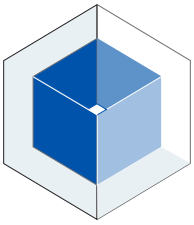
arcoplast®
WALL AND CEILING SYSTEMS

# ARCOPLAST

## Technical document

### Walls Ceilings Linings



Disclaimer : All information is presented with the best of intentions. New data may arise or standards change, please be aware we can only offer what we know at the time. We never make the claim we have completed every possible test available, the information we offer is based on the testing and data we have conducted and collected to date.

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# Arcoplast comparison test

## Comparison tests

| Barrier performance | Acryloyl 12.5mm | GFRP 9.5mm | GFRMC 9.5mm |
|---|---|---|---|
| Air Pressure Decay Test On Accessories Relating to MEP | Pass | Pass | Pass |
| Air Pressure Decay Test ASME N510 Nuclear Air Treatment Systems | Pass | Pass | Pass |
| Air Pressure Decay Test On Expansion Joint & Electrical Face Plates | Pass | Pass | Pass |
| Air Pressure Decay Test On Screw Penetrations | Pass | Pass | Pass |
| Air Pressure Decay Test Small Chamber BSL-3, BSL-4 | Pass | Pass | Pass |
| Supplemental Helium Leak Testing | Pass | Pass | Pass |
| Window Panel Pressure Decay Test Report | Pass | Pass | Pass |

| Coloration fastness | Acryloyl 12.5mm | GFRP 9.5mm | GFRMC 9.5mm |
|---|---|---|---|
| Coloration Test on Formaldehyde Gas Decontamination Procedure | Pass | Pass | Pass |
| Coloration Test on Hydrogen Peroxide Vapor Decontamination Procedure | Pass | Pass | Pass |
| Coloration Test on Chlorine Dioxide Decontamination Procedure | Pass | Pass | Pass |
| UV Exposure Cycles Test | Pass | Pass | Pass |
| Arcoplast surface and sealant chemical compatibility tests ISO 2812-4 | Pass | Pass | Pass |
| Arcoplast surface and sealant chemical compatibility tests ASTM D 1308-02 | Pass | Pass | Pass |
| Arcoplast cleanability & stain resistance ISFA 2-01 | Pass | Pass | Pass |

| Compliancy | Acryloyl 12.5mm | GFRP 9.5mm | GFRMC 9.5mm |
|---|---|---|---|
| USDA, FDA, NIH, CDC, NIAID, CANADA AGRICULTURE Compliant | ✓ | ✓ | ✓ |
| Product Guide Specification Written According To (CSI) 3-Part Format | ✓ | ✓ | ✓ |
| City of New York Department of Buildings | MEA 64-96-M | MEA 414-04-M | - |
| Determination of Extractives Residue according to US FDA 21 CFR 177.2600 | ✓ | ✓ | - |
| Living Building Challenge 3.1 Red List | ✓ | - | - |

# Arcoplast comparison test

## Comparison tests

| Fire & smoke properties | Acryloyl 12.5mm | GFRP 9.5mm | GFRMC 9.5mm |
|---|---|---|---|
| Air Pressure Decay Test ASME N510 Nuclear Air Treatment Systems | Pass | Pass | Pass |
| Air Pressure Decay Test On Accessories Relating to MEP | Pass | Pass | Pass |
| Air Pressure Decay Test Small Chamber BSL-3, BSL-4 | Pass | Pass | Pass |
| Air Pressure Decay Test On Expansion Joint & Electrical Face Plates | Pass | Pass | Pass |
| Air Pressure Decay Test On Screw Penetrations | Pass | Pass | Pass |
| ASTM E-84 Test On Surface Burning Characteristics (Must be on full composite construction - USA) | 10FS-0SD | 20FS - 200SD | 25FS-300SD |
| Classification of reaction to fire performance in accordance with EN 13501-1 - Europe, Asia | B-s1-d0 | B-s1-d0 | - |
| ISO 9705 Annex B full scale room fire test | Pass | Pass | - |
| Supplemental Helium Leak Testing | Pass | Pass | Pass |
| Toxicity Test - Measurement Of Acute Lethality Decomposition Products - UPITT Protocol | MEA 64-96-M (Solid colors) | MEA 414-04-M | - |
| UL 94 - 5VA - 500W Vertical burning test | Pass | Pass | - |
| UL S-102 Test on surface burning characteristics (must be on full composite construction - Canada) | 10.8FS - 6.1SD | 18,9 FS- 63, 4SD | - |
| Window Panel Pressure Decay Test Report | Pass | Pass | Pass |

| Mechanical properties | Acryloyl 12.5mm | GFRP 9.5mm | GFRMC 9.5mm |
|---|---|---|---|
| Arcoplast FEA Report on Structural Analysis - Seismic Loading Compliance | Pass | Pass | - |
| Joint Peel Strength Test - Interior Corner Assembly | 92.78 lbf | 55 lbf | - |
| Partition Load Bearing Test | ✓ | ✓ | - |
| Pull-out Strength Of Variable Fasteners - Ex. #6 x 25 mm Pan Phillips SDS | 733 lbs | 573 lbs | - |
| Seismic Shear Strength Test Panel - Spline Joint Assembly | 380 lbf | 396 lbf | 210 lbf |
| Seismic Shear Strength Test Lateral Movement - Corner Section Assembly | 791 lbf | 330 lbf | - |
| Seismic Shear Strength Load Test (Peak Load) Solid Panel | 629 lbf | 556 lbf | - |
| Walk-On Ceiling System Load Test | ✓ | ✓ | - |

# Arcoplast comparison test

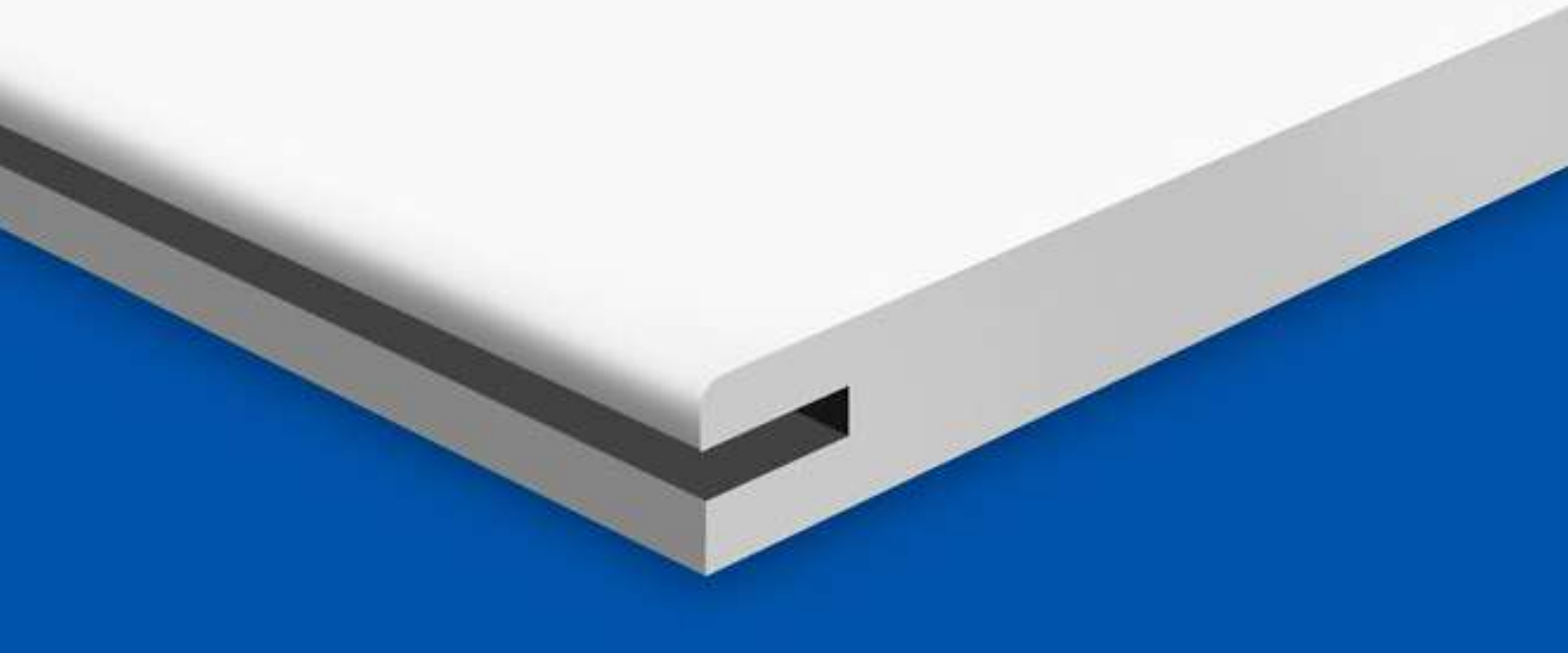
## Comparison tests

| Physical Properties | Acryloyl 12.5mm | GFRP 9.5mm | GFRMC 9.5mm |
|---|---|---|---|
| Barcol Test Indentation Hardness Test ASTM D 2583 | 58 | 56.8 | 48.6 |
| Coefficient of Linear Thermal Expansion ASTM D 696-03 | 22.43 $x10^{-6}$ in/in°F | 27.5 $x10^{-6}$ in/in°F | 63.22 $x10^{-6}$ in/in°F |
| Compressive Strength Properties Test ASTM D 695-02a | 12502 psi | 15920 psi | 5046 psi |
| Degree of Surface Disfigurement by Fungal/Algal Growth ASTM D3274 | Pass | Pass | Pass |
| DTUL - Deflection Temperature Under Load ASTM D 648 | 200°F | 185°F | - |
| Flexural Properties For Reinforced Plastics Test ASTM D 790-03 | 7504 psi | 10318 psi | 2012 psi |
| Impact Resistance Test - Mil 1073.2 | 11' x 2 lbs | 18' x 2 lbs | 1.5' x 2 lbs |
| Resistance to Bacteria ISO 846A-B-C | Pass | Pass | Pass |
| Resistance to Mold on the Surface Test ASTM D3273 | Pass | Pass | Pass |
| R-Value ASTM D177 Thermal Conductivity | 0.8 | 0.1 | - |
| Sound Absorption Test ASTM C 423-09a / E 795-05 | 0.05 | 0.05 | - |
| Sound Transmission Loss Test ASTM E 90-09 / E 413-10 | 59 | 57 | - |
| Specular Gloss Test ASTM D 523 | 97.8 | 99.7 | 98.3 |
| Surface Profile & Surface Finish Analysis ISO 10012-1 | Pc750 | Pc750 | - |
| Tensile Properties Test ASTM D 638-03 | 3490 psi | 10141 psi | 4130 psi |
| Water Absorption ASTM D 570 (24 hrs) | 0.01 | 0.01 | 2.33 |
| Water permeance Test ASTM E 96-05 | 0.0491 | - | 0.015 |
| Water Vapor Transmission Test ASTM E 96-05 | 0.04 | 0.01 | 0.0068 |

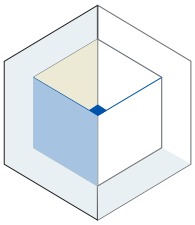
## NOTES

# Acryloyl

## Walls Ceilings Linings



**Acryloyl** **Imperial 1/2in** **Metric 12.5mm**



Engineered polymer wall paneling system
Antimicrobic / impervious to water, moisture and vapor
Certified up to PC3, PC4 | BSL-3 & BSL-4
Chemical toxin neutral
Surface : Pristine white high gloss/ matte

# Acryloyl

## introduction

ACRYLOYL IS AN EXCEPTIONAL PRODUCT. Manufactured to a consistent specification, is chemically neutral and has been awarded "The Living Building Challenge 3.1". The Acryloyl paneling system integrates with all Arcoplast systems, offering design flexibility of exceptional range.

Tested, certified, compliant and having a working history of excellence in the field for many industries, notably high containment up to levels PC4, BSL-4. Acryloyl is proving to be the answer for many old problems. Installation does not require elaborate preparations and having a history of longevity and no rejuvenating maintenance programs, economically Acryloyl is considered a very good cost return on investment.

## Specifications page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# Acryloyl

## Barrier performance

**AIR PRESSURE DECAY :** The use of A-1010 Bio-Seal finishing compound has equally impermeable results in an air, gas or water vapor tight assembly. A-1010 Bio-Seal creates a smooth, seamless seal between panels that does not crack or deteriorate over time.

**CLEANING :** Acryloyl will withstand up to and greater than 30 years of vigorous decontamination and wash-downs. It will not delaminate, dent, fade, or peel, it does not need to be re-finished.

**IMPACT :** The Acryloyl system is designed to outlast the life of the facility. Acryloyl is a robust impact, corrosion and chemical resistant paneling system suited for walls and ceilings for a wide range of industrial and scientific applications.

**MOISTURE and WATER :** Acryloyl panels are impervious to microorganisms and are not attacked by insects or vermin. Acryloyl panels are impermeable, and are unaffected by moisture and humidity.

### BARRIER TESTS CONDUCTED USING 12.5MM ACRYLOYL

| Results | Test | Description |
|---|---|---|
| Pass | ASME N510 | Air pressure decay nuclear air treatment systems test |
| Pass | ASME N510 | Air pressure decay test on accessories relating to MEP |
| Pass | ASME N510 | Air pressure decay test on expansion joint & electrical face plates |
| Pass | ASME N510 | Air pressure decay test on screw penetrations |
| Pass | ASME N510 | Air pressure decay test small chamber BSL-3, BSL-4 |
| Pass | Test | Supplemental helium leak testing |
| Pass | Report | Window panel pressure decay test report |

## Certification & training

PART 3 - EXECUTION

3.1 TRAINING AND CERTIFICATION

A. Only manufacturer trained and certified speciality applicators shall be considered for the construction of High Containment Environments as well as BSL-3, BSL-3Ag, and BSL-4 facilities.

1. Minimum Applicator requirements :

a. Minimum 2 years' experience in construction of High Containment facilities.

b. Familiar with construction guidelines pertaining to Bio-Safety in Microbiological and Biomedical Laboratories established by NIH (National Institute of Health).

c. Accredited by manufacturer on application of Acryloyl engineered polymer panels for high containment establishments.

d. US Department of Labor Occupational Safety and Administration (OSHA).

1) OSHA Standard 29CFR1926 - Safety and Health Regulation for Construction.

3.2 EXAMINATION

A. Examine areas to receive composite wall and ceiling panels. Notify Architect of conditions that would adversely affect installation or subsequent use.

B. Ensure other work to be performed behind composite panels is complete before starting installation.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

# Acryloyl

## Color surface finish

**ACRYLOYL CUSTOMIZED COLOR RANGE :** Match any PMS color.

**ACRYLOYL STANDARD COLOR :** Pristine white.

**ACRYLOYL STANDARD FINISH :** Acrylic on both face and back surfaces.

**COLORATION FASTNESS :** Surface color retention and durability based on cleaning and decontamination.

**ACRYLOYL SURFACE FINISH :** Satin or high-gloss.

**LIGHTING :** Acryloyl's pristine high gloss, bright white finish has been shown to produce a light reflectivity of 99.7 % at an 85 degree source angle, resulting in evenly diffused light throughout the room. The laboratory can be designed with fewer lamp fixtures and a reduced number of ceiling penetrations.

Acryloyl panels retain a clean modern look. Our clients often comment years after the installation, how Acryloyl panels always look brand new.

### COLOR SURFACE TESTS CONDUCTED USING 12.5MM ACRYLOYL

| Result | Test | Description |
|---|---|---|
| Pass | ISFA 2-01 | Arcoplast cleanability & stain resistance |
| Pass | ASTM D 1308-02 | Arcoplast surface and sealant chemical compatibility |
| Pass | ISO 2812-4 | Arcoplast surface and sealant chemical compatibility |
| Pass | Coloration | Chlorine dioxide decontamination procedure |
| Pass | Coloration | Formaldehyde gas decontamination procedure |
| Pass | Coloration | Hydrogen peroxide vapor decontamination procedure |
| Pass | UV test | Exposure cycles |

# Acryloyl

## Compliance

**Arcoplast Acryloyl engineered polymer panels** combine several barrier functions. Acryloyl panels when sealed and finished using A-1010 Bio-Seal are chemically welded together forming a single primary barrier membrane. Acryloyl panels are impervious to moisture and humidity, they do not oxidise or corrode and are unaffected by galvanic action, there is no flaking or delamination.

Arcoplast is used in mission critical environments and PC3, PC4, BSL-3, BSL-3Ag and BSL-4 facilities. Our products excel on air pressure decay tests, keeping interior and exterior personnel safe from harmful pathogens.

Arcoplast meets and exceeds USDA, CDC, FDA, cGMP, NIH BMBL 5th Edition, USP 797-800, GLSP compliant and specific guidelines for maximum containment facilities.

### COMPLIANCE TESTS CONDUCTED USING 12.5MM ACRYLOYL

| Result | Test | Description |
|---|---|---|
| Pass | MEA 64-96-M | City of New York Department of Buildings |
| Pass | US FDA 21 CFR 177.2600 | Determination of Extractives Residue according to US FDA |
| Pass | LBC 3.1 | Living Building Challenge 3.1 |
| Pass | CSI 3-Part Format | Product Guide Specification Written According To CSI 3 |
| Pass | Compliant test | USDA, CDC, FDA, NIH, NIAID, CANADA AGRICULTURE Compliant |

# Acryloyl

## Dimensions

Sheet sizes are made to your requirement within the parameters of the following thicknesses, widths and lengths.

### IMPERIAL : ACRYLOYL SHEET SIZES

| Thickness | Width | Length | Weight |
|---|---|---|---|
| 1/4in | 4 feet | 3 - 16 feet | 2 Lbs/Sq. Ft |
| 3/8in | 4 feet | 3 - 16 feet | 3.5 Lbs/Sq. Ft |
| 1/2in | 4 feet | 3 - 16 feet | 4.4 lbs./ Sq. Ft |
| 3/4in | 4 feet | 3 - 16 feet | 6.3 lbs./ Sq. Ft |

| | | |
|---|---|---|
| Tolerance | +/- 1/16in width | +/- 1/2in length |

### IMPERIAL : PROFILE & JOINT SYSTEM

| END CUT PROFILE | 1/4in | 3/8in | 1/2in | 3/4in |
|---|---|---|---|---|
| Grooved | | Yes | Yes | Yes |
| Square cut | Yes | Yes | Yes | Yes |

| SIDE CUT PROFILE | 1/4in | 3/8in | 1/2in | 3/4in |
|---|---|---|---|---|
| Eased side edge | | Yes | Yes | Yes |
| Grooved | | Yes | Yes | Yes |
| Square cut | Yes | Yes | Yes | Yes |

| JOINT SYSTEM | 1/4in | 3/8in | 1/2in | 3/4in |
|---|---|---|---|---|
| Batten cover | Yes | Yes | Yes | Yes |
| Cam lock | | | | Yes |
| Flush seam | Yes | Yes | Yes | Yes |
| Welded seam | Yes | Yes | Yes | Yes |

# Acryloyl

## Dimensions

Sheet sizes are made to your requirement within the parameters of the following thicknesses, widths and lengths.

