an article by ***Dr. Tim Sandle. Review Magazine Oct 20/2021***

It is commonly understood most forms of bacteria thrive in a sessile state by bonding to a surface using one of four different methods : attachment, adherence, adhesion or entrapment. It is also noted the rougher the surface the stronger the attachment force. As an example : Sessile cells protected in a Biofilm made up of extracellular polymeric substances are less likely to be a risk when a ***primary barriers surface is Ra 0.8µm or less.*** *Anomalies and damage to the primary barriers surface relating to morphology, is an interesting topic. Any increase in roughness to the surface, increases the surface area allowing for greater attachment. Patterns of flexibility have been observed as bacteria cells use their physiological shape to gain attachment to different surfaces. Linear damage such as scratches, coccus bacteria are more likely to be entrapped rather than rod shaped bacteria... for the full article it can be found at* ***Review Magazine Oct 20/2021.***

Arcoplast Primary Barrier surface lab tests

Surface texture ISO 4288:1996 - Geometrical Product Specifications

For the test results, the Ra master test micrometer reading was set at 0.40.

Micrometer symbol : µm.
Micrometer / Micron, is a metric unit of measure for a length equal to 0.001 mm, or about 0.000039 inch.

Dimensional Surface Topography	**Acryloyl**	**GFRMC**	**GFRP**
Ra : Roughness average*	0.020 µm	0.02 µm	0.082 µm
Rq : Roughness, root mean square average	0.03 µm	0.02 µm	0.135 µm
Rz : Average maximum height of the profile	0.16 µm	0.016 µm	0.817 µm
Rp : Maximum profile peak height	0.09 µm	0.08 µm	0.604 µm
Rv : Maximum profile valley depth	0.07 µm	0.08 µm	0.213 µm
Rt : Maximum Height of the profile	0.21 µm	0.20 µm	2.384 µm

The international standard for hygienic design ISO 4287.23 stipulates the topography and roughness of a surface at : **Ra 0.82µm or less.**

Acryloyl, GFRMC, GFRP panel surfaces have been extensively tested. Below are the results of a few of the tests. For more information please visit : **www.arcoplast.com**

Surface Bio Microorganism resistance tests		**Acryloyl**	**GFRMC**	**GFRP**
Disfigurement via fungus, mold & algae	ASTM 3274-09	>0<	>0<	>0<
Resistance to growth of mold	ASTM D3273-16	>0<	>0<	>0<
Resistance to fungi, bacteria	ISO 846	>0<	>0<	>0<

>0< : Zero Point, having a factor of Zero over a given time frame

Surface Chemical resistance tests		**Acryloyl**	**GFRMC**	**GFRP**
Cleanability & stain resistance	ISFA 2-01/td	✓	✓	✓
Surface & sealant chemical compatibility	ASTM D 1308-02	✓	✓	✓
Surface & sealant chemical compatibility	ISO 2812-4	✓	✓	✓

Surface Decon color fastness tests	**Acryloyl**	**GFRMC**	**GFRP**
Chlorine dioxide decontamination procedure	✓	✓	✓
Formaldehyde gas decontamination procedure	✓	✓	✓
Hydrogen peroxide vapor decontamination procedure	✓	✓	✓

Surface Reflective light test	ASTM D 523	99.8%	99.7%	99.7%

COMPONENTS

of the Arcoplast drybuild system

1 Wall, ceiling panels

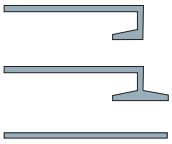
Acryloyl, GFRMC & GFRP panels are produced using different manufacturing technologies.

Acryloyl	Isotropic engineered polymer panel
GFRMC	XL. Ultra light weight Panel
GFRP*	High performance panel
Lead Shield*	GFRP Radiology panel
Security*	GFRP Steel mesh panel
Ultra*	GFRP Ultra hight impact panel
i-Panel*	GFRP insulated ceiling panel

note : *All five GFRP panels are produced using only GFRP manufacturing technologies.

note : Panels are delivered precut to specification. On-site, specialized tools are not required to cut and shape panels.

2 Molding, spline, back plate



J molding : Internal junctions and other applications.

Mechanical / Seismic spline : Used to join wall & ceiling panels together.

Back plate : Typically used for lining walls and ceilings with non-structural substrates.

note : Splines and moldings run the full length of the panel.

3 A-2020 structural adhesive

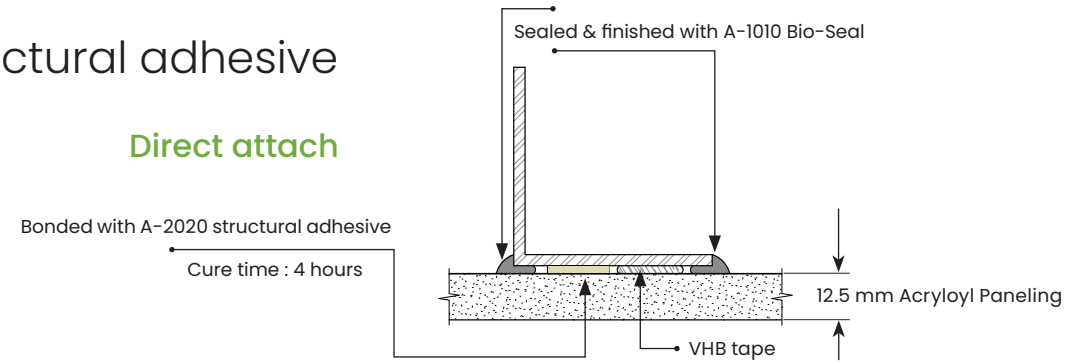
A-2020 structural adhesive : Used to direct attach panels to splines, j moldings, back plates and metal framing. Also used for direct attachment of : MEPs, fixtures and plant equipment.

4 A-1010 Bio-Seal

A-1010 Bio-Seal : Impermeable, chemically neutral, single application, three in one adhesive sealant finishing compound. Used to seal and finish seamless panel joints, penetrations & direct attachments.

A-2020 structural adhesive

Direct attach



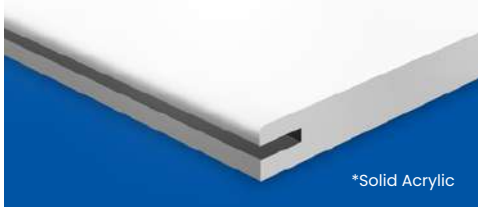
Lap Shear tests : A-2020 capacity to adhere to various materials

Material	Acryloyl panel	GFRP panel	Galvanized steel	Stainless steel
Epoxy	1087.8 psi	1195 psi	1303.5 psi	1220 psi
MMA	976 psi	1307.3 psi	759.5 psi	864.3 psi
Urethane	1050 psi	1126.4 psi	768.3 psi	844.2 psi
Acryloyl panel	2088.1 psi	-	1440.2 psi	1256 psi
GFRP panel	-	-	1526.9 psi	1214.6 psi

A-1010 Bio-Seal

The perfect finish for penetrations, seamless seals, integration of MEPs, plant equipment & floor membranes.

