



Integral Seal Mfg. Inc.

ARCHITECTURAL GLASS BROCHURE





OUR COMPANY

We are motivated by perfection, customer satisfaction, and to serve our clients best in this rapidly changing industry. We are always developing unique and custom methods to deliver exceptional quality products and solutions efficiently.

Integral Seal Manufacturing Inc. was established in 1995 in Concord Ontario, initially providing thermal sealed units to the GTA market. Since we have evolved into the glass industry expanding to our 50,000 square feet manufacturing and storage facility. Now we are equipped with industry leading equipment, including Engineered-to-order (ETO) software, CNC cutting machines, custom laminated, and automatic sealed unit lines. We take pride in our daily maintenance routines with dedicated technicians and quality control experts.

We produce glass for a wide range of projects and applications, namely the new condominium market with over 100 high rises in the past 10 years. Our facility is equipped and ready for any type of job as we continue to employ advancements in technology along with creativity in the architectural design market. Our glass printers and coloured interlayers stand alone in Ontario market providing clients with custom design options never available before.



TEMPERED GLASS

The perfect safety solution for all occasions Integral Seal’s tempered glass can be Laminated, Double Glazed and even Heat Soaked reducing the risk of spontaneous glass breakage.

Tempered glass is designed to safely shatter into small pieces as it breaks, eliminating the inherent dangers of large sharp corners. The safety glass is manufactured through a precise technique of extreme heating and rapid cooling, resulting in a stronger and more durable glass. Universally praised Tempered Glass is quickly becoming the standard product within our industry, especially in the high rise and railing sectors.

Our tempering facility includes an automatic arising and wash machine allowing all production to remain in-house, increasing productivity and efficiency. Continuing our tradition of dedicated customer care, we are proud to offer complete sealed units, laminated makeups and single glass panels in a range of tints and high performance options, as per individual specifications.

FEATURES

- Compatible with Fuse-Ink digital ceramic printing for uniquely custom projects.
- Able to be Heat Soaked to prevent glass panels spontaneous breakages.
- High Performance options available for improved UV and solar protection.
- Safety glass manufactured to reach Canadian CAN/CGSB 12.1 standards

THICKNESS

- 4mm - 8mm
- *Custom thickness’ available on request

MAXIMUM SIZE

- 1800x3500mm

GLASS TYPES

- Clear, Low Iron, Grey, Bronze, Low-E

Glass Comparison



Broken Tempered

Small pieces fall away preventing serious injury.



Broken Annealed

Large sharp dangerous pieces brake off.

Heat Soaking

To keep up with current E.U. glass safety standards Integral Seal is also able to offer Heat soaking. The process is designed to expose potential critical NiS (Nickel Sulfide) inclusions in fully tempered panels reducing the risk of spontaneous glass breakage. Heat soaking provides an additional defined level of confidence with your project reducing the chance of unwanted hassle later.





FUSE-INK DIGITAL PRINTING

Integral Seal's Fuse-Ink glass printing is the perfect solution for vibrant yet durable printing directly to the surface of the glass.

Fuse-Ink is a large format, digital glass printing process capable of reproducing full colour photography, vector graphics and textures directly onto the surface. Utilizing specialised ceramic inks, free of lead and cadmium, Fuse-Ink printing is pin point accurate and extremely durable perfect for internal and external projects.

The printing process entails direct application of ceramic inks to the surface of a panel, with a purpose built glass printer. Panels are then tempered through a furnace where the inks are permanently fused to the glass becoming UV and Scratch resistant. This process is a time and cost efficient solution for incorporating art with architecture, opening up a wide array of creative options.

The versatility of Fuse-Ink stems from the durability and flexibility of the inks. They have the capacity to face internally, externally, inside a Double Glazed Unit or even within two laminated glass panels. The inks can also be printed on high performance glass and be teamed with coloured interlayers to give a truly custom option. Performance data for individual designs is available to assist in the development stages.

FEATURES

Ceramic inks are UV, solvent and scratch resistant.
Ink coverage control allows fine tuning of light transmission on individual areas.

A 10 year warranty is provided against fading and discolouration.

Detailed performance data available for all types of printed glass panels.