### METRIC : ACRYLOYL SHEET SIZES

| Thickness | Width | Length | Weight |
|---|---|---|---|
| 6mm | 1200mm | 900mm - 4875mm | 9.7 Kg/M2 |
| 9.5mm | 1200mm | 900mm - 4875mm | 17.09 Kg/M2 |
| 12.5mm | 1200mm | 900mm - 4875mm | 21.48 Kg/M2 |
| 19mm | 1200mm | 900mm - 4875mm | 30.2 Kg/M2 |

| | | |
|---|---|---|
| Tolerance | +/- 1.5mm width | +/- 12.5mm length |

### METRIC : PROFILE & JOINT SYSTEM

| END CUT PROFILE | 6mm | 9.5mm | 12.5mm | 19mm |
|---|---|---|---|---|
| Grooved | | Yes | Yes | Yes |
| Square cut | Yes | Yes | Yes | Yes |

| SIDE CUT PROFILE | 6mm | 9.5mm | 12.5mm | 19mm |
|---|---|---|---|---|
| Eased side edge | | Yes | Yes | Yes |
| Grooved | | Yes | Yes | Yes |
| Square cut | Yes | Yes | Yes | Yes |

| JOINT SYSTEM | 6mm | 9.5mm | 12.5mm | 19mm |
|---|---|---|---|---|
| Batten cover | Yes | Yes | Yes | Yes |
| Cam lock | | | | Yes |
| Flush seam | Yes | Yes | Yes | Yes |
| Welded seam | Yes | Yes | Yes | Yes |

## Fire & Smoke

In 2009 under the Plastic Chapter 26, the International Building Code (IBC) created a division which addresses fiberglass reinforced polymer composite materials. This enables architects, specifiers and building owners to clearly interpret and conform to a uniform building code.

Composite materials are not incombustible, however the combustibility level can be significantly reduced through the correct process of chemistry engineering.

The surface burning characteristics of building materials manufactured in the United States are tested per the American Standard Testing Method (ASTM).

In Canada it is determined by ASTM International and Underwriters Laboratories (UL). In Europe, composite materials are tested in accordance with European Norms /Standard (EN), and International Organization for Standardization (ISO).

Interior finishes are classified according to their flame spread and smoke spread development indexes.

### FIRE & SMOKE TESTS CONDUCTED USING 12.5MM ACRYLOYL

| Result | Test | Description |
|---|---|---|
| B-s1-d0 | EN 13501-1 – Europe, Asia | Classification of reaction to fire performance, in accordance with – Europe, Asia |
| Pass | ISO 9705 Annex B | Full scale room fire test |
| MEA 64-96-M | UPITT Protocol Toxicity | Measurement of acute lethality decomposition products |
| 10.8 FS - 6.1 SD | UL S-102 Test | On surface burning characteristics (Must be on full composite construction – Canada) |
| 10 FS - 0 SD | ASTM E-84 Test | On surface burning characteristics (Must be on full composite construction – USA) |
| Pass | UL 94 – 5VA 500W | Vertical burning test |

Manufacturers usually publish the class only. However, there should be a more scrupulous look into the numbers. Owners and architects should require the test results for the flame and smoke generation to better assess the suitability of the interior finishes.

# Acryloyl

## Fire & Smoke

A composite material labelled as a Class A (Flame Spread 0-25) may not have a large margin of improvement because it is already in a low category. But, the (Smoke Development 0-450) is extremely critical, and a composite material with a smoke development of 425 versus 50 can have catastrophic consequences in a high occupancy high rise building.

Another area of concern is the toxicity issue in composite building materials. The City of New York requires testing on materials for acute lethality. This is based on the test methodology specified in the Building Code for the City of New York and as published by the University of Pittsburgh, Department of Industrial Environmental Health Sciences (The UPITT Test - The University of Pittsburgh Test Protocol for Measurement of Acute Lethality of Thermal Decomposition Products from Specimens).

The simplicity of the Arcoplast Acryloyl engineered polymer panel design, combined with the straightforward, simple installation methodology, facilitates cladding over new and existing fire rated partitions. Whether the fire rated assembly is composed on one or multiple layers of fire rated gypsum board and steel cladded wall liners or is attached to a masonry wall construction, Acryloyl paneling will provide a fully compliant primary barrier, with a pristine, seamless high gloss single membrane surface, ratted up to PC3, PC4, BSL-3, BSL-4.

## Installation

Borrowed from the light gauge steel stud construction methodology, Acryloyl engineered polymer wall and ceiling panel systems in most cases, do not require elaborate pre-engineering preparations. Acryloyl panels when sealed and finished using A-1010 Bio-Seal seamlessly integrate with third party building fixtures such as, door and window frames, MEP's, flooring finishes etc...

Arcoplast panels are manufactured in modular panel board form and are designed to be cut, shaped and fastened on-site to reduce engineering and fabrication time. The efficiency of on-site assembly reduces the cost of project delays, typically arising from last minute changes.

Arcoplast has an extensive library of application drawings and installation details specifically pertaining to the construction of high containment facilities.

The installation manual is a step by step guide with detailed instructions, work templates, drawings and quality control work sheets.

Installation manual

Please go to the website : www.arcoplast.com

Products page Acryloyl | Specifications | Installation | Download

# Acryloyl

## Mechanical test report

MECHANICAL TESTS CONDUCTED USING 12.5MM ACRYLOYL

| Result | Test | Description |
|---|---|---|
| 92.78 lbf | Interior corner assembly | Joint peel strength |
| Pass | Partition load bearing | Partition load bearing |
| 733 lbs | Ex. #6 x 25mm Pan Phillips SDS | Pull-out strength of variable fasteners |
| Pass | FEA report | Seismic loading compliance - FEA report on structural analysis report |
| 791 lbf | Corner section assembly | Seismic shear strength test lateral movement – corner section assembly |
| 629 lbf | Peak load | Seismic shear strength test load (peak load) solid panel |
| 380 lbf | Spline joint assembly | Seismic shear strength test panel – spline joint assembly |
| Pass | System load | Direct attach / walk-on ceiling system load |

# Acryloyl

## Physical

Acryloyl panels can perform as cavity-less free-standing partitions, which enable lab planners and architects to design suites for areas in which space and location is critical and for environments in which wall cavities are not suitable.

Acryloyl panels may be assembled in virtually any configuration, this simple uncomplicated system allows for cost-effective "box-within-a-box" construction. Walk-on ceilings, suspended ceilings, wall and ceiling liners, load bearing partitions, chase systems, beam covers and bulkheads. Arcoplast panels are easily installed into new or existing projects and are well suited for large production facilities with multilevel interiors, clean-rooms and high containment suits of the highest standard.

In some complex projects where cost is a consideration, GFRP and Acryloyl panels are used together for a multitude of reasons, often relating to added security, heavy traffic, areas that require a very robust primary barrier.

To join the two different types of panels, A-1010 Bio-Seal is used to chemically weld the panels together, forming a single membrane primary barrier. There is no discoloration or any other imperfections, the finished result is a clean modern seamless joint between the two different types of panel.

The weight of building materials plays an essential role in the architecture, design, and engineering of a building, and equally a significant factor in the cost effectiveness of a project. Design and weight limitations, building movement and demanding construction schedules must be carefully assessed. The cost to reinforce a building's foundation and structure to support the added weight of interior wall & ceiling systems can be exceedingly expensive.

# Acryloyl

## Physical

PHYSICAL TESTS CONDUCTED USING 12.5mm ACRYLOYL

| Result | Test | Description |
|---|---|---|
| 58 | ASTM D 2583 | Barcol indentation hardness |
| 22.43 x $10^{-6}$ in/in°F | ASTM D 696-03 | Coefficient of linear thermal expansion |
| 12502 psi | ASTM D 695-02a | Compressive strength properties |
| Pass | ASTM D3274 | Degree of surface disfigurement by fungal/algal growth |
| 200°F | ASTM D 648 | DTUL – Deflection temperature under load |
| 7504 psi | ASTM D 790-03 | Flexural properties for Reinforced plastics |
| 11' x 2 lbs | Mil 1073.2 | Impact resistance |
| Pass | ASTM D3273 | Resistance to mold on the surface |
| Pass | ISO 846A-B-C | Resistance to bacteria |
| 0.8 | R-Value ASTM D177 | Thermal conductivity |
| 0.05 | ASTM C 423-09a / E 795-05 | Sound absorption |
| 59 | ASTM E 90-09 / E 413-10 | Sound transmission loss |
| 99.8 | ASTM D 523 | Specular gloss test |
| Pc750 | ISO 10012-1 | Surface profile & surface finish analysis |
| 3490 psi | ASTM D 638-03 | Tensile properties |
| 0.01 | ASTM D 570 (24 hrs) | Water absorption |
| 0.04 | ASTM E 96-05 | Water vapor transmission |

# Acryloyl

## Test reports

### ACRYLOYL : COLOR FAST TEST REPORTS

ACRYLOYL : ASTM_D1308
Acryloyl : Surface sealant chemical compatibility. Oct.. 16,2017

ACRYLOYL : NC-ARC16910A-1
Acryloyl : Coloration test report. Sep 23, 2016

### ACRYLOYL : FIRE & SMOKE TEST REPORTS

ACRYLOYL : SV18619 / 4788361213
Acryloyl : Surface Burning Characteristics of Engineered Polymer Panels. March 7, 2018

ACRYLOYL : G102596804SAT-001. ISO 9705:1993(E)
Acryloyl : Full scale room test for surface products June 13, 2016

ACRYLOYL : REPORT NO : 406133. EN 13501-1:2007+A1 / ISO 11925-2
Acryloyl : Reaction to fire performance Oct 22, 2009

ACRYLOYL : REPORT NO : 103015795SAT-003A. ASTM E84-16 / UL 723, UBC 8-1, NFPA 255
Acryloyl : Surface burning characteristics of building materials. Apr 24, 2017

### ACRYLOYL : MECHANICAL TEST REPORTS

ACRYLOYL : LAB NO. 16P-3867
Acryloyl : Interior corner peel strength test. Aug 19, 2016

ACRYLOYL : LAB NO 16P-1259
Acryloyl : Pull out strength of variable fasteners. Mar 15, 2016

ACRYLOYL : LAB NO. 16P-4391
Acryloyl : Seismic shear strength load test solid panel. Oct.. 16, 2016

ACRYLOYL : LAB NO. 16P-3867
Acryloyl : Seismic shear strength test lateral movement. Aug 19, 2016

# Acryloyl

## Test reports

### ACRYLOYL : PHYSICAL TEST REPORTS

ACRYLOYL : LAB NO. 16P-4391
Acryloyl : Impact Resistance (2lb Steel Ball Dropped Causing No Damage). OCT 14, 2016

ACRYLOYL : LAB NO. 16P-4391
Acryloyl : Coefficient of Linear Thermal Expansion METHOD: ASTM D696-08 (Temperature Range: -30oC to + 30oC). OCT 14, 2016

ACRYLOYL : ASTM D3274-09 (20017)
Acryloyl : Evaluation degree of surface disfiguration of paint films by fungal or algal growth, or soil and dirt accumulation. Apr. 4, 2018

ACRYLOYL : LAB 130820 / ISO 848
Acryloyl : Evaluation of the action of microorganisms- Resistance to fungi and bacteria test method ISO 845. Apr. 20, 2018

ACRYLOYL : LAB NO : 16P-4391/ ASTM D523-14
Acryloyl : Physical properties test specular gloss ASTM D523-14. Oct.. 14, 2016

ACRYLOYL : LAB NO. 16P-4391 / ASTM D570-98
Acryloyl : Water Absorption 24hr immersion Method : ASTM D570-98 (Reapproved 2010). Oct.. 14, 2016

ACRYLOYL : LAB NO. 16P-4391/ ASTM D2583-07 / ASTM D2583-07
Acryloyl : Standard test method for indentation hardness of rigid plastics by means of a barcol impressor. Oct.. 14, 2016

ACRYLOYL : LAB CODE 200291/ ASTM E90-09/E413-10?E1332-10A
Acryloyl : Sound transmission loss test. Oct.. 14, 2016

ACRYLOYL : LAB NO. 16P-4391 / ASTM D790-15
Acryloyl : Flexural strength test using Instron 5500R with Bluehill software. Oct.. 14, 2016

ACRYLOYL : LAB NO. 16P-4391 / ASTM D638-14
Acryloyl : Tensile strength test. Method: ASTM D638-14. Oct.. 14, 2016

ACRYLOYL : LAB NO. 16P-4391 /ASTM E 96 DESICCANT PROCEDURE
Acryloyl : Water Vapor Permeance. Oct.. 14, 2016

Peer review summary

| | |
|---|---|
| Braun Intertec | date : 20 June 2020 |
| Document | 3 pages |
| Project | B2004610 |

Wall & ceiling panels limited structural peer review

Location national biocontainment laboratory Upper Hutt New Zealand

Ceiling and wall panels, Section 066250

Common Fire Alarm Testing at the PC3 Level (March 2019)
reported by Merrick Co

Leak Testing specification, Section 019140

As an assembly, these particular tests indicate that maximum loads to the ceiling and wall panels varied between some 15kPa to 30kPa to failure, far in excess of the stated goal of resisting a negative pressure of -3kPa (-3000 Pascals, or 0.435 psi) ...

Principal Engineer
Richard R. McGuire, PE (USA)

Reviewed by:
Jason S. Hanlon, PE (USA) Principal Engineer

**Braun Intertec Corporation**
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June 2, 2020 Project B2004610

Mr. Ghislain Beauregard, President
Arcoplast, Inc.
106 Crafton Drive
O'Fallon, MO 63366

Re: Arcoplast Wall and Ceiling Panels Limited Structural Peer Review
National Biocontainment Laboratory
Upper Hutt, New Zealand

Dear Mr. Beauregard:

At the request of Arcoplast, Inc., O'Fallon, MO., U.S.A., Braun Intertec Corporation has prepared this third party limited structural performance peer review of the installed Arcoplast wall and ceiling panels in the National Biocontainment Laboratory (NBL), located in Upper Hutt, New Zealand. This new laboratory structure is owned and operated by the Ministry for Primary Industries in New Zealand and was substantially completed in the spring 2019. The building has some 3,400 square meters (approx. 36,600 sq. ft.) of interior floor space and the Arcoplast wall and ceiling biocontainment panels are installed throughout the many laboratory spaces in this new facility.

## Overview of our Structural Peer Review of Arcoplast Panels Documents

Our technical documents review was limited to the available construction documents related to the Arcoplast wall and ceiling panels installations, data sheets, and past testing performance reports provided to us. In reviewing these product related documents, it is our understanding that the panels' installation performance must resist without assembly failure, a negative pressure of up to 3000 Pascals. (0.435 psi). The following is a summary of documents reviewed by Braun Intertec:

- Project Specification Sections 019140 – Room Leak Testing, 066200 – GFRPC Wall Panels
- Report of Mechanical Test (November 2016), St. Louis Testing Laboratory
- Structural Framing Calculations (July 2018), Redco NZ Ltd.
- Inspection and Site Visit Reports, Photos, Shop Drawings (2018 – 2019), Redco NZ Ltd., The Fletcher Construction Company Ltd.
- Sheet A-522-REV.M, Interior Details – Arcoplast System (November 2015), CCM Architects
- Arcoplast *Acryloyl EP* Panels Brochure (June 2019), Arcoplast, Inc.
- Window Panel Pressure Decay Study Report (June 2014), Technical Safety Services, Inc.
- Various website reviews on biocontainment facilities design and testing standards

In our review of the ceiling and wall panels tests performed by St. Louis Testing Labs, the test specimens were installed as a typical composite Arcoplast EP panel to standard light gauge metal stud framing, very similar to the support framing we see in the NBL structure. The Arcoplast structural adhesive provides the chemical bonding between the 12.5 mm (1/2”) and ceiling 9.5 mm (3/8”) biocontainment panels and the light gauge steel framing. As an assembly, these particular tests indicate that maximum loads to the ceiling and wall panels varied between some 15kPa to 30kPa to failure, far in excess of the stated goal of resisting a negative pressure of -3kPa (3000 Pascals, or 0.435 psi).

The technical specifications for the Acryloyl Engineered Polymer ceiling and wall panels, Section 066250, specifies that the Arcoplast panels are the ‘Basis of Design’ product. The physical properties listed in this specification requirement appear to be met or exceeded by the Arcoplast panels that were installed in the facility. In the Commissioning section of this specification, there is also the reference to the Room Leak Testing specification, Section 019140. In paragraph 3.3 for the air fan pressurization testing, a negative air pressure of -500 Pascals through the duration of the smoke pencil testing is required. The testing space acceptance criteria for the various rooms then is specified to be maintaining a negative room pressure of -200 Pascals +/- 50 Pascals for a period of at least 20 minutes.

Finally, the Common Fire Alarm Testing at the PC3 Level (March 2019) reported by Merrick Co. included a negative air pressure test that reached approximately -1300 Pascals (0.19 psi) without apparent damage to the Arcoplast ceiling and wall panels, and this negative pressure test exceeds the standard -500 Pa criteria for these biocontainment spaces, and further exceeds the minimum performance parameters in the above noted specifications.

In conclusion, our third party peer review of the Arcoplast ceiling and wall panels installed at the National Biocontainment Laboratory in Upper Hutt, New Zealand, would suggest that these biocontainment ceiling and wall panels, when constructed in conformance to the manufacturer’s standards and project specifications, should perform as intended, even up to as much as -3000 Pascals negative room air pressure for the test standard of 20 minutes. This value in our opinion, appears to exceed standard requirements when compared to the project specifications criteria and in researching similar lab testing criteria.