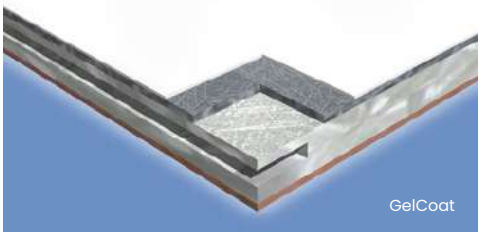
Acryloyl



¼ inch	2.0 Lbs/Sq.ft	6.2 mm	9.7 Kg/M2
⅜ inch	3.5 Lbs/Sq.ft	9.5 mm	17.09 Kg/M2
½ inch	4.4 Lbs/Sq.ft	12.5 mm	21.48 Kg/M2
¾ inch	6.3 Lbs/Sq.ft	19.0 mm	30.2 Kg/M2

Max panel size : 4 - 16 feet | 1.2 x 4.875 M

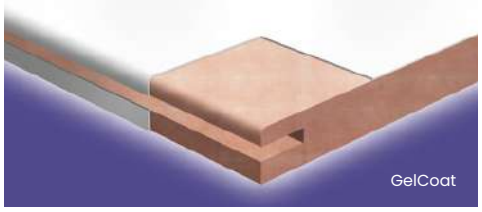
GFRMC



13/64 inch	1.09 Lbs/Sq.ft	5 mm	5.3 Kg/M2
⅜ inch	1.4 Lbs/Sq.ft	9.5 mm	6.1 Kg/M2

Max panel size : 9 - 40 feet | 1.2 x 4.875 M

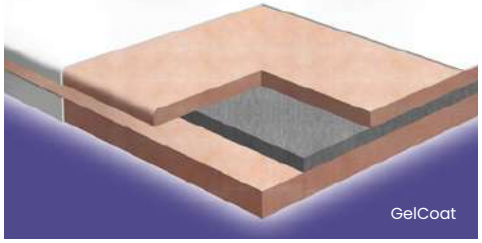
GFRP



13/64 inch	2.0 Lbs/Sq.ft	5 mm	9.76 Kg/M2
⅜ inch	3.6 Lbs/Sq.ft	9.5 mm	17.5 Kg/M2
½ inch	4.6 Lbs/Sq.ft	12.5 mm	22.5 Kg/M2

Max panel size : 4 - 12 feet | 1.2 x 4.875 M

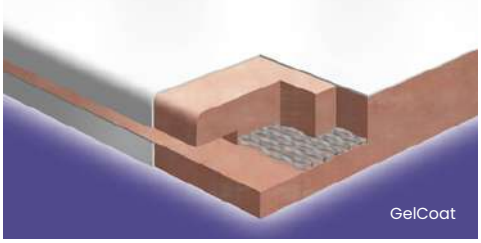
GFRP Lead Shield



½ inch	7.1 Lbs/Sq.ft	12.5 mm	35.32 Kg/M2

Max panel size 4 x 12 ft | 1.2 X 3.650 M

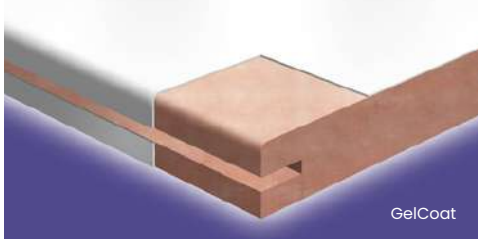
GFRP Security



7/8 inch	7.8 Lbs/Sq.ft	22 mm	38.3 Kg/M2

Max panel size 4 x 12 ft | 1.2 X 3.650 M

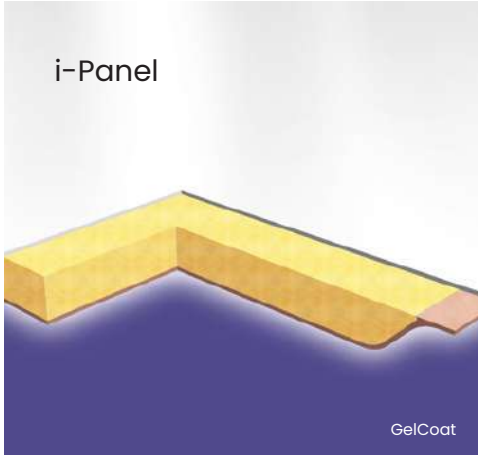
GFRP Ultra



¾ inch	6.7 Lbs/Sq.ft	19 mm	32.5 Kg/M2

Max panel size 4 x 12 ft | 1.2 X 3.650 M

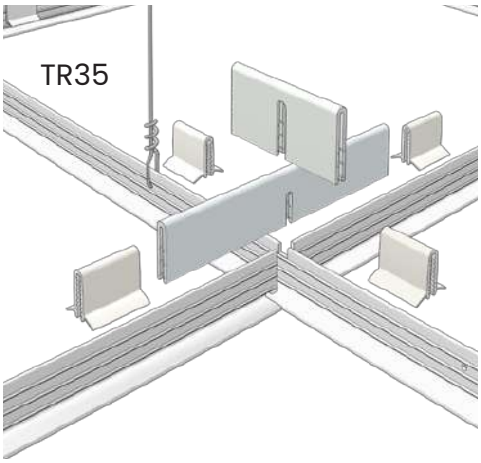
i-Panel



0.625 inch	1.15 Lbs/Sq.ft	15.9 mm	5.61 Kg/M2
1.125 inch	1.25 Lbs/Sq.ft	28.6 mm	6.09 Kg/M2
1.625 inch	1.35 Lbs/Sq.ft	41.3 mm	6.58 Kg/M2
2.125 inch	1.45 Lbs/Sq.ft	53.9 mm	7.07 Kg/M2

Panel size : 2x2, 2x3, 2x4, 4x4 ft
Panel size : 600x600, 600x900, 600x1200, 1200x1200 mm

TR35

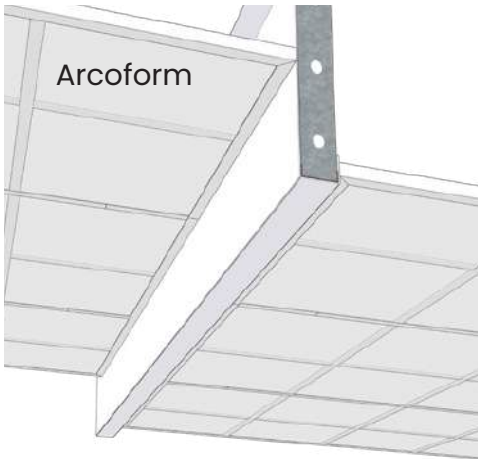


Grid	Lbs/ Sq.ft
2x2 ft	0.43
2x3 ft	0.42
2x4 ft	0.31
4x4 ft	0.23

Grid	Kg/Sq.M
600 x 600 mm	2.09
600 x 900 mm	2.08
600 x 1200 mm	1.51
1200 x 1200 mm	1.12

Calculation : Average 2500 Sq.ft | 232 Sq.M

Arcoform



Bulkheads, Beam & Column, Fascia Covers, Soffits, Utility Chases

Max length : 12 ft | 3.650 M
1 pound per sq/ft | 4.88 Kg/sq meter

* Solid Acrylic panel : Polished semi or high gloss surface

GelCoat : Arcoplast GelCoat surface

manufactured to precision

Arcoplast panels are manufactured in a controlled environment to specification, using only virgin materials to ensure all mechanical and physical properties render a consistent surface topography, chemical stability, uniformed strength and durability.

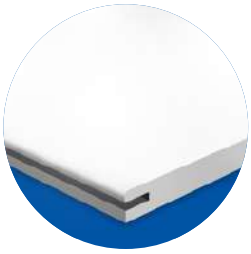
Leef® Logistical economic environmental footprint

Installation
Arcoplast primary barrier panels are precut to client specification, and assembled using a kitset drybuild system, that is quick and efficient to install, with minimal waste and cleanup, equating to significantly less labor, less time, less natural resources and related costs.

Assembly and installation of Arcoplast primary barriers, involves no surface manufacture or wet on-site surface coatings, thus eliminating the potential of an inconsistent surface laden with embedded toxins.

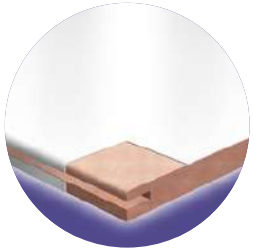
Arcoplast primary barriers are not ephemeral
In the event of accidental damage, all Arcoplast primary barriers are able to be fully repaired to full restoration, returning the surface back to new.

Arcoplast primary barriers have a long life cycle & no rejuvenating maintenance programs. Arcoplast primary barriers do not flake, delaminate, shed, blister and are not affected by corrosion or galvanic action.



Acryloyl 9.5 mm

Ceiling lining



GFRP 9.5 mm

Wall lining

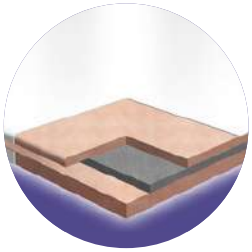
Dedicated 9.5 mm GFRP primary barrier. This facility has a GFRP Lead Shield radiology cleanroom. (Not shown in this image)

note : Here we display potential design possibilities of a hybrid primary barrier, made up of Acryloyl panels and GFRP specialized panels. When installed together, the different panel systems are indistinguishable.

dedicated hybrid

Primary barriers

GFRP Lead Shield



The world of science is always pushing the boundaries resulting in constant change. Todays design and construction of a cleanroom must now be able to facilitate safe working conditions for a wider dynamic of applications, within more complexed environments.

Dedicated and hybrid primary barriers both have their advantages

Arcoplast dedicated primary barriers are made up of only one type of panel, and are commonly used as the basis of design for a range of specific cleanroom environments.

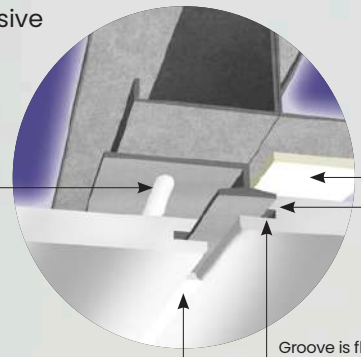
Arcoplast hybrid primary barriers are made up of a combination of different Arcoplast panel systems to facilitate a dynamic of applications within the same cleanroom environment.

Dedicated and hybrid primary barriers are able to be designed and built to various compliance standards rated up to : BSL-2, BSL-3, ABSL-3, BSL-3Ag, BSL-4. CL3, CL4. PC3, PC4. CGMP facility class A, B C, D.

All Arcoplast primary barriers are compatible to the same sterilization standards and cleaning regimes.

- ✓ Chlorine dioxide gas : ClO_2
- ✓ Formaldehyde gas : CH_20
- ✓ Vaporized hydrogen peroxide gas : H202

Standard wall junction assembly



A-1010 Bio-Seal

Moisture absorption	ASTM D570	0.21%
Tensile strength	ASTM D882	2100 psi

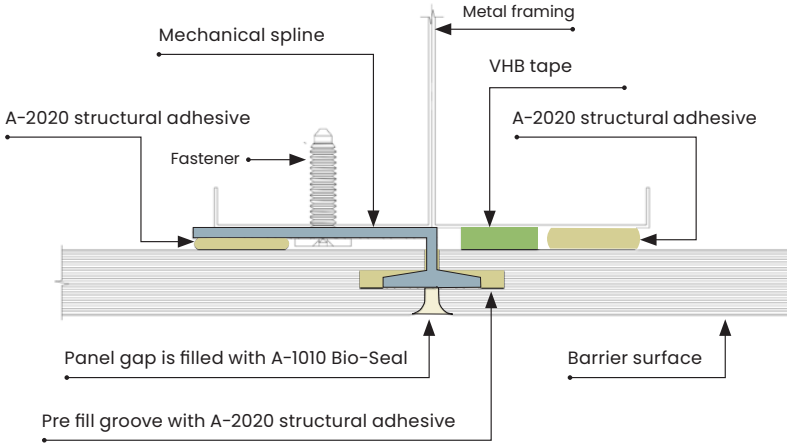
Acryloyl : Seamless single membrane primary barrier | PC3 Laboratory.

note : A-1010 Bio-Seal seamless joint.

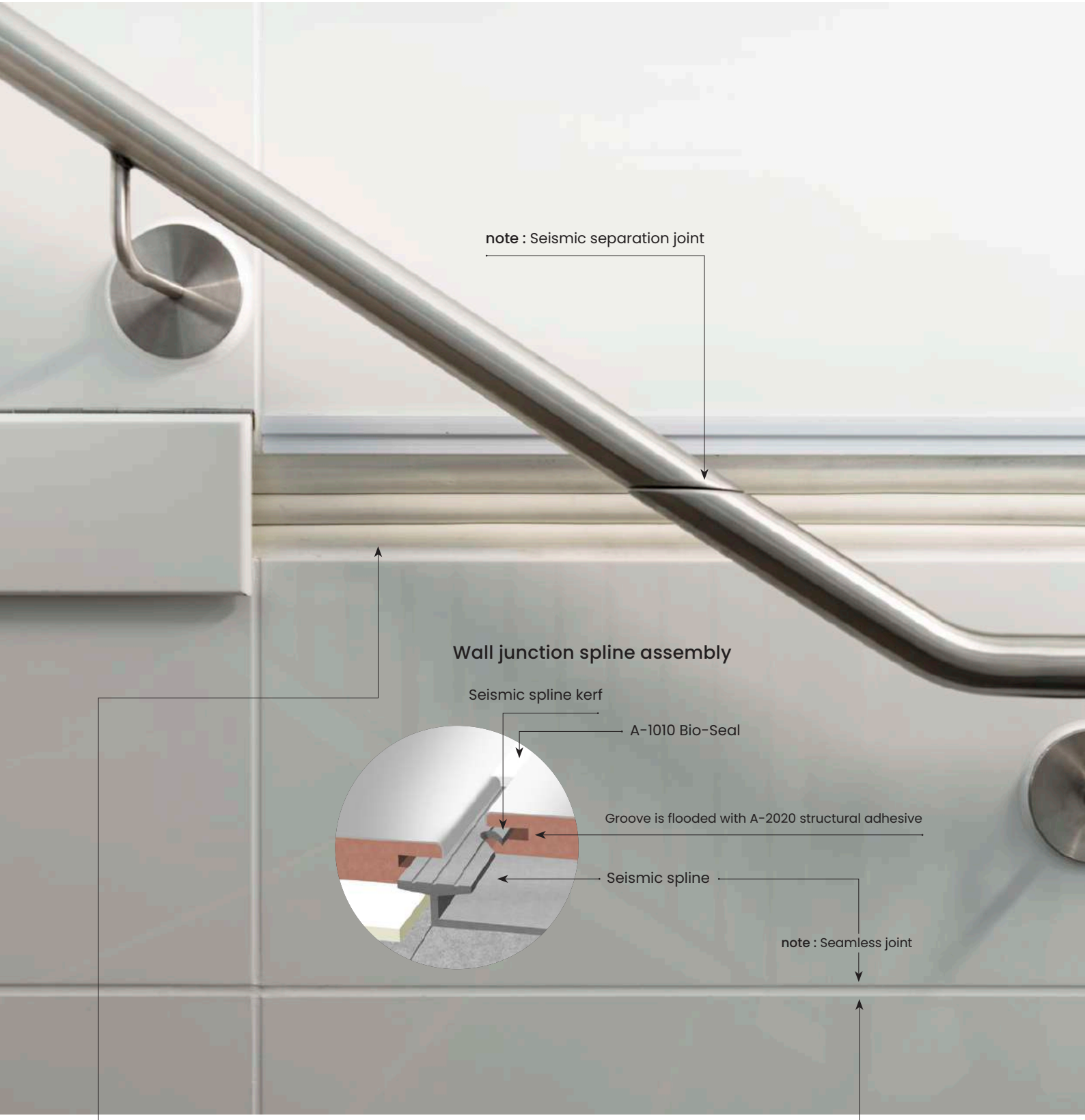
Seamless

A-2020 structural adhesive and A-1010 Bio-Seal adhesive sealant finishing compound, facilitate seamless integration of all Arcoplast products rated up to : BSL-2, BSL-3, ABSL-3, BSL-3Ag, BSL-4. CL3, CL4. PC2, PC3, PC4, CGMP Class A,B,C,D.

A-2020 structural adhesive and A-1010 Bio-Seal both have impressive bonding strength, not only to Arcoplast products, but to most third party products.