Thank you for the opportunity to provide you this peer review of the Arcoplast panels being used at the impressive National Biocontainment Laboratory in Upper Hutt, New Zealand.

BRAUN INTERTEC

## General

In performing its services, Braun Intertec used that degree of care and skill ordinarily exercised under similar circumstances by reputable members of its profession currently practicing in our profession. No warranty, express or implied, is made.

The information, observations, and opinions stated in this report are based upon our review of documents provided to Braun Intertec by the manufacturer or prime contractor, and are based upon our professional engineering judgment and professional practice.

To have questions answered, please call Richard McGuire at 913.647.5006.

Sincerely,

BRAUN INTERTEC CORPORATION

Richard R. McGuire, PE (USA)
Principal Engineer

Reviewed by:

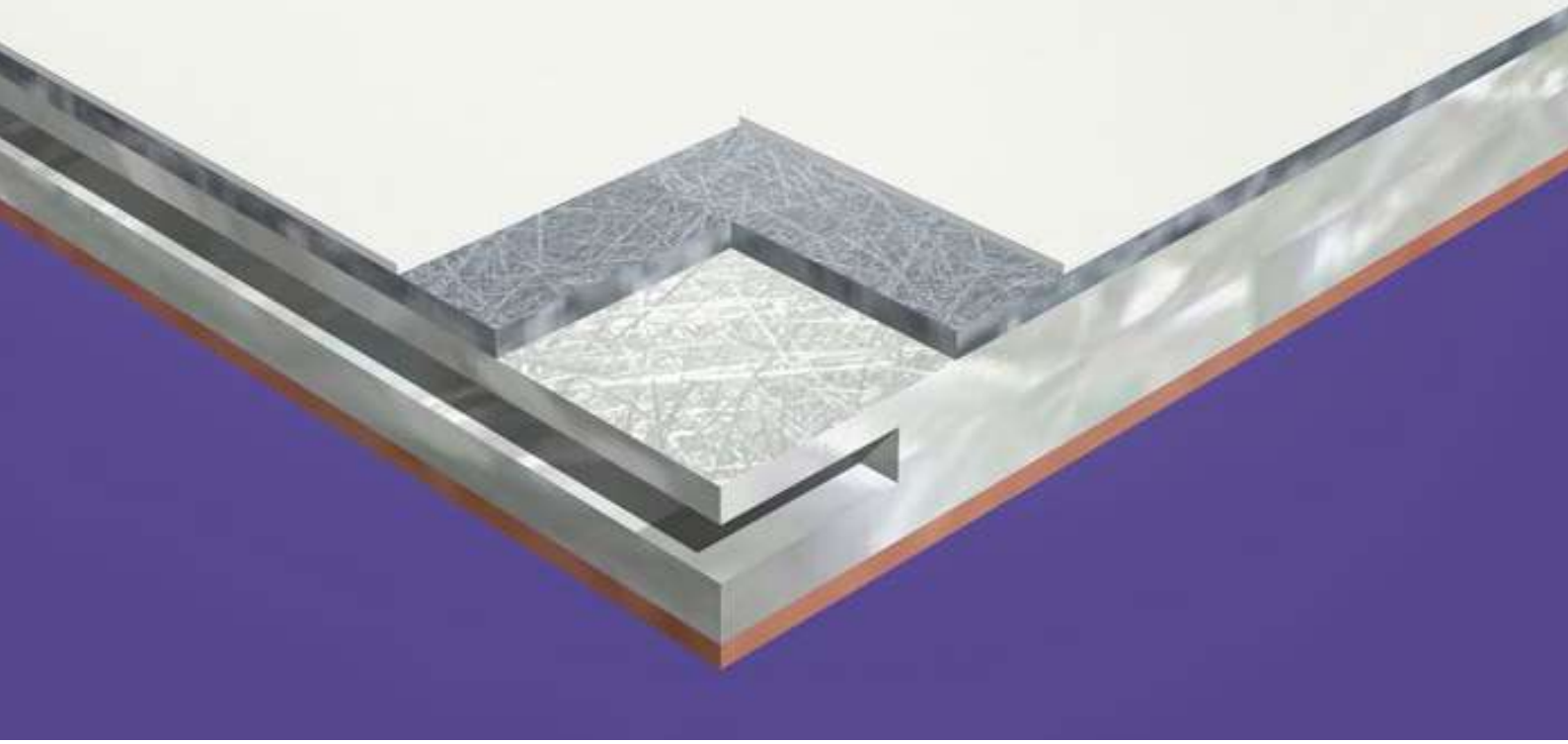
Jason S. Hanlon, PE (USA)
Principal Engineer

## DRAWINGS

## NOTES

# GFRMC

## Walls Ceilings Linings



**GFRMC** **Imperial 3/8in** **Metric 9.5mm**

ASTM E 84 : Fire and Smoke Classification – Class A
Available in large panel dimension
Designed for cladding over existing walls and ceiling substrates
Designed to accommodate heavily burdened roof structures
Nationally and internationally code compliant

# GFRMC

## introduction

Arcoplast GFRMC is a non-woven composite core substrate reinforced with fiberglass resin with a high gloss gel coat finish that provides a smooth, hard, & non-porous finish for easy cleanability.

GFRMC wall and ceiling panel system's are suitable for a diverse range of applications from clean-rooms, controlled environments and regulated industries & sciences up to level PC3, BSL-3.

| Specifications | page |
|---|---|
| Barrier performance | p 32 |
| Certification | P 33 |
| Color surface finish | p 34 |
| Compliance | p 35 |
| Dimensions | p 36 -37 |
| Fire & Smoke | p 38 |
| Installation | p 38 |
| Mechanical test report | p 39 |
| Physical | p 40 -41 |
| Test Reports | p 42 -44 |

## Barrier performance

AIR PRESSURE DECAY : A-1010 Bio-Seal two in one sealant finishing compound when used to bond GFRMC panels together, forms an impermeable water vapor, gas and air tight joint. A-1010 Bio-Seal chemically welds the GFRMC panels together forming a single membrane. The seamless smooth joints of the connecting panels do not crack or deteriorate over time.

CLEANING : GFRMC will withstand up to and greater than 30 years of vigorous decontaminations and wash-downs. It will not decay, fade, or peel, so it will not need to be painted or re-finished.

IMPACT : The GFRMC system is designed to outlast the life of the facility. GFRMC is a robust, corrosion and chemical resistant, light weight panel system.

GFRMC : Having the least amount of vapor transmission of all Arcoplast products making it suitable for diverse environmental conditions, such as commercial kitchens and high humidity production areas.

### BARRIER TESTS CONDUCTED USING : GFRMC 3/8inch | 9.5mm

| Result | Test | Description |
|---|---|---|
| Pass | ASME N510 | Air pressure decay test on accessories relating to MEP |
| Pass | ASME N510 | Air pressure decay test small chamber |
| Pass | ASME N510 | Air pressure decay test on electrical and monitoring face plates |
| Pass | ASME N510 | Air pressure decay test Arcoplast cGMP window housing |
| Pass | ASME N510 | Air pressure decay test on screw penetrations |

## Certification & training

PART 3 - EXECUTION

3.1 TRAINING AND CERTIFICATION

A. Only manufacturer trained and certified speciality applicators shall be considered for the construction of High Containment Environments such as PC3, BSL-3, BSL-3Ag facilities.

1. Minimum Applicator requirements :

a. Minimum 2 years' experience in construction of High Containment facilities.

b. Familiar with construction guidelines pertaining to Bio-Safety in Microbiological and Biomedical Laboratories established by NIH (National Institute of Health).

c. Accredited by manufacturer on application of GFRMC fiberglass composite panels for high containment establishments.

d. US Department of Labor Occupational Safety and Administration (OSHA).
1/ OSHA Standard 29CFR1926 - Safety and Health Regulation for Construction.

3.2 EXAMINATION

A. Examine areas to receive composite wall and ceiling panels. Notify Architect of conditions that would adversely affect installation or subsequent use.

B. Ensure other work to be performed behind composite panels is complete before starting installation.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

# GFRMC

## Color surface finish

GFRMC COLOR : Standard color, pristine white

GFRMC CUSTOMISED COLOR RANGE : Match PMS colors

GFRMC COLORATION FASTNESS : Surface color retention and durability based on cleaning and decontamination processes

GFRMC SURFACE FINISH : Smooth

GFRMC SURFACE PROFILE : High gloss polished surface

### COLORATION FASTNESS TESTS CONDUCTED USING : GFRMC 3/8inch | 9.5mm

| Result | Test | Description |
|---|---|---|
| Pass | ISFA 2-01 | Arcoplast cleanability & stain resistance |
| Pass | ASTM D 1308-02 | Arcoplast surface and sealant chemical compatibility |
| Pass | ISO 2812-4 | Arcoplast surface and sealant chemical compatibility |
| Pass | Coloration | Chlorine dioxide decontamination procedure |
| Pass | Coloration | Formaldehyde gas decontamination procedure |
| Pass | Coloration | Hydrogen peroxide vapor decontamination procedure |
| Pass | UV test | Exposure cycles |

# GFRMC

## Compliance

Arcoplast GFRMC fiberglass polymer composite panels combine together several barrier functions. GFRMC is light weight, available in large ceiling and wall panel sizes, GFRMC has a Gel Coat surface that does not corrode, oxidise or delaminate and requires no on going maintenance programs.

Arcoplast is used in mission critical environments up to PC3, BSL-3, BSL-3Ag facilities.

Our products excel on air pressure decay tests, keeping interior and exterior personnel safe from harmful pathogens.

Arcoplast meets and exceeds USDA, FDA, CDC, cGMP, NIH BMBL 5th Edition, USP 797-800, GLSP compliant and specific guidelines for maximum containment facilities.

### COMPLIANCE TESTS CONDUCTED USING : GFRMC 3/8inch | 9.5mm

| Result | Test | Description |
|---|---|---|
| Pass | CSI 3-Part Format | Product guide Specification written according To CSI 3 |
| Pass | Compliant test | USDA, FDA, CDC, NIH, USP 797-800, Canada Agriculture compliant |

# GFRMC

## Dimensions

GFRMC sheet sizes are made to your requirement within the parameters of the following thicknesses, widths and lengths.

### IMPERIAL : GFRMC SHEET SIZES

| Thickness | Width | Length | Weight | R/K Rating |
|---|---|---|---|---|
| 13/64in | 48in - 108in | Up to 40ft | 1.09 lbs./ Sq. Ft | - |
| 3/8in | 48in - 108in | Up to 40ft | 1.4 lbs./ Sq. Ft | - |

### GFRMC IMPERIAL PROFILE & JOINT SYSTEM

| END CUT PROFILE | 13/64in | 3/8in |
|---|---|---|
| Grooved | | Yes |
| Eased side edge | | |
| Square cut | Yes | Yes |

| SIDE EDGE PROFILE | 13/64in | 3/8in |
|---|---|---|
| Eased side edge | | |
| Grooved | | Yes |
| Square cut | Yes | Yes |

| JOINT SYSTEM | 13/64in | 3/8in |
|---|---|---|
| Batten cover | Yes | |
| Flush seam | Yes | Yes |
| Mechanical spline | | Yes |

# GFRMC

## Dimensions

GFRMC sheet sizes are made to your requirement within the parameters of the following thicknesses, widths and lengths.

### METRIC : GFRMC SHEET SIZES

| Thickness | Width | Length | Weight | R/K Rating |
|---|---|---|---|---|
| 5mm | 1.2 - 2.74 meter | 1.2 - 12.2 meter | 5.3kg/m2 | - |
| 9.5mm | 11.2 - 2.74 meter | 1.2 - 12.2 meter | 6.1 kg/m2 | - |

### GFRMC METRIC PROFILE & JOINT SYSTEM

| END CUT PROFILE | 5mm | 9.5mm |
|---|---|---|
| Grooved | | Yes |
| Eased side edge | | |
| Square cut | Yes | Yes |

| SIDE EDGE PROFILE | 5mm | 9.5mm |
|---|---|---|
| Eased side edge | | |
| Grooved | | Yes |
| Square cut | Yes | Yes |

| JOINT SYSTEM | 5mm | 9.5mm |
|---|---|---|
| Batten cover | Yes | |
| Flush seam | Yes | Yes |
| Mechanical spline | | Yes |

## Fire & Smoke

### FIRE & SMOKE TESTS CONDUCTED USING : GFRMC 3/8inch | 9.5mm

| Result | Test | Description |
|---|---|---|
| Class A–20 FS–SD-300 | ASTM E-84 | Surface burning characteristics of building materials |

## Installation

Handling / Storage: Handle panels with care and limit panel sagging to prevent warping and gel coat fissures. Keep contents dry. Store indoors in a well-ventilated area on flat wooden skids.

Panel Protector - Remove protective film prior to edge detailing.

Caution : Do not stack nor store any goods on the GFRMC panels and prevent foot traffic on stored panels.

Crating / Transportation: Standard width panels of 4'0" and up to 16'-0" in length are crated and shipped on wooden crates. Dimensionally large panels of up to 9"-0" in width and up to 40'-0" in length are bundled and shipped on flatbed trailers.

Arcoplast has an extensive library of shop drawings and installation details specifically pertaining to the construction of high containment facilities.

The installation manual is a step by step guide with detailed instructions, work templates, shop drawings and quality control work sheets.

Installation manual
Please go to the website : www.acoplast.com
Products page GFRMC | Specifications | Installation | Download

# GFRMC

## Mechanical

SURFACE PROPERTIES TESTS CONDUCTED USING : GFRMC 3/8inch | 9.5mm

| Result | Test | Description |
|---|---|---|
| 210 lbf | Spline joint assembly | Seismic shear strength test panel |

# GFRMC

## Physical

Arcoplast Composite Fiberglass Liner Panel - GFRMC 5mm & 9.5mm

Applications : Wall and ceiling systems requiring an ultra-lightweight, dimensionally large sanitary composite liner panel for cladding existing decayed surfaces. GFRMC is also well suited for lining new walls and ceilings that require minimum exposed panel joints.

Composition : Reinforcement – Chopped fiberglass strand.

Product : Arcoplast GFRMC 5mm & 9.5mm are constructed using a non-woven composite core substrate, reinforced with fiberglass resin impregnated fabric. GFRMC's gel coat surface is a smooth, hard, non-porous finish, offering easy cleanability and has a finish that is virtually maintenance free.

Resin : Fire Rated Polyester resin system.

Substrate : Polypropylene high strength core matrix.

Surface Finish : High gloss Fire Rated gel coat creating a smooth, impermeable surface profile with excellent chemical and corrosion resistance.

# GFRMC

## Physical

### PHYSICAL TESTS CONDUCTED USING : GFRMC 3/8inch | 9.5mm

| Result | Test | Description |
|---|---|---|
| 48.6 | ASTM D2583.7 | Barcol test indentation hardness |
| 1156.0 | ASTM D695-15 | Compressive strength |
| 63.22 x$10^{-6}$ in/in°F | ASTM D696-08 | Coefficient of liner thermal expansion |
| 2012.2 | ASTM D790-15 | Flexural strength |
| 0.268 | ASTM D695-15 | Modulus compressive |
| 192900.8 | ASTM D790-15 | Modulus flexural |
| 24263.5 | ASTM 638-14 | Modulus tensile |
| 4130 | ASTM 638-14 | Tensile strength |

### SURFACE PROPERTIES TESTS CONDUCTED USING : GFRMC 3/8inch | 9.5mm

| Result | Test | Description |
|---|---|---|
| Pass | ASTM D 3274 | Degree of surface disfigurement by fungal growth |
| Pass | ISO 8464 B C | Resistance to bacteria |
| Pass | ASTM D 3273 | Resistance to mold on surface |
| 98.3 | ASTM D 523 | Specular gloss test |
| 30.9 | ASTM D 570 (24HRS) | Water absorption |
| 0.015 | ASTM E 96 | Water permeance |
| 0.0068 | ASTM E 96 05 | Water Vapor transmission |

Test reports

GFRMC : COMPLIANCE REPORTS

GFRMC : CSI 3-PART FORMAT
GFRMC : Construction Specification Institute. June 13, 2020

GFRMC : FIRE & SMOKE TEST REPORTS

GFRMC : ASTM-E84
GFRMC : Smoke development and Flame spread report 5mm. March 25, 2020

GFRMC : ASTM-E84
GFRMC : Smoke development and Flame spread report 9.5mm. March 25, 2020

GFRMC : MECHANICAL TEST REPORTS

GFRMC : 20P-2156
GFRMC : 5mm Lap shear strength test on concrete with A2020 adhesive no tape. May 21, 2020

GFRMC : 20P-2156
GFRMC : 5mm Shear strength test on metal plate with tape and A2020 adhesive. May 21, 2020

GFRMC : 20P-2156
GFRMC : 5mm Tensile strength test on metal plate with A2020 and tape. May 21, 2020

GFRMC : 20P-2156
GFRMC : 5mm Tensile strength test on metal plate with A2020 and no tape. May 21, 2020

GFRMC : 20P-2156
GFRMC : 9.5mm Lap shear strength test on concrete with A2020 adhesive no tape. May 21, 2020

GFRMC : 20P-2156
GFRMC : 9.5mm Seismic shear strength test with spline and A2020 adhesive. May 21, 2020

GFRMC : 20P-2156
GFRMC : 9.5mm Shear strength test on metal plate with tape and A2020 adhesive. May 21, 2020

# GFRMC

## Test reports

GFRMC : 20P-2156
GFRMC : 9.5mm Tensile strength test on metal plate with A2020. May 21, 2020

GFRMC : 20P-2156
GFRMC : 9.5mm Tensile strength test with spline and A2020. May 21, 2020

## GFRMC : PHYSICAL TEST REPORTS

GFRMC : MIL 1073.2
GFRMC : Impact resistance test with 2lbs. ball drop method. May 21, 2020

GFRMC : ASTM D2583-13A
Standard test method for indentation hardness of rigid plastics by mean of barcol impresser. May 21, 2020

GFRMC : ASTM D696-08
Coefficient of linear thermal expansion test. May 21, 2020

GFRMC : ASTM D523-14
Standard test method of specular gloss. May 21, 2020

GFRMC : ASTM D570-98
GFRMC : 5mm Water absorption, 24-hour immersion. June 10, 2020

GFRMC : ASTM E96
GFRMC : 5mm Water vapor transmission and permeance test. June 10, 2020

GFRMC : ASTM D695-15
GFRMC : 5mm Compressive strength properties test. May 21, 2020

GFRMC : ASTM D790-17
GFRMC : 5mm Flexural strength test. May 21, 2020

GFRMC : ASTM D638-14
GFRMC : 5mm Tensile strength test. May 21, 2020

Test reports

GFRMC : PHYSICAL TEST REPORTS

GFRMC : ASTM D570-98
GFRMC : 9.5mm Water absorption, 24-hour immersion. June 10, 2020

GFRMC : ASTM E96
GFRMC : 9.5mm Water vapor transmission and permeance test. June 10, 2020

GFRMC : ASTM D695-15
GFRMC : 9.5mm Compressive strength properties test. May 21, 2020

GFRMC : ASTM D790-15
GFRMC : 9.5mm Flexural strength test. May 21, 2020

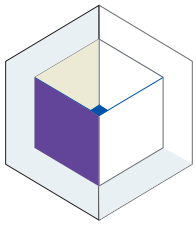
GFRMC : ASTM D638-14
GFRMC : 9.5mm Tensile strength test. May 21, 2020

## NOTES

# GFRP

## Walls Ceilings Linings

**GFRP** **Imperial 3/8in** **Metric 9.5mm**



Gel coated fiberglass reinforced polymer wall panel system
Antimicrobic / impervious to water, moisture and vapor
Certified up to PC3, PC4 | BSL-3 & BSL-4
Designed for highly specialized facilities
Surface : Pristine white high gloss

# GFRP

## introduction

GFRP IS THE MOST ROBUST ARCOPLAST PRODUCT. Designed for highly specialized facilities with strict requirements for environment control. Made of reinforced glass fiber with a Gel Coat surface, GFRP panels are manufactured to comply to the highest level of containment rated PC3, PC4, BSL-3, BSL-4. GFRP has surpassed expectations for applied operational and functional criteria such as longevity, maintenance and reliability.

GFRP panels are configured for load and non-load bearing applications as well as direct attached ceilings and re-cladding existing surfaces. All Arcoplast products meet and exceed USDA, Canada Agriculture, FDA, NIH, BMBL, AS/NZS and USP 797-800. GFRP is compliant with specific guidelines for high containment facilities.

| Specifications | page |
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| Barrier performance | p 48 |
| Color surface finish | p 49 |
| Compliance | p 50 |
| Color range | P 51 |
| Dimensions | p 52 -53 |
| Fire & smoke | p 54 -55 |
| Installation | p 56 |
| Mechanical test report | p 57 -59 |
| Physical | p 60 -61 |
| Test reports | p 62 -65 |

# GFRP

## Barrier performance

AIR PRESSURE DECAY : GFRP panels when chemically welded together using A-1010 Bio-Seal, are formed into a single impermeable membrane. The smooth, seamless joints are water vapor, gas and air tight, and do not crack or deteriorate over time

CLEANING : GFRP will withstand up to and greater than 30 years of vigorous decontaminations and wash-downs. It will not decay, dent, fade, or peel, so it will not need to be painted or re-finished.

IMPACT : The GFRP system is designed to outlast the life of the facility. GFRP is a robust, impact, corrosion, and chemical resistant panel system.

MOISTURE and WATER : GFRP is impervious to microorganisms and is not effected by insects or vermin. The front and back surfaces are impermeable and unaffected by moisture or humidity.

### BARRIER TESTS CONDUCTED USING : GFRP 9.5MM

| Results | Test | Description |
|---|---|---|
| Pass | ASME N510 | Air pressure decay nuclear air treatment systems test |
| Pass | ASME N510 | Air pressure decay test on accessories relating to MEP test |
| Pass | ASME N510 | Air pressure decay test on expansion joint & electrical face plates |
| Pass | ASME N510 | Air pressure decay test on screw penetrations test |
| Pass | ASME N510 | Air pressure decay test small chamber BSL-3, BSL-4 test |
| Pass | Test | Supplemental helium leak testing |
| Pass | Report | Window panel pressure decay test report |

* ASME Standard N510 - Testing of nuclear air treatment systems (1995)

# GFRP

## Color surface finish

GFRP COLOR : Standard color, pristine white

GFRP CUSTOMIZED COLOR RANGE : Full range of PMS colors

GFRP COLORATION FASTNESS : Surface color retention & durability based on cleaning & decontamination

CUSTOM FORMING : Custom molded for curved applications

GFRP FINISH : Front surface finish : Fire rated gel coated resin acrylic

GFRP SURFACE FINISH : Smooth, non porous

GFRP SURFACE PROFILE : High gloss polished surface

Lighting : GFRP has a pristine high gloss, bright white finish, that produces a light reflectivity of 99.7 % at an 85 degree source angle, providing the laboratory with evenly diffused light designed with fewer lamp fixtures, thus reducing the amount of penetrations to the ceiling surface.

## GFRP COLOR SURFACE TESTS CONDUCTED USING : GFRP 9.5MM

| Result | Test | Description |
|---|---|---|
| Pass | ISFA 2-01 | Arcoplast cleanability & stain resistance |
| Pass | ASTM D 1308-02 | Arcoplast surface and sealant chemical compatibility |
| pass | ISO 2812-4 | Arcoplast surface and sealant chemical compatibility |
| Pass | Coloration | Chlorine dioxide decontamination procedure |
| Pass | Coloration | Formaldehyde gas decontamination procedure |
| Pass | Coloration | Hydrogen peroxide vapor decontamination procedure |
| Pass | UV test | Exposure cycles |

# GFRP

## Compliance

Arcoplast GFRP fiberglass polymer composite panels integrate both shielding and barrier functions into the primary barrier. GFRP does not flake, delaminate, is unaffected by water or galvanic action and GFRP does not corrode or oxidise and requires no rejuvenating maintenance programs.

Arcoplast is used in mission critical environments such as BSL-3, BSL-3Ag and BSL-4 facilities. Arcoplast products excel on air pressure decay tests, keeping interior and exterior personnel safe from harmful pathogens.

Arcoplast meets and exceeds USDA, FDA, CDC, cGMP, NIH BMBL 5th Edition, USP 797-800, GLSP compliant and specific guidelines for maximum containment facilities.

### GFRP COMPLIANCE TESTS CONDUCTED USING : GFRP 9.5MM

| Result | Test | Description |
|---|---|---|
| MEA 414-04-M | UPITT Protocol toxicity test | City of New York department of buildings |
| Pass | US FDA 21 CFR 177.2600 | Determination of extractives residue according to US FDA |
| Pass | CSI 3-Part format | Product guide specification written according to CSI 3 |
| Pass | Compliant test | USDA, FDA, CDC,  NIH, NIAID, Canada Agriculture compliant |

# GFRP

## GFRP Color range

Standard color : Pristine white.

Arcoplast gel coated fibreglass panels can be matched to most pan tone colors, please consult with Arcoplast for further information.

GFRP is highly durable, and retains its pristine high gloss appearance. The GFRP Gel Coat surface has a clean brilliant white glossy finish, offering a modern aesthetic to any room or working environment. After years of being decontaminated, scrubbed, vigorously washed and having endured years of activity… Our clients often comment on how GFRP always looks “brand new”.

### GFRP COLOR RANGE TESTS CONDUCTED USING : GFRP 9.5MM

| | |
|---|---|
| Color | Pristine white |
| Custom color | Full range of PMS colors |

### GFRP RANGE OF FINISHES

| | |
|---|---|
| Custom forming | Custom molded for curved applications |
| Panel surface | Front surface finish : Fire rated gel coated resin acrylic |
| Surface finish | Smooth non porous |
| Surface profile | Polished high gloss surface |

# GFRP

## Dimensions

GFRP sheet sizes are made to your requirement within the parameters of the following thicknesses, widths and lengths.

### IMPERIAL SIZES

| Thickness | Width | Length | Weight |
|---|---|---|---|
| 13/64in | 4 feet | 3 - 12 feet | 2.0lbs./ Sq. Ft |
| 3/8in | 4 feet | 3 - 12 feet | 3.6lbs./ Sq. Ft |
| 1/2in | 4 feet | 3 - 12 feet | 4.6lbs./ Sq. Ft |
| 3/4in | 4 feet | 3 - 12 feet | 8lbs./ Sq. Ft |

| | | |
|---|---|---|
| Tolerance | - | +/ -1/8 Inch length |

### IMPERIAL : PROFILE & JOINT SYSTEM

| END CUT PROFILE | 13/64in | 3/8in | 1/2in | 3/4in |
|---|---|---|---|---|
| Grooved | | Yes | Yes | Yes |
| Eased side edge | | | | Yes |
| Square cut | Yes | Yes | Yes | |

| SIDE CUT PROFILE | 13/64in | 3/8in | 1/2in | 3/4in |
|---|---|---|---|---|
| Eased side edge | Yes | Yes | Yes | Yes |
| Grooved | | Yes | Yes | Yes |
| Square cut | | | | Yes |

| JOINT SYSTEM | 13/64in | 3/8in | 1/2in | 3/4in |
|---|---|---|---|---|
| Batten cover | Yes | | | |
| Flush seam | Yes | Yes | Yes | Yes |
| Mechanical seam | | Yes | Yes | Yes |

# GFRP

## Dimensions

GFRP sheet sizes are made to your requirement within the parameters of the following thicknesses, widths and lengths.

### METRIC SIZES

| Thickness | Width | Length | Weight |
|---|---|---|---|
| 5mm | 1200mm | 900mm - 3700mm | 9.76 Kg/m² |
| 9.5mm | 1200mm | 900mm - 3700mm | 17.5Kg m² |
| 12.5mm | 1200mm | 900mm - 3700mm | 22.5Kg m² |
| 19mm | 1200mm | 900mm - 3700mm | 39.1Kg m² |

| | | |
|---|---|---|
| Tolerance | - | +/- 3 mm length |

### METRIC : PROFILE & JOINT SYSTEM

| END CUT PROFILE | 5mm | 9.5mm | 12.5mm | 19mm |
|---|---|---|---|---|
| Grooved | | Yes | Yes | Yes |
| Eased side edge | | | | Yes |
| Square cut | Yes | Yes | Yes | |

| SIDE CUT PROFILE | 5mm | 9.5mm | 12.5mm | 19mm |
|---|---|---|---|---|
| Eased side edge | Yes | Yes | Yes | Yes |
| Grooved | | Yes | Yes | Yes |
| Square cut | | | | Yes |

| JOINT SYSTEM | 5mm | 9.5mm | 12.5mm | 19mm |
|---|---|---|---|---|
| Batten cover | Yes | | | |
| Flush seam | Yes | Yes | Yes | Yes |
| Mechanical seam | | Yes | Yes | Yes |

## GFRP Fire & smoke

In the year 2009 under the Plastic Chapter 26, the International Building Code (IBC) created a division which addresses fiberglass reinforced polymer composite materials. This enables architects, specifiers and building owners to clearly interpret and conform to a uniform building code.

Composite materials are not incombustible, however the combustibility level can be significantly reduced through the correct process of chemistry engineering.

The surface burning characteristics of building materials manufactured in the United States are tested per the American Standard Testing Method (ASTM).

In Canada it is determined by ASTM International and Underwriters Laboratories (UL). In Europe, composite materials are tested in accordance with European Norms /Standard (EN), and International Organization for Standardization (ISO).

Interior finishes are classified according to their flame spread and smoke spread development indexes.

Manufacturers usually publish the class only. However there should be a more scrupulous look into the numbers. Owners and architects should require the test results for the flame and smoke generation to better assess the suitability of the interior finishes.

A composite material labeled as a Class A (Flame Spread 0-25) may not have a large margin of improvement because it is already in a low category. But the (Smoke Development 0-450) is extremely critical, and a composite material with a smoke development of 425 versus 50 can have catastrophic consequences in a high occupancy high rise building.

Another area of concern is the toxicity issue in composite building materials. The City of New York requires testing on materials for acute lethality. This is based on the test methodology specified in the Building Code for the City of New York and as published by the University of Pittsburgh, Department of Industrial Environmental Health Sciences (The UPITT Test - The University of Pittsburgh Test Protocol for Measurement of Acute Lethality of Thermal Decomposition Products from Specimens).

# GFRP

## GFRP Fire & smoke

The test has a pass/fail criteria. It must not be more toxic than wood, which produces a 50 percent lethality rate at a total mass of 19.7 grams. Upon the receipt of successful test results, the City of New York will grant a Materials & Equipment Acceptance (MEA) number for the designated product.

[Note: International Building Code Chapter 8 Section 8901.1.1. on interior finishes. Exception: Materials having a thickness less that 0.036 inch (0.9mm) applied directly to the surface of walls or ceilings.]

The IBC does not factor in primers and paint applications or high-performance coatings as an integral part of a wall or ceiling system, whether constructed using a light gauge steel stud and drywall composition or masonry wall. Historically, manufacturers have only been required to test the primer and paint product and coatings without the substrate. It is therefore highly uncertain as to the classification of a given system unless the whole assembly is tested.

Arcoplast fiberglass reinforced composite panels also comply with the IBC Chapter 8 Section 801.1.3 referring to interior finishes below the design flood elevation to be flood-damage-resistant materials.

### GFRP RANGE OF FINISHES TESTS CONDUCTED USING : GFRP 9.5MM

| Result | Test | Description |
|---|---|---|
| B-s1-d0 | EN 13501-1 Europe, Asia | Classification of reaction to fire performance, in accordance with – Europe, Asia |
| Pass | ISwO 9705 Annex B | Full scale room fire test |
| MEA 414-04-M | UPITT Protocol Toxicity | Measurement of acute lethality decomposition products |
| 18.9 FS - 63.4SD | UL S 102 Test | On surface burning characteristics (Must be on full composite construction – Canada) |
| 20FS – 200SD | ASTM E 84 Test | On surface burning characteristics (Must be on full composite construction – USA) |
| Pass | UL 94 – 5VA 500W | Vertical burning test |

## Installation

Borrowed from the light gauge steel stud construction method, Arcoplast fiberglass reinforced composite wall and ceiling systems most often do not require elaborate pre-engineering preparations. GFRP when sealed and finished using A-1010 Bio-Seal, seamlessly integrates with third party building fixtures such as, door and window frames, MEP's, flooring finishes etc.

Arcoplast panels are manufactured in modular panel board form and are designed to be cut, shaped and fastened on-site to reduce engineering and fabrication time. The efficiency of on-site assembly reduces the cost of project delays typically arising from last minute changes.

Arcoplast has an extensive library of application drawings and installation details specifically relating to the construction of high containment facilities.

The installation manual is a step by step guide with detailed instructions, work templates, drawings and quality control work sheets.

Installation manual

Please go to the website : www.acoplast.com
Products page GFRP | Specifications | Installation | Download

# GFRP

## Mechanical

Mechanical and Physical Properties. The mechanical and physical properties of building materials should be carefully considered when planning the construction of high containment facilities. Flexural and compressive strength, surface hardness, gloss property, coefficient of expansion and contraction, impact resistance and water vapor transmission are crucial factors in the material selection process.

Disappointment and failures are, in many cases, associated with a poor performance of materials or systems design. Consider this example: A wall to footprint ratio is approximately 1.72 feet times the floor surface. With a 5,000 square foot footprint, the laboratory space will yield approximately 8,600 square feet of partition surface.

Arcoplast Panel System : 7 lbs. x 8600 sq. ft. = 60,200 lbs.
Masonry Block : 45 lbs. x 8,600 sq. ft. = 387,000 lbs.
Poured in Place Concrete : 100 lbs. x 8,600 sq. ft. = 860,000 lbs.

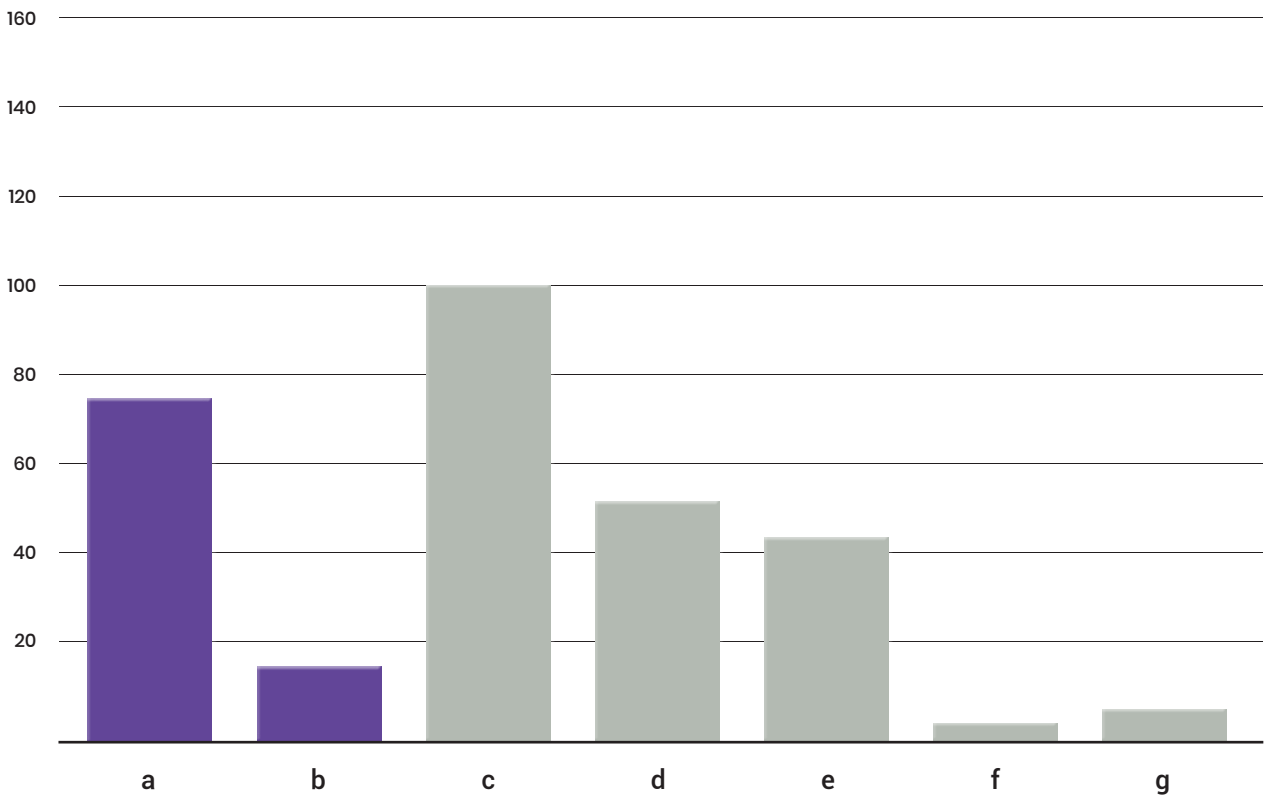
At 7 pounds per square foot, Arcoplast panel systems would clearly cause the least stress on the building. The structural and environmental integrity is achieved through light gauge steel stud framing and Arcoplast modular panel system that work in harmony with the building movement, and constant air cycle movement generated by the air handling systems.