When installing an Arcoplast primary barrier, fasteners are used only to attach the splines & backing plates to the buildings' frame work. Fasteners never penetrate the panel surface. Instead, panels are fixed and joined in a variety of ways using A-2020 structural adhesive and A-1010 Bio-Seal, in conjunction with VHB tape, splines, moldings and or backing plates.



Seismic spline : Panels seamlessly joined together using a seismic spline assembly.
The seismic spline and panels are chemically welded together using A-2020 structural adhesive.

note : Horizontal seismic dampening pad installed between each level of the building.

Seismic spline

Arcoplast developed two spline systems, the mechanical spline and the seismic spline.

The difference is the seismic spline* is kerfed to increase the bonding surface area and thus rated : seismic category A, B, C, D, E, F.

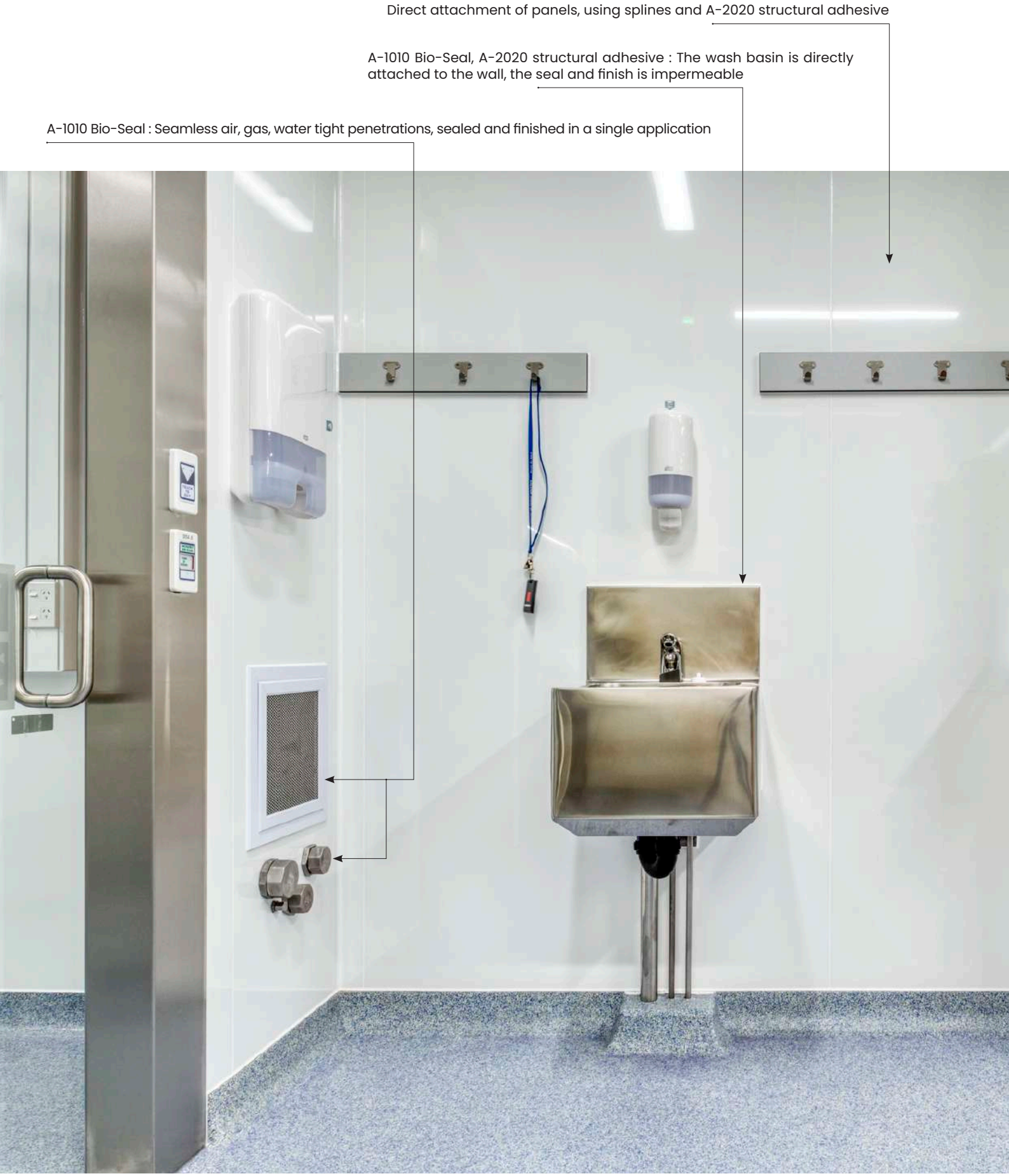
note : Check with the local authorities for the appropriate seismic compliance, as every country and district have specific regulations.

As depicted on page 15, fasteners are used to secure the spline to the building frame, the Arcoplast panels are then attached together using the seismic spline in combination with A-2020 structural adhesive, finally the seams are sealed and finished using A-1010 Bio-Seal.

Contact Arcoplast for FEA seismic test report.

FEA compliance :	US ICC-ES AC 156
NZ Standards :	NZS 4219 (2009)

Seismic spline* : Patent No. 10,087,637 B1



Direct attachment of fixtures and MEPs | PC3 Animal research Laboratory.

note : Wet areas : Arcoplast primary barriers are impermeable and unaffected by galvanic action.

Direct attach

When designing new or modifying an existing facility, A&E teams and lab designers are quick to appreciate the benefits of *direct attachment.

Direct attachment of panels : Splines, moldings and or back plates, fix and locate panels into position. VHB tape holds the panel in place as A-2020 structural adhesive chemically welds the assembly together. Four hours latter A-1010 Bio-Seal, seals & finishes the attachment.

Direct attachment of fixtures and MEPs : The device is secured in place using VHB tape while A-2020 structural adhesive chemically welds the fitting or MEP to the barrier surface. Four hours latter A-1010 Bio-Seal is used to seal and finish the direct attachment.

The lap shear strength depends on materials being bonded.

Bio-Seal A-1010

Bio-Seal A-1010 is an air tight, gas tight, water tight three in one adhesive sealant finishing compound.

Lap shear strength : 721 - 1202 psi

A-2020 structural adhesive

A-2020 structural adhesive fully cures in 4 hours.