### MECHANICAL TESTS CONDUCTED USING 9.5 MM GFRP

| Result | Test | Description |
|---|---|---|
| 55 lbf | Interior corner assembly | Joint peel strength test |
| Pass | Partition load bearing | Partition load bearing test |
| 573 lbs | Ex. #6 x 25mm Pan Phillips SDS | Pull-out strength of variable fasteners test |
| Pass | FEA report | Seismic loading compliance - FEA report on structural analysis report |
| 330 lbf | Instron 5500R | Seismic shear strength test lateral movement – corner section assembly |
| 556 lbf | Instron 5500R | Seismic shear strength test load (peak load) solid panel test |
| 396 lbf | Instron 5500R | Seismic shear strength test panel – spline joint assembly test |
| Pass | System load | Walk-on ceiling system load test |

# GFRP

## Mechanical



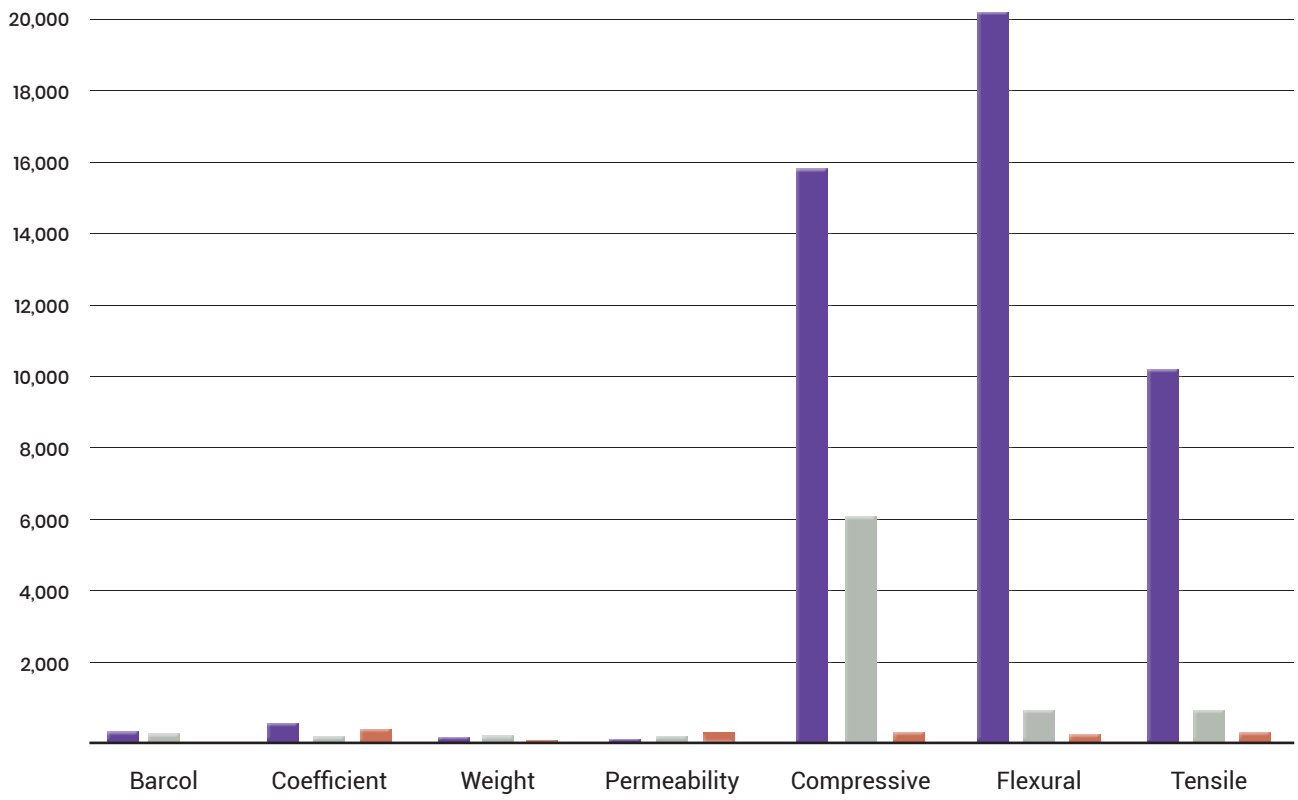

| | High containment facility estimated material weights | Arcoplast |
|---|---|---|
| a | Cast in place 8" concrete wall with Arcoplast liner | 76 P/sf |
| b | Arcoplast with steel stud | 16 P/sf |

| | High containment facility estimated material Weights | Concrete |
|---|---|---|
| c | Cast in place 12" concrete wall w/HPC coating | 100 P/sf |
| d | 12" thick glazed CMU | 51 P/sf |
| e | 12" thick CMU w/HPC coating | 42 P/sf |
| f | 2" 18 Gauge insulated stainless steel panel | 4 P/sf |
| g | Steel stud/ two layers 1/2 Ea side w/HPC coating | 9 P/sf |

These figures are based on average construction calculations

# GFRP

## Mechanical & physical properties comparison




| Test | GFRP | Concrete | Gypsum |
|---|---|---|---|
| Barcol Hardness | 56.8 | 50 | 0 |
| Coefficient of thermal expansion | 27.5 x$10^{-6}$/in/in˚F | 5.5 x$10^{-6}$/in/in˚F | 9.3 x$10^{-6}$/in/in˚F |
| * Weight (psf) | 3.6 psf | 4.5 psf | 1.4 psf |
| Permeability | 0.01 | 6 | 31 |

| | | | |
|---|---|---|---|
| Compressive Strength (psi) | 15,920 psi | 6,000 psi | 350 psi |
| Flexural Strength (psi) | 21,101 psi | 700 psi | 60 psi |
| Tensile Strength (psi) | 10,141 psi | 700 psi | 80 psi |

* Concrete weight is based on GFRP panel thickness of : 9.5mm | 3/8in

# GFRP

## Physical

Acryloyl panels may be assembled in virtually any configuration, this simple uncomplicated system allows for cost-effective “box-within-a-box” construction. Walk-on ceilings, suspended ceilings, wall and ceiling liners, load bearing partitions, chase systems, beam covers and bulkheads. GFRP panels are easily installed into new or existing projects and are well suited for high traffic production facilities with demanding work loads in the clean-room and high containment industries.

### PHYSICAL TESTS CONDUCTED USING 9.5 MM GFRP

| Result | Test | Description |
|---|---|---|
| 0.05 | ASTM C 423-09a / E 795-05 | Sound absorption Test |
| 57 | ASTM E 90-09 / E 413-10 | Sound transmission loss test |
| 99.7 | ASTM D 523 | Specular gloss test |
| Pc750 | ISO 10012-1 | Surface profile & surface finish analysis test |
| 10141 psi | ASTM D 638-03 | Tensile properties test |
| 0.01 | ASTM D 570 (24 hrs.) | Water absorption test |
| 0.01 | ASTM E 96-05 | Water vapor transmission test |

# GFRP

## Physical

The weight of building materials plays an essential role in the architecture, design, and engineering of a building, and equally a significant factor in the cost effectiveness of a project. Design and weight limitations, building movement and demanding construction schedules must be carefully assessed. The cost to reinforce a building's foundation and structure to support the added weight of interior wall and ceiling systems can be exceedingly expensive.

### PHYSICAL TESTS CONDUCTED USING 9.5 MM GFRP

| Result | Test | Description |
|---|---|---|
| 56.8 | ASTM D 2583 | Barcol indentation hardness test |
| 27.5 x $10^{-6}$ in/in°F | ASTM D 696-03 | Coefficient of linear thermal expansion test |
| 15920 psi | ASTM D 695-02a | Compressive strength properties test |
| Pass | ASTM D3274 | Degree of surface disfigurement by fungal/algal growth test |
| 185°F | ASTM D 648 | DTUL – Deflection temperature under load test |
| 10318 psi | ASTM D 790-03 | Flexural properties for Reinforced plastics test |
| 18' x 2 lbs | Mil 1073.2 | Impact resistance test |
| Pass | ASTM D3273 | Resistance to mold on the surface test |
| 10318 psi | ISO 846A-B-C | Resistance to bacteria test |
| 0.1 | R-Value ASTM D177 | Thermal conductivity test |

## GFRP : BARRIER PROPERTIES TEST REPORTS

GFRP : ASME N510
GFRP : Air pressure decay nuclear air treatment systems test. Jun 29, 2006

GFRP : ASME N510
GFRP : Air pressure decay test on accessories relating to MEP. Aug 14, 2006

GFRP : ASME N510
GFRP : Air pressure decay test on screw penetrations. Mar 3, 2007

GFRP : ASME N510
GFRP : Air pressure decay test small chamber BSL-3, BSL-4. Jun 29, 2006

GFRP : PHAC LEVEL 4 CONTAINMENT
GFRP : Air pressure decay test on expansion joint & electrical face plates. Nov 9, 2010

GFRP : ARCOPLAST TESTING
GFRP : Supplemental helium leak testing. Aug 14, 2006

## GFRP : COLORATION PROPERTIES TEST REPORTS

GFRP : ASTM D1308-02
GFRP : Chemical resistance testing on GFRP surface and sealant 72-hour test. Jan 3, 2014

GFRP : ISO 2812-4
GFRP : Chemical resistance testing on GFRP surface and sealant failure rate. Feb 14, 2014

GFRP : ARC062065A-01
GFRP : Coloration test chlorine dioxide decontamination procedure. Mar 8, 2007

GFRP : ARC062065A-01
GFRP : Coloration test formaldehyde gas decontamination procedure. Mar 3, 2007

GFRP : ARC062065A-01
GFRP : Coloration test hydrogen peroxide vapor decontamination procedure. Mar 3, 2007

GFRP : MEA
GFRP : City of New York Department of Buildings. Mar 7, 2005

GFRP : CSI 3-PART FORMAT
GFRP : Construction Specification Institute. Dec 21, 2014

# GFRP

## GFRP : COMPLIANCY REPORTS

GFRP : MEA
GFRP : City of New York Department of Buildings. Mar 7, 2005

GFRP : CSI 3-PART FORMAT
GFRP : Construction Specification Institute. Dec 21, 2014

## GFRP : FIRE & SMOKE TEST REPORTS

GFRP : ISO 9705
GFRP : Annex B full scale room fire test. Oct 28, 2014

GFRP : EN 13501-1
GFRP : Classification of reaction to fire performance, in accordance with – Europe, Asia. Feb 18, 2011

GFRP : UL S-102
GFRP : Test on surface burning characteristics (Must be on full composite construction – Canada) Feb 18, 2011

GFRP : ASTM E-84
GFRP : Test on surface burning characteristics (Must be on full composite construction – USA). May 5, 2020

GFRP : GFRP : ISO 9705
GFRP : Investigation combustion products of Arcoplast cement core sandwich panel in accordance with article 4, section 27-335.1(2) and article 5, section 27~348E. March 31, 2005

## GFRP : MECHANICAL TEST REPORTS

GFRP : REPORT 1106-867
GFRP : Pull-out strength of variable fasteners – ex. #6 x 25 mm Pan Phillips SDS. Nov 29, 2006

## GFRP : PHYSICAL TEST REPORTS

GFRP : ASTM D 696-03
GFRP : Coefficient of linear thermal expansion. Mar 17, 2011

GFRP : ISO 846
GFRP : Resistance to bacteria test. Aug 29, 2013

GFRP : ASTM D 3273
GFRP : Resistance to mold on the surface test. Aug 28, 2013

GFRP : ASTM C 423 - 09A / E 795 - 05 REPORT NO : NGC 4012079
GFRP : Sound absorption Arcoplast" Closed Edge Insulated Ceiling Tile Type E-400 Mount Aug 10, 2012

GFRP : ASTM C423-09A / E795-05
GFRP : Sound absorption test GFRP 9.5mm panel. Aug 10, 2012

GFRP : ASTM E 90-09/ E413-10/E1332-10A REPORT NO : NGC 2012071
GFRP : Sound transmission 9.5mm on 5/8 drywall side 1 and 5/8 drywall side 2 on 3-5/8 in. steel stud with 3-1/2 in. fiberglass insulation. Aug 10, 2012

GFRP : ASTM E 90 - 09 / E 413 -10 REPORT NO : NGC 2012041
GFRP : Sound transmission loss test GFRP : 9.5mm panel side 1 and no face side 2 on 3-5/8 in. steel stud. Aug 10, 2012

GFRP : ASTM E 90 - 09 / E 413 -10 REPORT NO : NGC 2012042
GFRP : Sound transmission 9.5mm panel side 1 and GFRP 9.5 side 2 on 3-5/8 in. steel stud with 3 in. mineral wool insulation. Aug 10, 2012

GFRP : ASTM E 90 - 09 / E 413 - 10 REPORT NO : NGC 2012043
GFRP : Sound transmission 9.5mm side 1 and 1/2in. drywall side 2 on 3-5/8 in. steel stud with 3 in. mineral wool insulation. Aug 10, 2012

GFRP : ASTM E 90-09 / E 413-10/E1332-10A REPORT NO : NGC 2012072
GFRP : Sound transmission 9.5mm side 1 and 1/2in. drywall side 2 on 3-5/8 in. steel stud with 3 in. mineral wool insulation. Aug 10, 2012
GFRP : ASTM E 90-09/ E 413 -10 REPORT NO : NGC-2012040

GFRP : Sound transmission wall Partition Assembly Consisting of Side 1 - No Face Materials Source Side of Partition Side 2 - Single Layer of Arcoplast" Closed Edge Insulated Ceiling Tile 3-5/8 Inch Steel Studs, 16 Inches o.c. Aug 10, 2012

# GFRP

## GFRP : PHYSICAL TEST REPORTS

GFRP : ASTM D 523
GFRP : Specular gloss test. Mar 17, 2011

GFRP : ASTM D 2583
GFRP : Test barcol indentation hardness. Mar 17, 2011

GFRP : ASTM D 695-02A
GFRP : Test compression properties, Arcoplast 9.5 mm solid glass/resin core panel. March 17, 2011

GFRP : ASTM D 695-02A
GFRP : Test compressive strength properties. Mar 17, 2011

GFRP : ASTM D 790-03
GFRP : Test flexural properties, Arcoplast 9.5 mm solid glass/resin core panel. March 17, 2011

GFRP : MIL 1073.2
GFRP : Test impact resistance. Mar 17, 2011

GFRP : ASTM D 638-03
GFRP : Test tensile properties. Mar 17, 2011

GFRP : ASTM E 96-05
GFRP : Water vapor transmission test. Mar 17, 2011

## DRAWINGS

## NOTES

# GFRP Specialized

## Walls Ceilings Linings

**GFRP Specialized** **Imperial 1/2in** **Metric 12.5mm**

Customized fabrication for specific controlled environments

Designed & manufactured for healthcare and research facilities

Engineered to architectural specification

Gel coated fibreglass composite technologies

Four specialized panels : Lead, i-Panel, High Security, Ultra

# GFRP Specialized panels

## introduction

Manufactured for specific application of industrial and scientific requirement where no deviation from strict criteria is expectable.

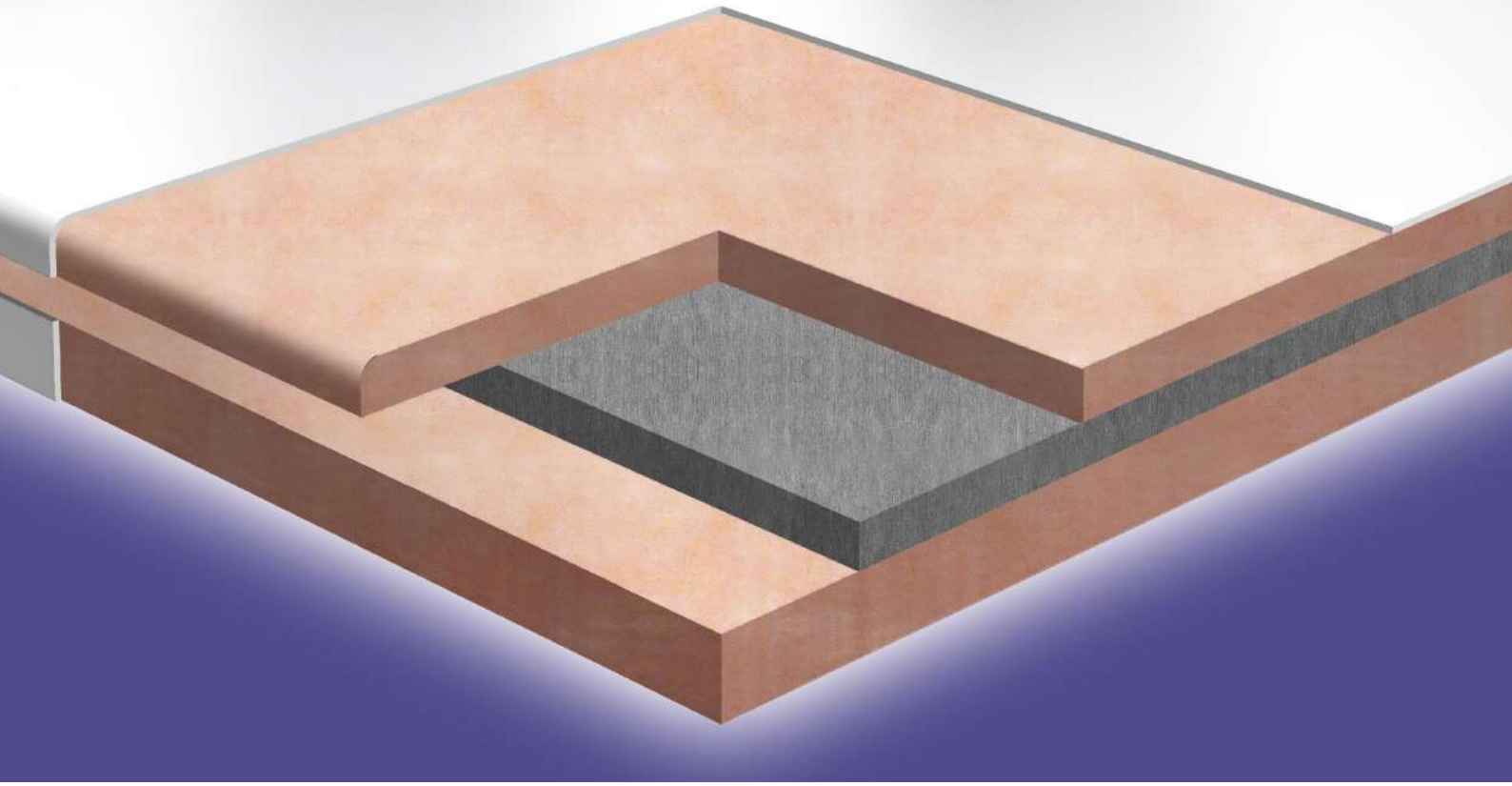
These specialized paneling systems are designed to form a comprehensive wall to ceiling primary barrier membrane.