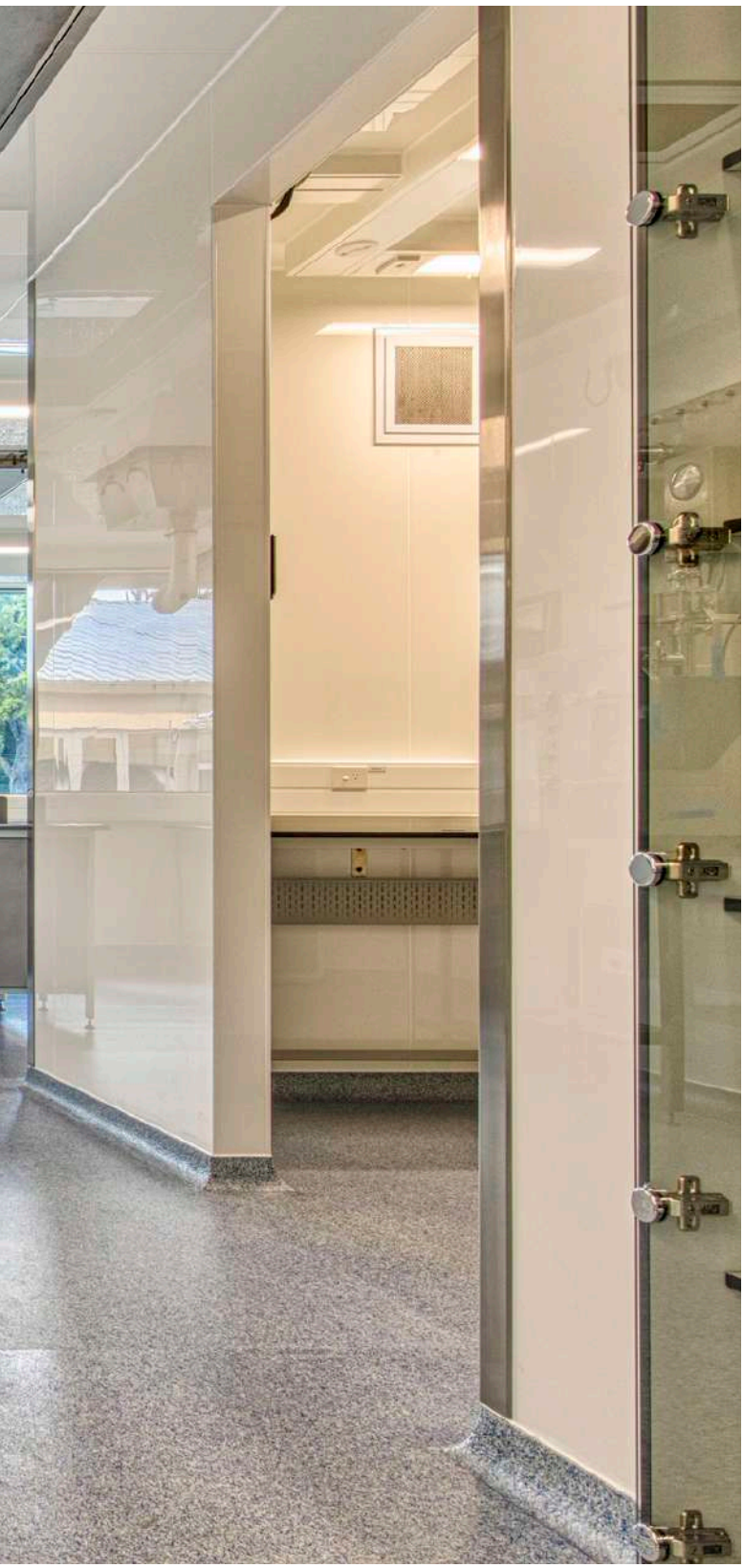
Lap shear strength : 759 - 2088 psi

*Direct attachment : Direct attach.

For more info : Please request a copy of VOL 1.

Acryloyl : Dedicated, seamless single membrane primary barrier | PC3 Laboratory.

note : The room captures the view and natural light using the : Arcoplast Perfect Glazing System.



Acryloyl

Acryloyl is the most diverse, economically viable seamless single membrane primary barrier in the Arcoplast range. It is compliant rated up to : BSL-2, BSL-3, ABSL-3, BSL-3Ag, BSL-4. CL3, CL4. PC2, PC3, PC4. CGMP Class A,B,C,D.

Acryloyl is an isotropic, fully submersible, 100% impermeable* panel system, it is chemically neutral and been awarded the : Living Building Challenge Declare Label.

Acryloyl panels are manufactured with a high gloss or satin finish. The panel surface has excellent light reflective qualities,°° thus A&E design teams are able to specify fewer light fixtures, resulting in fewer penetrations.

Comments from lab technicians and staff :
"The Laboratory always looks brand new, even after years and years of use..."

* Acryloyl Perm Rate : ASTM D 570 : 0.01 (24 hrs)

°° Reflective light value : 99.8% @ 85° source angle.

GFRMC : Hybrid, seamless single membrane primary barrier, TR35 iPanel ceiling | Mobile laboratory.

note : The GFRMC GelCoat, ultra light weight, XL panels, facilitate fewer joints and seams.

GFRMC

GFRMC Ultra light weight primary barriers are used throughout the world for a diversity of applications from new builds to refits. It is no surprise one of the most common uses is in the construction of Mini and Mobile Labs, rated BSL-2, BSL-3, ABSL-3, BSL-3Ag. CL2, CL3, PC2, PC3.

GFRMC XL, ultra light weight panels are ideal for wet and dry conditions, having a very low vapor transmission rate : 0.0036

GFRMC is 60% lighter than Acryloyl or GFRP.

Interesting to **note** : A factor for the basis of design for many projects has been the transportation of the panels to difficult and remote locations, and there after the simplicity and efficiency of Arcoplast's drybuild kitset installation system.

GFRP Hybrid : GFRP walls and TR35 suspended ceiling grid | BSL-3 Pharmaceutical cleanroom - CGMP.

note : Soft even light : Reflective light value : 99.7% @ 85° source angle.

GFRP

GFRP is the strongest, most robust seamless single membrane primary barrier system in the Arcoplast range, compliance rated up to BSL-2, BSL-3, ABSL-3, BSL-3Ag, BSL-4. CL3, CL4. PC2, PC3, PC4. CGMP Class A,B,C,D.

There are 5 different types of GFRP panel and all of them have the Arcoplast GelCoat surface.

GFRP	High performance panel
i-Panel	Insulated ceiling panel
Lead Shield	Radiology panel
Security	Steel mesh panel
Ultra	High impact panel

The manufacture of all Arcoplast GFRP panels consists of the wetting out glass fiber resin process. This is done in multiple applications to achieve a specific thickness, strength, and physical mechanical properties, resulting in the finished panel manufactured to an exact specification.

note : Lead Shield and Security panels do not use the laminated construction method.

Question : Why go to all this trouble?

Answer : Longevity, strength, endurance, no surface separation or delamination.

Hybrid primary barrier : TR35 suspended ceiling grid with i-Panels. Walls : GFRP 9.5 mm | Cleanroom cage wash.

TR35

The TR35 FRP* nonmetallic suspended ceiling grid system is in a class of its own. Designed specifically for critical environments, it is not affected by galvanic action or moisture. TR35 does not delaminate, blister, flake or succumb to corrosion.

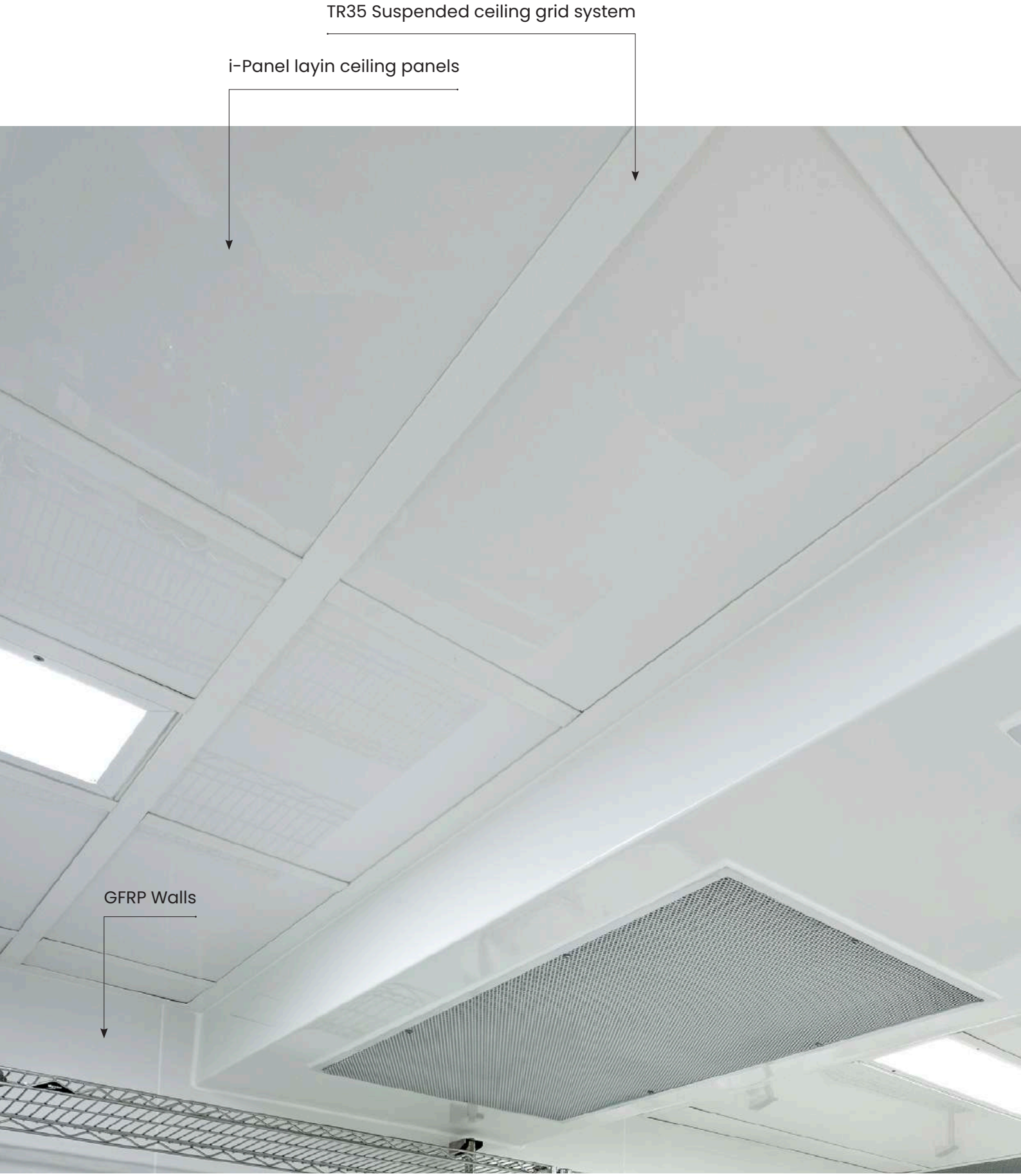
The TR35 grid houses either the standard lay-in ceiling panel or one of the Arcoplast layin ceiling panels : i-Panel, or one of two Acryloyl lay-in panels available as : Square or Tegular edge. **note :** Tegular edge panels are only seismic Cat : A, B.