GFRP Specialized paneling systems have all the features of the GFRP panels, except these specialized panel systems have been modified for specific applications such as : Hospital R/F, RAD, X-Ray or C-Arm departments, vivariums accommodating large animals, industrial/ government buildings and places where security is a critical requirement...

| Specifications | page |
|---|---|
| GFRP lead walls & ceilings panels | p 70 -75 |
| i-Panel GFRP insulated ceiling panels | p 76 -79 |
| GFRP security walls & ceilings panels | p 80 -83 |
| GFRP ultra walls & ceilings panels | p 84 -89 |
| Mechanical Spline | p 90 -91 |

# GFRP Lead

## Walls Ceilings Linings



**GFRP Lead** **Imperial 1/2in** **Metric 12.5mm**

Encased lead shielded panels, impose no risk of lead expose

Encased lead laminate available in various thicknesses, suited to user requirement

Designed for new and modernizing existing facilities

Lead shielded panels are engineered to meet specific radiation specifications

Manufactured for radiation protection in health & animal care imaging facilities

# GFRP Specialized lead shield panels

PANELING SURFACE : The same gel coat surface is used for all GFRP panels, including GFRP Lead shield

GFRP COLOR : Standard color, pristine white

GFRP CUSTOMIZED COLOR RANGE : Full range of PMS colors

GFRP COLORATION FASTNESS : Surface color retention & durability based on cleaning & decontamination

CUSTOM FORMING : Custom molded for curved applications

GFRP FINISH : Front surface finish is made of a fire rated gel coated resin acrylic

GFRP SURFACE FINISH : Smooth gloss

GFRP SURFACE PROFILE : Polished surface

Lighting : GFRP panels have a Light reflectivity of 99.7 % at an 85 degree source angle

All GFRP panel surfaces have excellent evenly diffused light properties, resulting in fewer lamp fixtures and fewer ceiling penetrations.

**GFRP SPECIALIZED COLOR SURFACE TESTS CONDUCTED USING 9.5 MM GFRP**

| Result | Test | Description |
|---|---|---|
| Pass | ISFA 2-01 | Arcoplast cleanability & stain resistance |
| Pass | ASTM D 1308-02 | Arcoplast surface and sealant chemical compatibility |
| pass | ISO 2812-4 | Arcoplast surface and sealant chemical compatibility |
| Pass | Coloration | Chlorine dioxide decontamination procedure |
| Pass | Coloration | Formaldehyde gas decontamination procedure |
| Pass | Coloration | Hydrogen peroxide vapor decontamination procedure |
| Pass | UV test | Exposure cycles |

# GFRP Lead panels

Cutting profile

| PROFILE | LEAD | LEAD |
|---|---|---|
| END CUT PROFILE | ½ in | 12.5mm |
| Grooved | Yes | Yes |
| Eased side edge | | |
| Square cut | Yes | Yes |

| SIDE EDGE PROFILE | ½ in | 12.5mm |
|---|---|---|
| Eased side edge | Yes | Yes |
| Grooved | Yes | Yes |
| Square cut | | |

| JOINT SYSTEM | ½ in | 12.5mm |
|---|---|---|
| Batten cover | Yes | Yes |
| Flush seam | Yes | Yes |
| Mechanical spline | Yes | Yes |

# GFRP Lead panels

## Dimensions

### Lead shield panels

Sheet sizes are made to your requirement with the parameters of the following thicknesses, widths and lengths. If you require a thicker gauge of lead shielding, please contact Arcoplast.

| Thickness | R/K Rating | Weight | Length | Width |
|---|---|---|---|---|
| ½ inch | - | 7.1lbs./ Sq. Ft | Up to 12ft | 48in |
| 12.5mm | - | 35.32Kg. / Sq. m | Up to 3650mm | 1200mm |

# GFRP Lead panels

## Arcoplast lead lined paneling

Radiation shielding embedded in the Arcoplast (GFRP) gel coated fiberglass reinforced polymer panels are particularly well suited for Healthcare, Animal Care and Medical Industries. Applications for Imaging facilities, X Ray, CT Scan and PET Scan can be designed and constructed, with ease and security, with minimum exposure to lead.

Arcoplast GFRP wall and ceiling liner panels, and dividing partitions, eliminate lead hazards with fully integrated lead shield plates, ensuring a safe working environment for humans and animals in high containment facilities and research laboratories.

Arcoplast manufacturing processes easily incorporates lead shielding plates of variable thickness and dimensions to suit user requirements. The final product is a fully fused and homogenous panel make-up, encapsulating the lead sheets that cannot leech out and contaminate the laboratory space.

The Arcoplast lead shielded panel's extreme performance is due to the unique construction process. The Arcoplast panel is not a laminated construction, the construction of the panel consists of a wetting out glass fiber and resin systems, in multiple applications, to meet specific thickness, physical and mechanical strength. During this assembly process, the specified lead sheets are incorporated in the panel make-up, and the entire panel in the exotherm process, fuses the glass fiber mats, fire rated resin and the lead sheeting.

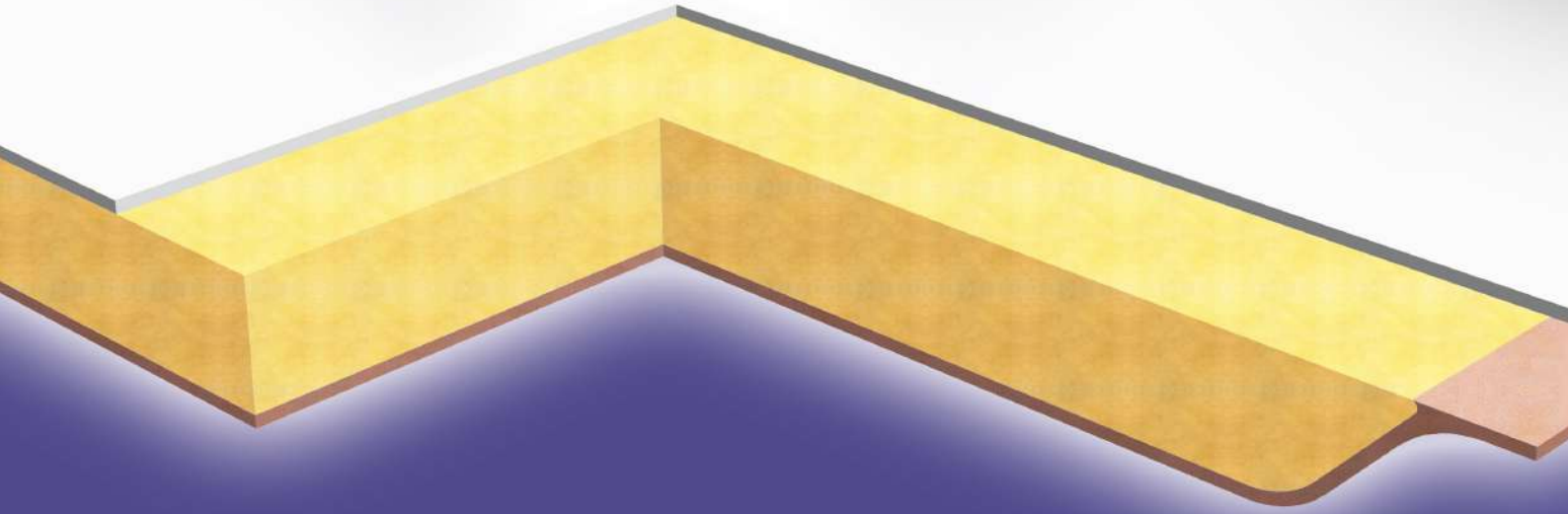
The entire crafted process results in a very smooth, non-porous, high gloss gel coat surface, with a solid glass and resin matrix, fully encapsulated lead shield panel that is permanently sealed and will provide the security and protection for the occupants and environments for the entire duration of the laboratory.

Through the engineering advances in composite manufacturing, the lead shielded panels can now be handled safely, and the on-site installation methodology greatly simplify the constructability of high containment laboratories with specific radiation requirements, providing a lifetime, high performance wall and ceiling systems.

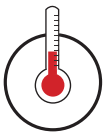
## NOTES

# i-Panel

## Suspended ceiling panels



**i-Panel** **Imperial 5/8in** **Metric 15.9mm**



Available in various R / K ratings

Closed edge encapsulated high density insulation

Does not crack, peel, fade or deteriorate over time

Gel coated, high gloss, non-porous surface

Rigid suspended ceiling panel system

# i-Panel : GFRP insulated ceiling panels

PANELING SURFACE : The same gel coat surface is used for all GFRP panels, including i-Panel

i-PANEL COLOR : Standard color, pristine white

i-PANEL CUSTOMIZED COLOR RANGE : Full range of PMS colors

i-PANEL  COLOR FASTNESS : Surface color retention & durability based on cleaning & decontamination

i-PANEL FINISH : Front surface finish is made of a fire rated gel coated resin acrylic

i-PANEL SURFACE FINISH : Smooth gloss

i-PANEL SURFACE PROFILE : Polished surface

Lighting : GFRP panels have a Light reflectivity of 99.7 % at an 85 degree source angle

All GFRP panel surfaces have excellent evenly diffused light properties, resulting in fewer lamp fixtures and fewer ceiling penetrations.

i-PANEL's are designed to be installed into the TR35 suspended ceiling grid system

## i-PANEL COLOR SURFACE TESTS CONDUCTED USING 9.5 MM GFRP

| Result | Test | Description |
|---|---|---|
| Pass | ISFA 2-01 | Arcoplast cleanability & stain resistance |
| Pass | ASTM D 1308-02 | Arcoplast surface and sealant chemical compatibility |
| Pass | ISO 2812-4 | Arcoplast surface and sealant chemical compatibility |
| Pass | Coloration | Chlorine dioxide decontamination procedure |
| Pass | Coloration | Formaldehyde gas decontamination procedure |
| Pass | Coloration | Hydrogen peroxide vapor decontamination procedure |
| Pass | UV test | Exposure cycles |

# i- Panel GFRP insulated ceiling panels

## Dimensions

Sheet sizes are made to your requirement with the parameters of the following thicknesses, widths and lengths.

### i-Panel ceiling panels | Imperial

| Thickness | R -Value | Weight | Length x Width | | |
|---|---|---|---|---|---|
| 5/8 inch | R 2.368 | 1.15lbs./ Sq. Ft | 23 ¾ in x 23 ¾ in | 23 ¾ in x 47 ¾ in | 47 ¾ in x 47 ¾ in |
| 1 1/8 inch | R 4.523 | 1.25lbs./ Sq. Ft | 23 ¾ in x 23 ¾ in | 23 ¾ in x 47 ¾ in | 47 ¾ in x 47 ¾ in |
| 1 5/8 inch | R 6.648 | 1.35lbs./ Sq. Ft | 23 ¾ in x 23 ¾ in | 23 ¾ in x 47 ¾ in | 47 ¾ in x 47 ¾ in |
| 2 1/8 inch | R 8.344 | 1.45lbs./ Sq. Ft | 23 ¾ in x 23 ¾ in | 23 ¾ in x 47 ¾ in | 47 ¾ in x 47 ¾ in |

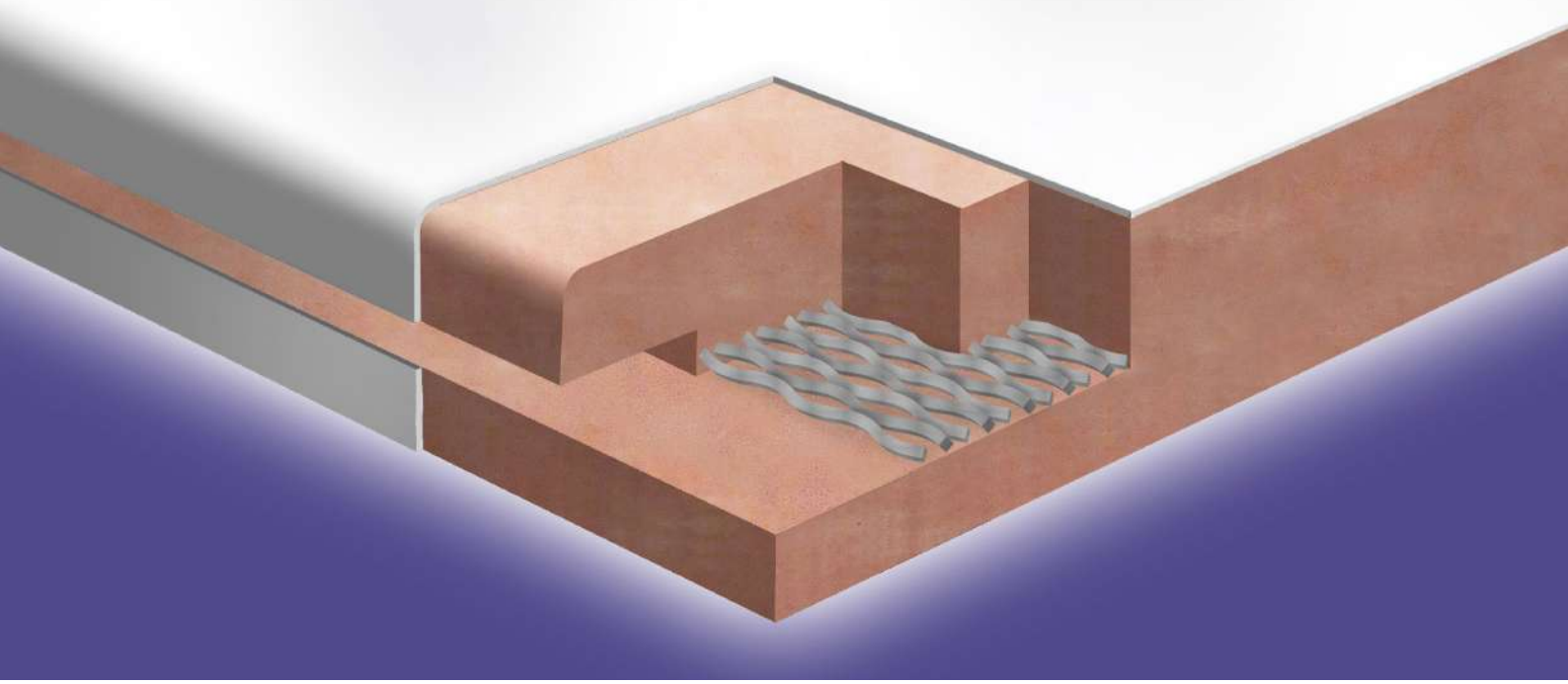
### i-Panel ceiling panels | Metric

| Thickness | R -Value | Weight | Length x Width | | |
|---|---|---|---|---|---|
| 15.9mm | R 2.368 | 5.61Kg m² | 600mm x 600mm | 600mm x 1200mm | 1200mm x 1200mm |
| 28.6mm | R 4.523 | 6.09Kg m² | 600mm x 600mm | 600mm x 1200mm | 1200mm x 1200mm |
| 41.3mm | R 6.648 | 6.58Kg m² | 600mm x 600mm | 600mm x 1200mm | 1200mm x 1200mm |
| 53.9mm | R 8.344 | 7.07Kg m² | 600mm x 600mm | 600mm x 1200mm | 1200mm x 1200mm |

## NOTES

# GFRP Security

## Walls Ceilings Linings



**GFRP Security** **Imperial 3/4in** **Metric 19mm**

Available in various thickness to meet user requirement

Constructed for high level security controlled environments

Custom manufactured to specification

Impressive weight to strength ratio

Various perforation geometries and dimensions are available

# GFRP Specialized security panels

PANELING SURFACE : The same gel coat surface is used for all GFRP panels, including GFRP Security

GFRP COLOR : Standard color, pristine white

GFRP CUSTOMIZED COLOR RANGE : Full range of PMS colors

GFRP COLORATION FASTNESS : Surface color retention & durability based on cleaning & decontamination

GFRP FINISH : Front surface finish is made of a fire rated gel coated resin acrylic

GFRP SURFACE FINISH : Smooth gloss

GFRP SURFACE PROFILE : Polished surface

LIGHTING : GFRP Security panels have a pristine high gloss, bright white finish, that produces a light reflectivity of 99.7% at an 85 degree source angle, providing the laboratory with evenly diffused light designed with fewer lamp fixtures, while reducing the amount of penetrations to the ceiling surface.