Arcoplast lay-in ceiling panels are able to be sealed into the grid using one of three types of gasket seal or TR35 caulking.

Depending on the design and configuration, the TR35 suspended grid system is compliant up to seismic categories A, B, C, D, E, F.

The TR35 suspended ceiling grid has a long life cycle with no rejuvenating maintenance programs.

FRP* : Pultruded fiberglass thermoset polyester resin.



Arcoform Utility Chase | Cleanroom Laboratory.

note : Arcoform shroud integrated with GFRP wall panels in combination with the TR35 suspended ceiling grid system.

Arcoform Utility Chase

Arcoform

Arcoform is an integral modular system made up of different profiles, when assembled forms a protective shroud that works as a division barrier, concealing building structures and MEPs from corrosive elements within the cleanroom.

By encapsulating the building structures and MEPs with protective shrouds, the cleanroom is streamlined of any clutter, thus significantly improving the efficiency of the cleaning, decon and sterilization of the cleanroom.

Arcoform standard profiles are : beam and column covers, bulkheads, soffits, fascias and utility chases. The shrouds are available with bungs, inspection ports and can be insulated in a range of different densities.

Arcoform custom profiles are manufactured to specification and therefore have unlimited design possibilities.

note : All Arcoform shrouds are finished with the Arcoplast high gloss GelCoat surface.

Arcoplast Perfect Glazed windows | PC3 Laboratory.

note : Available as CGMP single or double glaze windows.

BSL-3 Glazing

Arcoplast have a range of three different window glazing systems : CGMP Perfect Glaze, Molded Glazing and Pultruded Glazing.

The Arcoplast Perfect Glazed window system is manufactured and supplied : Fully assembled ready to install, or as an assembly kitset.

The window frames are made of anodized, extruded aluminum. The design of the window ensures the anodized aluminum is not exposed to the cleanroom environment.*

The windows house single or double glaze windows in a range of different thicknesses and types of glass.

The Arcoplast Perfect Glaze window system integrates seamlessly into the primary barrier, rendering a perfectly flush finish, compliant to CGMP standards.**

Construction of the Perfect Glaze double-wall assembly is highly robust, and designed to be installed into load and non-load-bearing internal or exterior facing walls.

Arcoplast Perfect Glaze Windows have a long life cycle with no rejuvenating maintenance programs.

*For single glaze windows, the aluminum frame is exposed to the service area and not the interior of the cleanroom.

** CGMP Clean Good Manufacturing Practices.

Arcoplast service hatches are integrated into 9.5 mm GFRP primary barrier | Laboratory cleanroom / BSL-3.

note : All Arcoplast hatches are seamlessly integrated into the primary barrier using A-1010 Bio-Seal.

Hatches

Arcoplast access hatches allow entry into wall cavities or the interstitial space of a ceiling. When the hatch door is closed, the hatch door seal, ensures the primary barrier integrity is maintained. Arcoplast hatches are rated up to BSL-2, ABSL-3, BSL-3Ag, BSL-3.

Arcoplast access or service hatches range in size, shape and function. Some service hatches are fitted with an enclosure shell for housing devices such as fire extinguishes. These type of hatches, regardless if the door is open or closed, never breach the primary barriers seal.

Most Arcoplast hatches can be fitted with a viewing window for real-time monitoring of equipment. All Arcoplast hatches can be purpose or retro fitted into walls, ceilings, and in some of the Arcoform shrouds such as utility chases, bulkheads and fascias.

VLADS | PC3 Laboratory.

note : VLADS are custom manufactured and designed to be installed as a kitset.

VLADS

V Vaporized Hydrogen Peroxide Decon

L Laboratory display unit (LDU)

A Access control device

D Differential pressure indicator

S Safety signage and monitoring device

Fully customizable laboratory command and monitoring console, designed for high containment facilities rated to : BSL-2, BSL-3, ABSL-3, BSL-3Ag, BSL-4. CL3, CL4. PC2, PC3, PC4. CGMP Class A,B,C,D.

Face Plates | Cleanrooms.

note : Available in a range of standard sizes and shapes, or custom made to requirement.

Face plates

Every project is unique, hence we customize any shape to your requirement.

Our plates are 6mm to 19mm in thickness, made from Acryloyl, available in 2 formats.

1. **Solid face plates :** Fixed solid core face plates, available in rings, squares, rectangles and ovals...

2. **PuzzleLock face plates** : Two piece interlocking plates, available in all sizes and shapes, designed to interlock around MEPs and fixtures.

A-1010 Bio-Seal is used to seamlessly integrate the face plate into the primary barrier.

the right stuff

The end is important in all things
Yamamoto Tsunetomo. The book of the Samurai

Arcoplast have developed hard-copy & digital : Instruction manuals, technical documents and a series of dedicated training programs designed to inform and empower people so they may carry out their best work.

Critical Path

The fundamental goal is to achieve the best possible result.

Arcoplast have worked and communicated with teams of people across a pool of skills and talents, for some 40 years in over 35 countries.

Arcoplast are often invited to contribute to the early stages of a project. One of our greatest resources is our network of experienced contractors and skilled experts across all fields of knowledge...

It often begins with a conversation to discuss the project, the people involved, the timeline, the objectives, the budget and any concerns.

If you have a project and wish to discuss it with us, we look forward to having a chat.

TR35
arcoplast
TECHNICAL DOCUMENT
TR35 Suspended Ceilings
Industry specific solutions
VOLUME ONE
the Science of sealants, adhesives and penetrations
A-1010 Bio-Seal Finishing Compound
A-2020 Structural Methacrylate Adhesive
A-3030 Acrylayl Panel Seam Adhesive
A-4040 Acrylic Sealant
A-5050 Acrylayl Surface Repair Kit

Acryloyl BSL-3 Pharmaceutical production facility.

note : Dedicated : Direct attach, Acryloyl primary barrier | Walls Acryloyl 12.5mm. Ceiling Acryloyl 9.5mm.