GFRP SPECIALIZED COLOR SURFACE TESTS CONDUCTED USING 9.5 MM GFRP

| Result | Test | Description |
|---|---|---|
| Pass | ISFA 2-01 | Arcoplast cleanability & stain resistance |
| Pass | ASTM D 1308-02 | Arcoplast surface and sealant chemical compatibility |
| Pass | ISO 2812-4 | Arcoplast surface and sealant chemical compatibility |
| Pass | Coloration | Chlorine dioxide decontamination procedure |
| Pass | Coloration | Formaldehyde gas decontamination procedure |
| Pass | Coloration | Hydrogen peroxide vapor decontamination procedure |
| Pass | UV test | Exposure cycles |

Cutting profile

| PROFILE | STEEL CORE | STEEL CORE |
|---|---|---|
| END CUT PROFILE | ¾ in | 19mm |
| Grooved | Yes | Yes |
| Eased side edge | | |
| Square cut | Yes | Yes |

| SIDE EDGE PROFILE | ¾ in | 19mm |
|---|---|---|
| Eased side edge | Yes | Yes |
| Grooved | Yes | Yes |
| Square cut | | |

| JOINT SYSTEM | ¾ in | 19mm |
|---|---|---|
| Batten cover | Yes | Yes |
| Flush seam | Yes | Yes |
| Mechanical spline | Yes | Yes |

# GFRP Security panels

## Dimensions

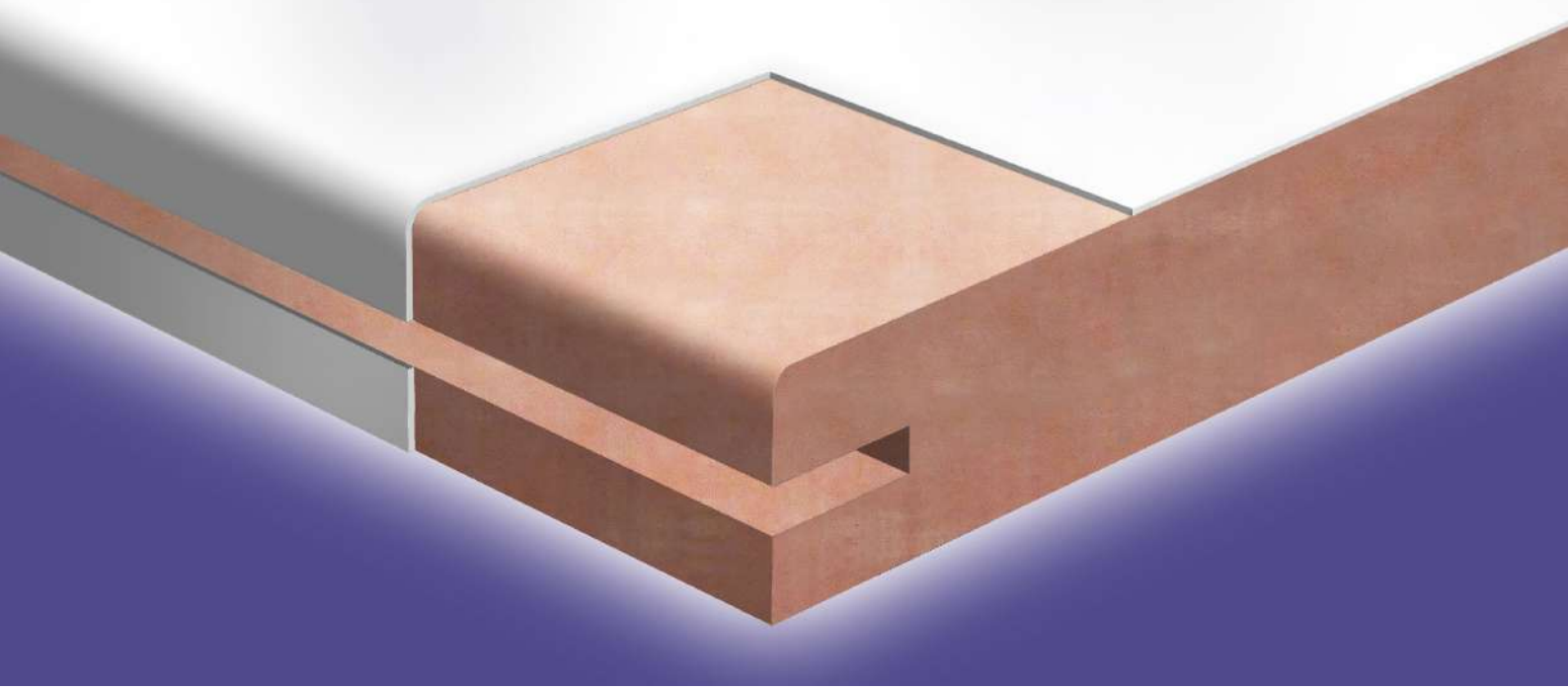
### Security panels

Sheet sizes are made to your requirement with the parameters of the following thicknesses, widths and lengths. For more information please contact Arcoplast.

| Thickness | R/K Rating | Weight | Length | Width |
|---|---|---|---|---|
| ¾ inch | - | 7.8lbs./ Sq. Ft | Up to 12ft | 48in |
| 19mm | - | 38.3Kg. / Sq. m | Up to 3650mm | 1200mm |

# GFRP Ultra

## Walls Ceilings Linings



**GFRP Ultra** **Imperial 3/4in** **Metric 19mm**

Designed for large animal holding rooms

Extremely robust, non delaminated panel system

Impact resistance up to 2,000 psf at point of contact

Manufactured to endure stringent cleaning regimes & high pressure washdowns

Standard building construction practices, utilizing minimum components

# GFRP Specialized Ultra panels

PANELING SURFACE : The same gel coat surface is used for all GFRP panels, including GFRP Ultra

GFRP COLOR : Standard color pristine white

GFRP CUSTOMISED COLOR RANGE : Full range of PMS colors

GFRP COLORATION FASTNESS : Surface color retention & durability based on cleaning & decontamination

CUSTOM FORMING : Custom molded for curved applications

GFRP FINISH : Front surface finish is made of a fire rated gel coated resin acrylic

GFRP SURFACE FINISH : Smooth gloss

GFRP SURFACE PROFILE : Polished surface

LIGHTING : GFRP Security panels have a pristine high gloss, bright white finish, that produces a light reflectivity of 99.7% at an 85 degree source angle, providing the laboratory with evenly diffused light designed with fewer lamp fixtures, while reducing the amount of penetrations to the ceiling surface.

GFRP SPECIALIZED COLOR SURFACE TESTS CONDUCTED USING 9.5 MM GFRP

| Result | Test | Description |
|---|---|---|
| Pass | ISFA 2-01 | Arcoplast cleanability & stain resistance |
| Pass | ASTM D 1308-02 | Arcoplast surface and sealant chemical compatibility |
| pass | ISO 2812-4 | Arcoplast surface and sealant chemical compatibility |
| Pass | Coloration | Chlorine dioxide decontamination procedure |
| Pass | Coloration | Formaldehyde gas decontamination procedure |
| Pass | Coloration | Hydrogen peroxide vapor decontamination procedure |
| Pass | UV test | Exposure cycles |

# GFRP Ultra panels

## Cutting profile

| PROFILE | ULTRA HEAVY DUTY | ULTRA HEAVY DUTY |
|---|---|---|
| END CUT PROFILE | ¾ in | 19mm |
| Grooved | Yes | Yes |
| Eased side edge | | |
| Square cut | Yes | Yes |

| SIDE EDGE PROFILE | ¾ in | 19mm |
|---|---|---|
| Eased side edge | Yes | Yes |
| Grooved | Yes | Yes |
| Square cut | | |

| JOINT SYSTEM | ¾ in | 19mm |
|---|---|---|
| Batten cover | Yes | Yes |
| Flush seam | Yes | Yes |
| Mechanical spline | Yes | Yes |

# GFRP Ultra panels

## Dimensions

### Ultra heavy duty panels

Sheet sizes are made to your requirement with the parameters of the following thicknesses, widths and lengths. Please contact us for more information.

| Thickness | R/K Rating | Weight | Length | Width |
|---|---|---|---|---|
| ¾ inch | - | 6.7lbs./ Sq. Ft | Up to 12ft | 48in |
| 19mm | - | 32.5Kg. / Sq. m | Up to 3650mm | 1200mm |

## DRAWINGS

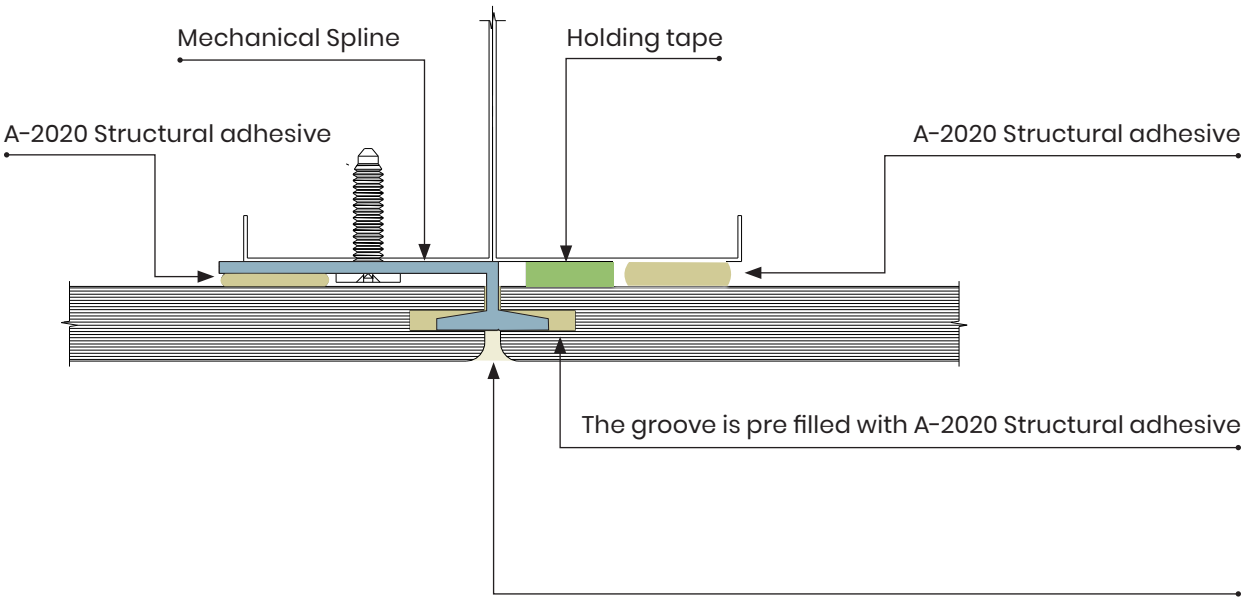
## NOTES

# Mechanical Splines

## Mechanical Spline

Arcoplast wall and ceiling liner joint and spline attachment assembly meets seismic requirements of NZS 4219 (2009) and ICC-ES AC 156 (US).

Mechanical working Joint Strength lbs/in 457.2




The panel gap is filled with A-1010 Bio-Seal Sealant and finishing compound

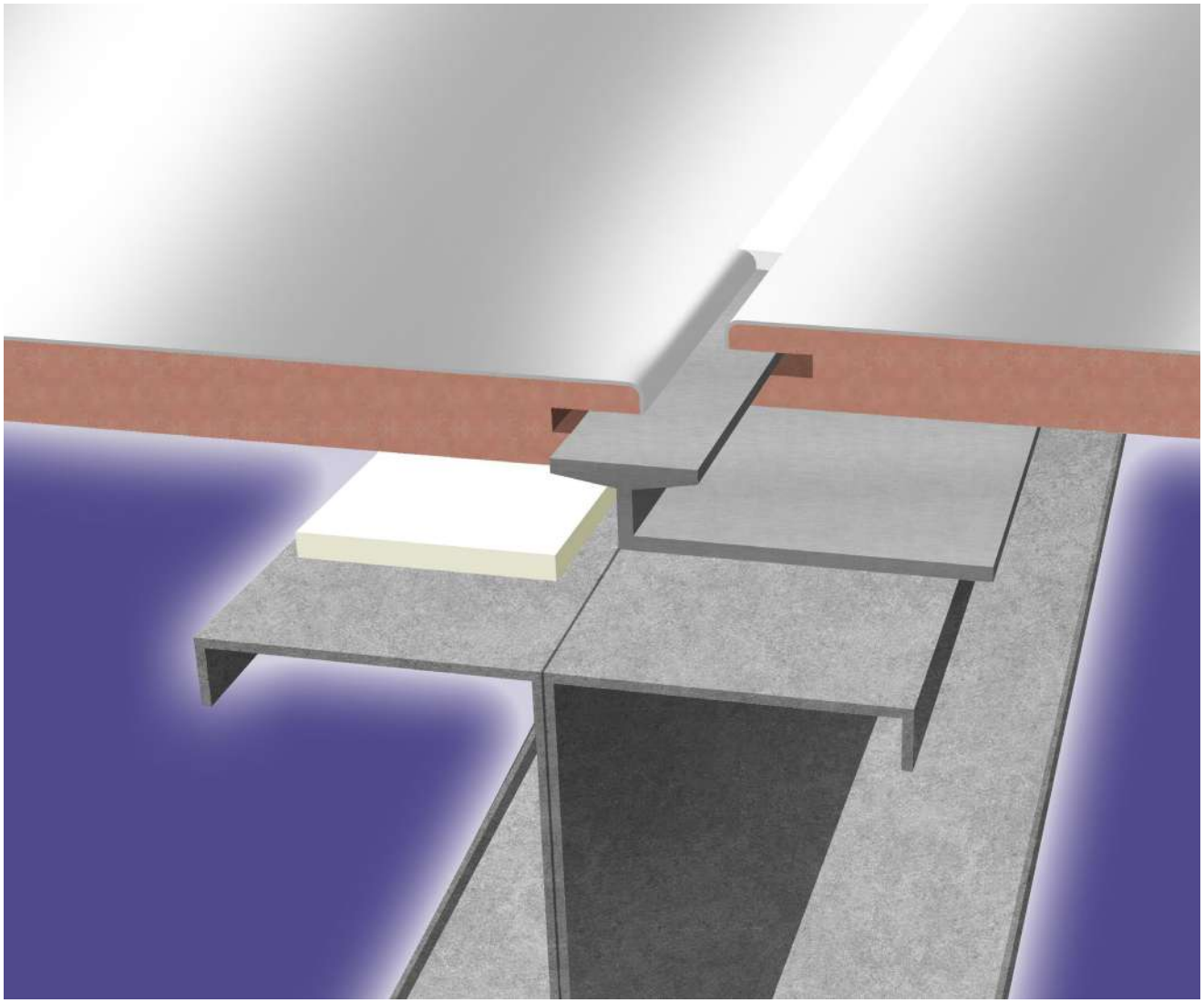
A-1010 Bio-Seal : Standard color : Pristine white

Aluminum mill finish mechanical spline assembly - Patent No. 10,087,637 B1

The innovative engineering design of the Arcoplast spline joining system allows the adhesive to flow through the staggered diagonal grooves creating a “zipper configuration” preventing the legs of the spline from laterally slipping out of the panel kerf, therefore significantly increasing the seismic shear strength.

Furthermore, the staggered groove design enables the adhesive to expand to the bottom and top lip of the panel kerf enabling a “stitching effect” resulting in a solid panel joint core matrix.

## Mechanical Spline



Mechanical splines are the backbone of the assembly process and key to over coming the issues of lining a wall over existing materials without breaching the barrier surface.

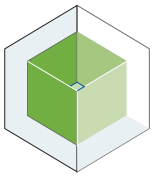
The Arcoplast mechanical spline system works with the full range of Arcoplast Panel Systems.

# ARCOPLAST A-1010 Bio-Seal

**Two in one : sealant finishing compound**

**specifications**

## A-1010 Bio-Seal



## Sealant & Finishing compound

A two-component equal mix high strength aliphatic urethane adhesive

Bonds seals in a single application, non sagging

Environmentally chemically neutral, odor free

Pick proof, non porous or yellowing finish

Seismic Shear strength panel to panel 791 psi

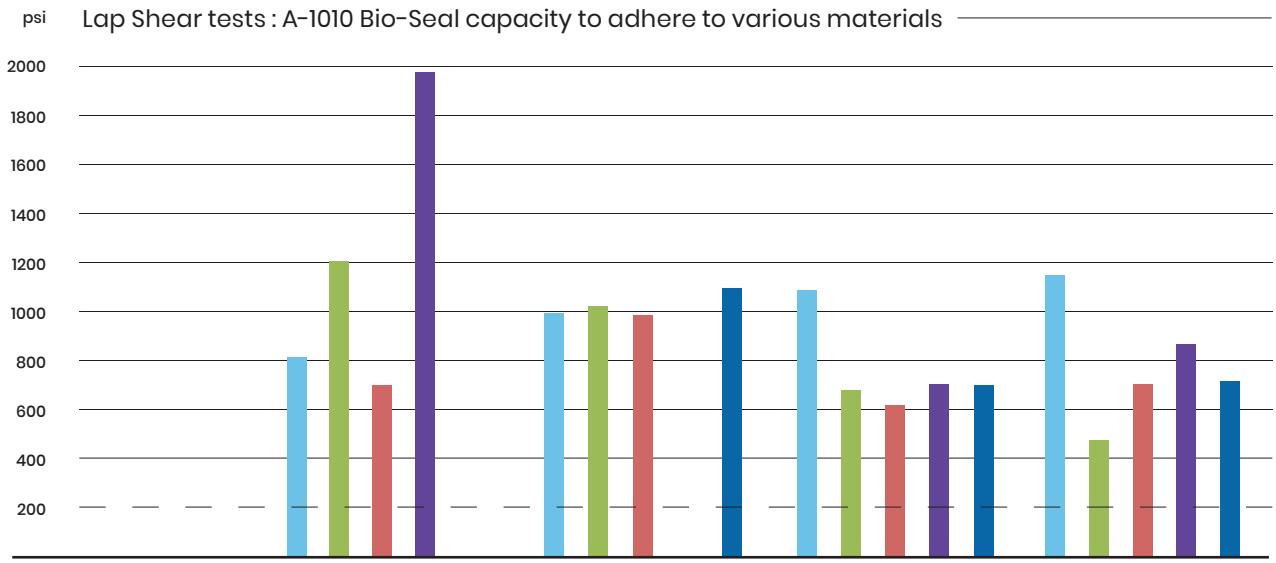
# A-1010 Bio-Seal : Sealant and finishing compound

A-1010 Bio-Seal

A two component, equal mix, high strength aliphatic urethane structural adhesive that bonds and seals in one application. The A-1010 Bio-Seal sealant is specifically designed for composite panel joints, panel to panel coving and featheredge detailing. It is also ideally suited for sealing around mechanical, electrical devices and plumbing services eliminating unsightly caulking lines, and difficult tooling lines that can harbor contamination.

A-1010 Bio-Seal delivers a permanent high gloss, non-porous, non-yellowing finish. It is odor free and environmentally neutral. This extraordinary product creates the perfect seal necessary for a safe working environment in Pharmaceutical production, Food and Beverage manufacture, Healthcare, Animal care and Bio Security laboratories rated up to PC3, PC4, BSL-3 and BSL-4.