Science

We all know robotic automation and AI are the future, and we know many of todays cutting edge cleanrooms utilize these technologies.

The reason Arcoplast primary barriers became the basis of design for Hi Tech facilities ???

35 years ago, Arcoplast introduced a new science in the field of cleanroom technologies. The GFRP monolith seamless single membrane primary barrier... But

Over the years it became apparent, one panel system for all applications did not suffice. Hence Arcoplast developed three different panel systems : Acryloyl, GFRMC and GFRP.

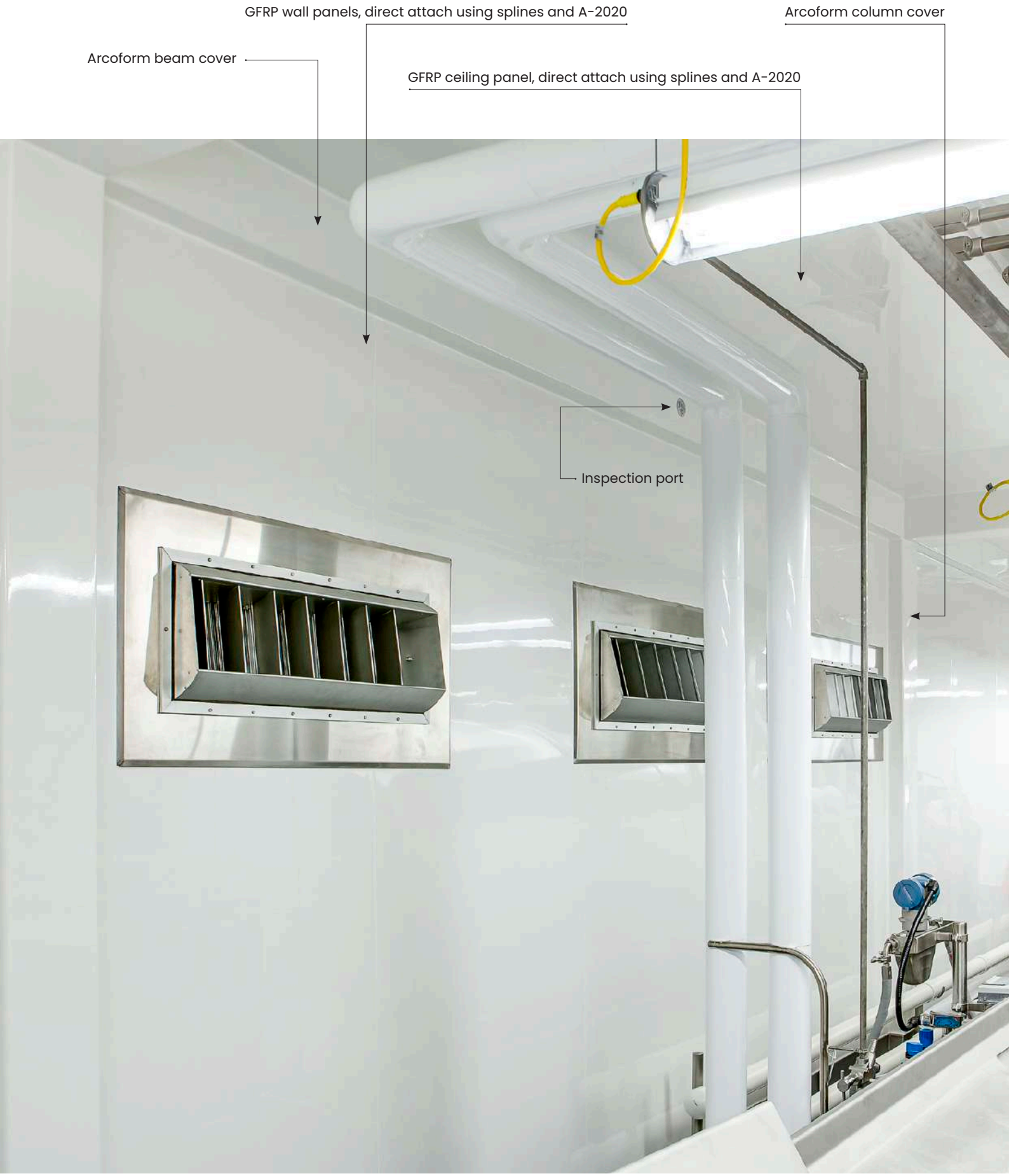
The reason Arcoplast is still the basses of design for the most technologically advanced high containment facilities in around the world...

Arcoplast have been researching & developing this new science in primary barriers for 35 years.

What is interesting, A&E departments and lab designers often comment on how the Arcoplast system provides them with multiple solutions to old problems.

Q : How long will the latest technology last?

A : Up to 65 years... if it's an Arcoplast primary barrier.



GFRP primary barrier with seamless integration of Arcoform beam and column covers | Food processing facility.

note : USDA registered establishment.

Separation posts, used to separate MEPS from the primary barrier

Sanitation

The design and construction of a primary barrier has an integral part in determining the efficacy of sterilization in a cleanroom.

In the design of this cleanroom, all MEP services have been separated from the barrier surface to facilitate efficient cleaning and decon.

On a microscopic level, all Arcoplast primary barrier surfaces inhibit microbial attachment, thus mitigating many forms of contamination.

Arcoplast primary barriers do not, flake, shed, blister, delaminate or suffer from galvanic action. Therefore there are no rejuvenation maintenance programs.

Luminance of the Arcoplast primary barrier has practical applications. Quick inspection of the barrier surface enables staff to be efficient when inspecting and cleaning the barrier.

Work flow : Arcoplast GelCoat surface and the Acryloyl polished surface are compliant to the same cleaning, decon, sterilization procedures.

Surface Reflective light test GFRP	ASTM D 523	99.7%

Acryloyl | PC 3 Animal research laboratory.

note : Air ventilation systems integrated into Arcoform bulkheads.

Air quality

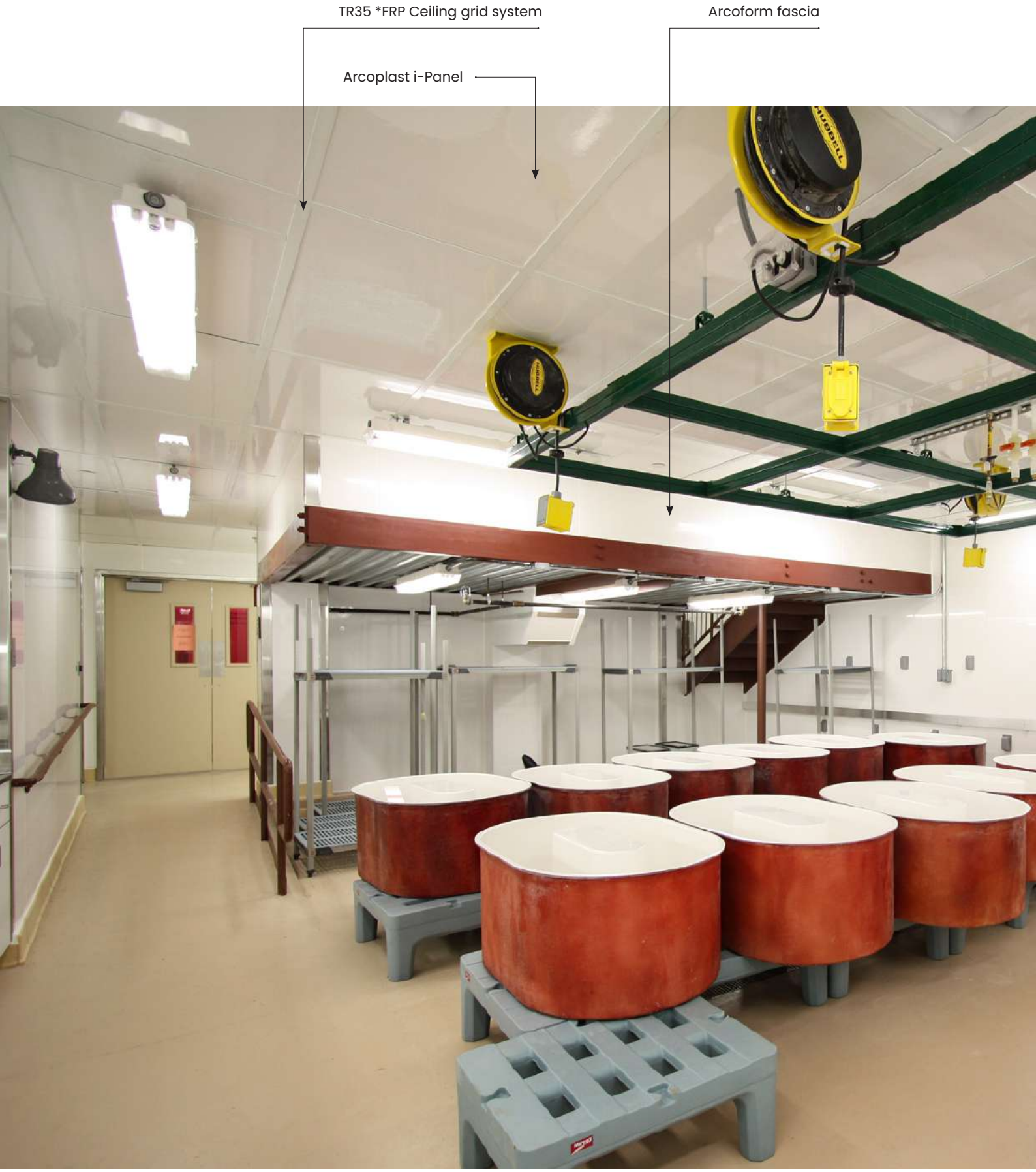
Inside a cleanroom the quality and control of the air, is systemic to the primary barrier.