The series of Lap Shear tests were conducted using Arcoplast A-1010 Structural Adhesive as a bonding agent between a combination of materials.




| | Acryloyl panel | GFRP panel | Galvanized steel | Stainless Steel |
|---|---|---|---|---|
| Epoxy | 837 psi | 995.9 psi | 1080.5 psi | 1164.2 psi |
| MMA | 1202.3 psi | 1077.1 psi | 681.1 psi | 477.3 psi |
| Urethane | 721.1 psi | 919.9 psi | 624.7 psi | 686.8 psi |
| Acryloyl panel | 1975.1 psi | - | 721.6 psi | 849.2 psi |
| GFRP panel | - | 1102.8 psi | 713.8 psi | 728.4 psi |

200 psi : Is consider in the industry as an acceptable working strength for wall panel adhesion.

# A-1010 Bio-Seal : Sealant and finishing compound

**Tooling**
Tooling is recommended immediately after application to ensure uniformed contact on both sides of the joint area. Always use a smooth continuous pressure to obtain clean lines.

**Tip :** Practice before you begin.

**Sealant cartridge**
Two cartridges joined together : Cartridge A 200ml, Cartridge B 200 ml. Bio-Seal is automatically mixed to the correct ratio of 1:1 when using the recommended dispensing system with a static mixer.

**Arcoplast - Surface preparation**
Prior to application, remove all foreign matter and contaminants, such as surface dirt, dust, oil and loose particles from all interface materials and components. Clean the surface using a clean cloth dampened with isopropyl alcohol.

**Application - Bio-Seal A-1010**
Critical to the performance are the correct environmental room conditions : Temperature and humidity range are critical.

**Setting time**
Application and tooling for a 1/4 inch / (6 mm) diameter bead has an approximate working time of 45 minutes at 70°F / 21.1 °C

**Moisture sensitive**
If cartridge is not fully dispensed, keep the current static mixer dispense tip on until next application and then replace with new needle.

**For industrial and commercial use only**
Must be applied by trained skilled personnel. Not for consumer use.

| Result | Test | Description |
|---|---|---|
| Pass | 21 CFR 177.2600 | Determination of extractive residue. US FDA test |
| 0.21% | ASTM D570 | Moisture absorption |
| 199% | ASTM D882 | % Elongation |
| 2100 psi | ASTM D882 | Tensile strength |
| 66 | Test | Shore D hardness |
| 199 | ASTM D882 | Standard method of tensile properties of thin plastics |
| 1531 psi | ASTM 882 | Young's modulus (elastic) |

Disclaimer : Bio-Seal is not a structural product, & is not designed to address any structural issues a building may have or there part of.

# A-1010 Bio-Seal : Sealant and finishing compound

| | |
|---|---|
| **Safety Data Sheet** | Please go to the website before using any Arcoplast product & download the SDS sheets |

| | |
|---|---|
| Application : caulking guns 400ml | Battery powered gun Cox 83002<br>Manual gun Mixpac DM-400<br>Pneumatic gun Mixpac DP-400-85-01 |
| Application mix ratio | A & B by volume 1:1 total volume 400 ml |
| Application working humidity range | 40% maintained and below |
| Application working temperature range | 60 - 80 °F \| 15.56 - 26.67 °C |
| Application working time frame | 45 minutes |
| Cure time touch dry | 12 hours |
| Cured time 100% set | 72 hours \| 3 x days |
| Clean up | Isopropyl alcohol |
| Flash point | 200°F \| 93°C |
| Storage life time | 6 months from date of shipment stored at 50 - 80°F \| 10 - 27°C |

| Dual cartridges part A & B | | Translucent paste ( part A ) | White paste ( part B ) |
|---|---|---|---|
| Density | 77 °F / 21 °C | 9.64 - 10.04 lbs/gal \| 115-1203 kgs/$m^3$ | 9.9 - 10.2 lbs/gal \| 1186 - 1222 kgs/$m^3$ |
| Viscosity | 77 °F / 21 °C | 45,000 - 160,000 | 130,000 - 230,000 |

| | |
|---|---|
| Colors x 2 | Pristine high gloss white / Clear high gloss |
| Environmentally neutral | No solvents, no hood system, no effect on the ozone |
| Finish - High gloss | Feathers well producing a clean line |
| Low shrinkage | Not cured by solvent evaporation, therefore has minimal shrinkage |
| Non-sag | Application to vertical surfaces is not an issue |
| Non porous | Does not encourage bacterial growth. Impervious to moisture |
| Non-yellowing | Colorfast - does not obscure detection of debris or unsanitary conditions |
| Odour free | During and after curing |
| Toxic free | No known carcinogens, mutagens, teratogens, heavy metals, or other toxic substances |

Compliant | Determination of Extractive Residue in Accordance with US FDA 21 CFR 177.2600

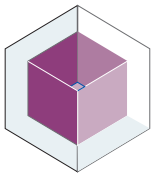
# ARCOPLAST A-2020

**Structural adhesive**

**specifications**

## A-2020

## Structural Methacrylate Adhesive



A two-component methacrylate adhesive

Exceptional strength, 5 times greater than conventional urethane

Cure time of 4 hours

Lap Shear strength panel to panel 2000 psi

No fasteners required, no breaching of the containment barrier

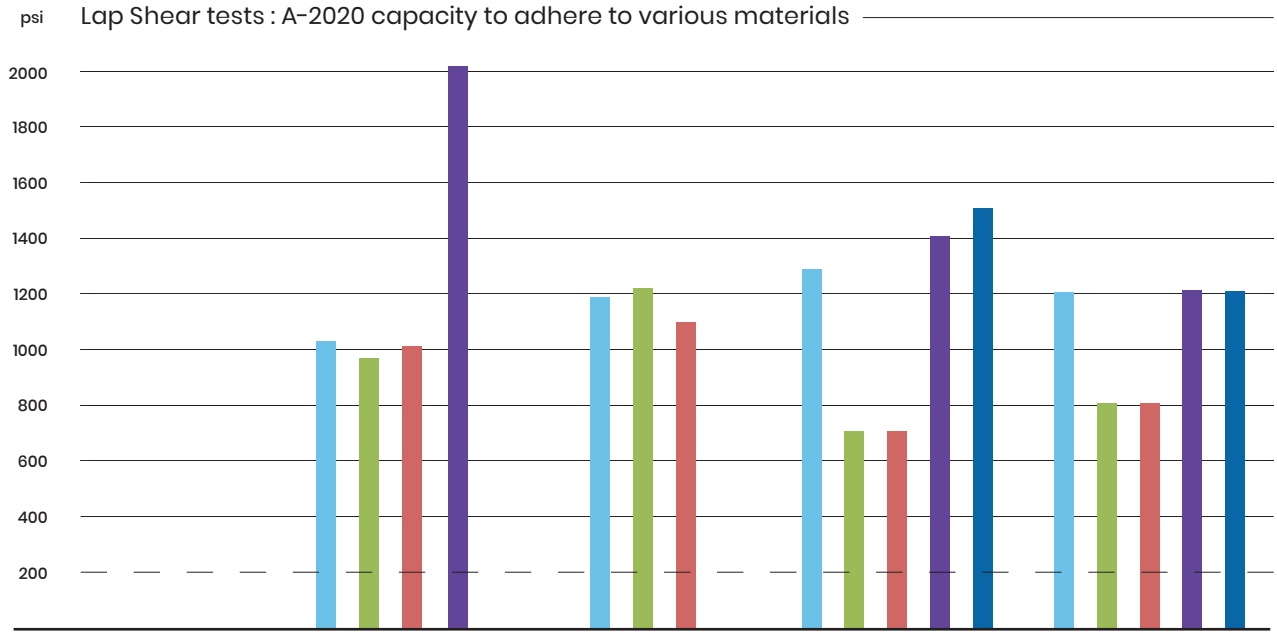
# A-2020 Methacrylate Structural Adhesive

## introduction

The Arcoplast A-2020 Structural Adhesive is a two-part, equal mix methacrylate adhesive, formulated specifically for bonding composite acrylic and fiberglass wall and ceiling panels.

The bonding strength of the A-2020 on average, is 5 times greater than conventional one-component urethane moisture cure adhesives, therefore eliminating the need for mechanical fasteners, a feature well appreciated in the construction of high containment facilities.

This series of Lap Shear tests were conducted using Arcoplast A-2020 Structural Adhesive as a bonding agent between a combination of materials.




| | 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 |

200 psi : Is consider in the industry as an acceptable working strength for wall panel adhesion.

# A-2020 Methacrylate Structural Adhesive

**Application**
Begin by choosing the appropriate VHB tape.
For the 1.5mm VHB tape run a 9.5 mm continuous bead of A-2020
For the 3 mm VHB tape run a 12.5 mm continuous bead of A-2020
Run all A-2020 adhesive beads parallel to the tape.

**Tip :** Work in a well ventilated space.

**A-2020 Structural Adhesive cartridge**
Two cartridges joined together : Cartridge A 200ml, Cartridge B 200 ml. A-2020 is automatically mixed to the correct ratio of 1:1 when using the recommended dispensing system with a static mixer.

**Arcoplast - Surface preparation**
Prior to application, remove all foreign matter and contaminants, such as surface dirt, dust, oil and loose particles from all interface materials and components. Clean the surface using a clean cloth dampened with isopropyl alcohol mixed with 50% water.
**Structural adhesive A-2020 Application**
Critical to the performance are the correct environmental room conditions : Temperature below 60° F will increase cure and fixture time.

**Setting time**
Application for a 1/2 inch / (12.5 mm) diameter bead has an approximate working time of 45 minutes at 70°F / 21.1 °C

**Dispensing and handling**
If cartridge is not fully dispensed, keep the current static mixer dispense tip on until next application and then replace with new needle.

**For industrial and commercial use only**
Must be applied by trained skilled personnel. Not for consumer use.

Disclaimer : A-2020 is not designed to address any structural issues of the building or there part of

# A-2020 Methacrylate Structural Adhesive

| | |
|---|---|
| **Safety Data Sheet** | Please go to the website before using any Arcoplast product & download the SDS sheets |

| | | |
|---|---|---|
| Application : caulking guns 400ml | Battery powered gun<br>Manual gun<br>Pneumatic gun | Cox 83002<br>Mixpac DM-400<br>Mixpac DP-400-85-01 |
| Application mix ratio | A to B by volume 1:1 | total volume 400 ml |
| Application working humidity range | 40% maintained and below | |
| Application working temperature range | 60 - 80 °F | \| 15.56 - 26.67 °C |
| Application working time frame | 30 - 50 minutes 75°F | \| 24°C |
| Fixture time | 100 to 150 minutes 75°F | \| 24°C |
| Cured time 100% set | 4 hours | |
| Clean up | Isopropyl alcohol | |
| Flash point | 51°F | \| 11°C |
| Storage life time | 12 months from date of shipment stored at 50 - 70°F | \| 10 - 21°C |

| Temperatures | Translucent paste ( part A ) | Amber paste ( part B ) |
|---|---|---|
| Density 77 °F / 21 °C | 8.2 lbs/gal \| 3.71 kgs/$m^3$ | 8.0 lbs/gal \| 3.6 kgs/$m^3$ |
| Viscosity 77 °F / 21 °C | 100,000 - 150,000 | 100,000 - 150,000 |

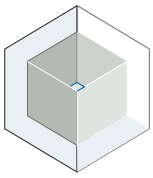
| | |
|---|---|
| Color x 1 | Amber |
| VOC's 1000gram | 39 grams of VOC / Litre of material |
| Gloss finish | Consistent viscosity |
| Low shrinkage | Not cured by solvent evaporation, therefore has minimal shrinkage |
| Non-sag | Application to vertical surfaces is not an issue |
| Non porous | Does not encourage bacterial growth. Impervious to moisture |
| Gap filling capability | 0.25 inches \| 6mm |
| Odour | Slight odor during curing process |
| Classification | Low VOC construction adhesive |

# ARCOPLAST A-5050

A-5050 Repair Kit

## A-5050

## Repair kit



Acryloyl surface repair and restoration compound

Does not support bacterial growth

Odor chemically neutral when cured

Restoration to original finish and surface quality

Tensile strength ASTM D-638  2000-3000 psi

# A-5050 Repair Kit

## introduction

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.

The A-5050 methacrylate compound is formulated to quickly harden and is easily sanded down to the original panel thickness and then polished to restore the Acryloyl panel's original high gloss surface resulting in a seamless surface finish. The A-5050 product is UV stable, has similar ingredients to the Acryloyl panels, giving the finished product similar hardness and gloss when polished properly.

The A-5050 10:1 mix ratio cartridge fits most hand operated dispenser guns with a 10:1 mix plunger. These dispenser tools are easy to use and cost effective, eliminating excess waste material, measuring and mixing equipment, messy and time-consuming cleanups.

The A-5050 restoration compound is packed in a single 50ml – 10:1 mix ratio cartridge and neatly packaged in a plastic bag with two Quadro mixing nozzle 10:1 mix ratio tips.

# A-5050 Repair Kit

## Specifications

| | |
|---|---|
| **Safety Data Sheet** | Please go to the website before using any Arcoplast product & download the SDS sheets |

### CHARACTERISTICS

| Room temperature cure | Properties |
|---|---|
| Working Time | 20 to 30 minutes (at 75°F/ 24°C) |
| Fixture Time | 40 to 60 minutes (at 75°F/ 24°C) |
| Can be Sanded In | 60 minutes |
| Operating Temp | 65°F to 85°F (18°C to 30°C) |
| Gap Filling | 0.250 inches |
| Mixed Density | 0.5 lbs/gal (.96 g/cc) |
| Flash Point | 51°F (11°C) – See SDS for more safety information |

### CHEMICAL RESISTANCE

| Excellent Resistance to the following | Susceptible to the following |
|---|---|
| Hydrocarbons | Polar Solvents |
| Acids and Bases | Super Strong Acids and Bases |

# A-5050 Repair Kit

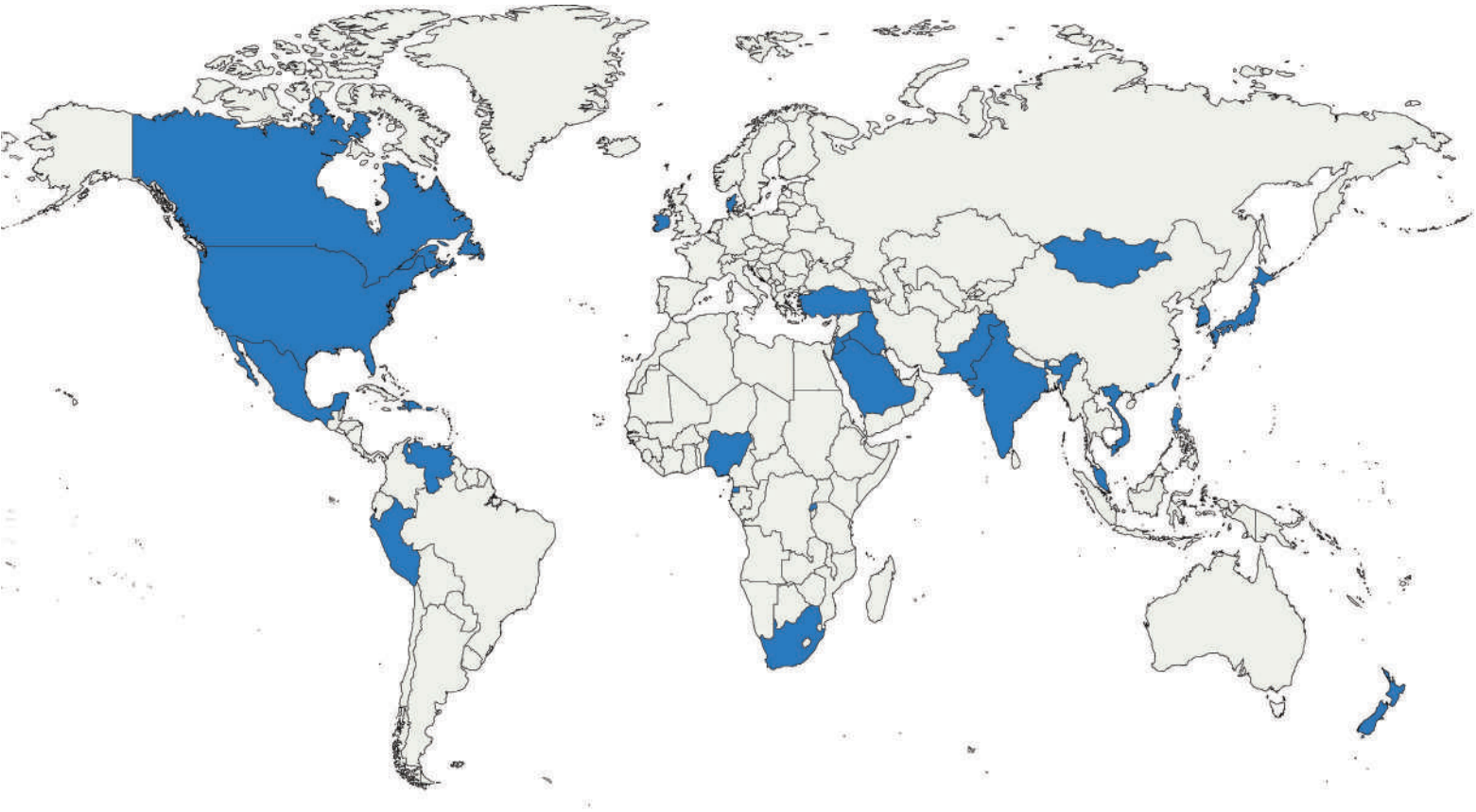
## Specifications

### PHYSICAL PROPERTIES

| UNCURED | RESIN | ACTIVATOR |
|---|---|---|
| Viscosity (cps) | 50,000 – 70,000 | 8,000 – 15,000 |
| Color | White | Clear |
| Density (lbs/gal) | 9.3 | 7.5 |
| Mix Ratio (wt or vol) 1.0 | 10 | |
| Mixer Recommendation | Cartridge (50 ml) | MBQX 05-24T – Square 24 element Pink/Grey Mix Tips (10:1) |

### MECHANICAL PROPERTIES

| Tensile Strength (ASTM D63B) | Substrate | Results | Failure Type |
|---|---|---|---|
| Strength, psi | Engineered Polymers | 2,000 - 3,000 | Cohesive |
| Strength, psi | Gel Coat Surface | 2,000 - 3,000 | Substrate |
| Strength, psi | Steel/Stainless Steel | 1,000 | Cohesive |
| Strength, psi | Aluminum | 1,000 | Cohesive |

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