Arcoplast primary barriers ensure consistent 24/7 containment of deferential negative/ positive air pressure without leakage, enabling stable A/C and humidity levels within the cleanroom.

Dr Tim Sandle points out :
Whilst air is a vector of micro organisms, it is not a nutritive environment. Therefore many micro-organisms in the air die from desiccation or photo-sensitivity. Many other micro-organisms are anaerobic and thus will not survive or will be unable to multiply. However, micro-organisms may be able to settle onto critical surfaces...

Test results support : Arcoplast primary barriers subject to cleaning decon procedures, do not abrade particulates that might contribute to airborne or surface microbial activity.

Arcoplast primary barriers are impermeable, and not affected by corrosion, oxidization or galvanic action, and so do not shed corrosive particles or particulates into the atmosphere, potentially causing corrosion in the air filtration systems and plant equipment.



Facility upgrade : Arcoplast lining system. TR35 *FRP suspended ceiling grid | Aquatics research Laboratory.

note : Wet room : GFRP primary barrier perm rate : ASTM D 570 (24 Hrs) water absorption :: 0.01.

***FRP** : Fiberglass reinforced pultruded thermoset polyester resin.

GFRP Wall liner panel

The answer

Arcoplast has been the answer for a number of projects that all had one thing in common... "How to save the facility from failure!"

There are many scenarios :
Modernizing a facility from fading into redundancy.
Bringing a facility back up to compliance.
Upgrading a facility to a higher level of Bio Security.
Resurfacing a facilities failed surfaces.

The solution always begins by understanding the criteria of the cleanrooms application and working environment, relevant to compliance.

The different Arcoplast systems offer multiple solutions to these problems. Some times the answer is a dedicated panel system, and other times a hybrid system...

Often the answer is not complicated. But one thing is certain, the project will be completed to a specification that is sustainable for many decades to come.

sustainability

A long life cycle primary barrier with no rejuvenating maintenance programs, is the ultimate sustainable system.

Declare.

VOC Test method GC-MS | Test Result : No VOC's detected

HPDc : Certified member

SCS global : Certified member

Environmental Product Declaration : Certified member

Leef® Logistical economic environmental footprint ✓

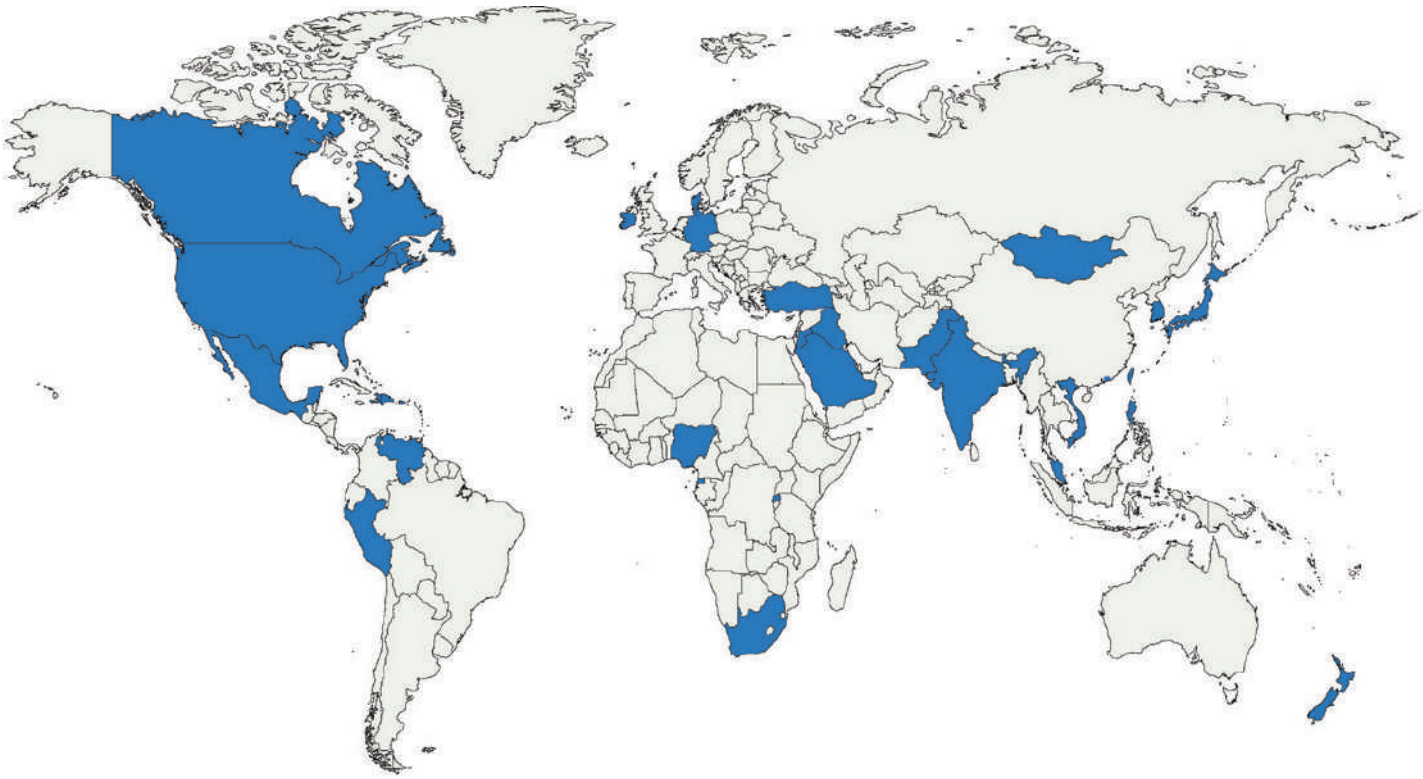
No rejuvenating maintenance programs ✓

Long life cycle ✓

Acryloyl dedicated : Seamless single membrane primary barrier | PC2.

note : Staircase handrails directly attached to the wall, using A-1010 Bio-Seal and A-2020 structural adhesive.

arcoplast®
WALL AND CEILING SYSTEMS



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