THICKNESS

Single: 4mm - 8mm
Lami: 8.76 - 17.52mm

*Custom thickness' available on request

MAXIMUM SIZE

1800x3500mm

GLASS TYPES

Clear, Low Iron, Grey, Bronze, Low-E



Print Surface



Internal Surface

Reflective Appearance
Externally



External Surface

Matt Appearance
Externally



Inside Laminated

Reflective Appearance
Internal & External



Inside IGU

Reflective Appearance
Internal & External

Colour Gamut



Blue

Red

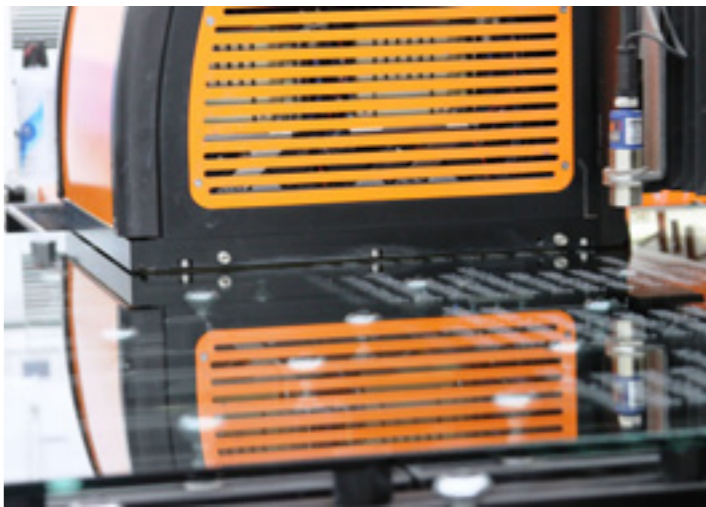
Orange

Green

White

Black

Although Fuse-Ink is pin point accurate when it comes to measurements it is important to note the ceramic printing colour gamut does not offer magenta or cyan. This means very bright pinks, purples and blues will be subject to colour shifts when printed.





PRINTED BACKSPLASH

The custom feature to any new design or remodel Integral Seal's Printed Glass Backsplash's are both a vibrant and durable.

Produced with Integral Seal's Fuse-Ink printing process, glass backsplash's use permanent ceramic inks fused directly into the glass. Due to there durability and easy to clean nature glass backsplash's are an ideal substitute for tiles and other materials. Photographs, illustrations, paintings and even marble textures are available with printed glass backsplash's making it the custom feature of any project.

Printed glass backsplash's can be installed in place of a regular kitchen backsplash or outdoors in alfresco areas. They are ideal for wet areas such as bathrooms and showers, or in lift wells to create eye popping features. Irregular shapes to fit range hoods or around corners are no problem, Integral Seal's production facility is more than capable too deal with any application.

FEATURES

Fuse-Ink ceramic inks are UV, solvent and scratch resistant.

Print from any high resolution digital image formats that you provide.

A 10 year warranty is provided against fading and discolouration.

No grout-lines makes glass much easier to wipe off and clean up mess.

THICKNESS

4mm - 8mm

*Custom thickness' available on request

MAXIMUM SIZE

1800x3500mm

GLASS TYPES

Clear, Low Iron, Grey, Bronze



Selecting Images

While we offer the production and printing services, we ask that clients provide the image or design for their project. The most popular option is to purchase images or designs online from image libraries or professional photographers. Other clients have engaged graphic designers and interior decorators to create custom designs with stunning results.

If you are not sure where to start have a read through some of Integral Seal's website guides to help you with selecting images, resolutions and other information about the process. If finding the correct image is too difficult have a look through the in house graphic range of textures and patterns available for free use.





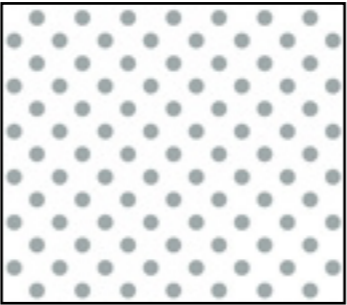
GRAPHIC RANGE

Add some creative flair to your project without the hassle by choosing one of Integral Seal’s purpose designed Graphic Range.

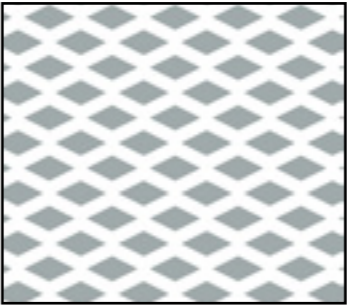
Incorporating creativity into a glass project is made easy with Integral Seal’s Graphic Range. Developed a purpose built for Fuse-Ink printing the collection of patterns and textures is ensured to impress. The comprehensive Graphic range provides shading, diffuses light and decreases glare adding a performance component to an otherwise purely decorative product.

A workflow created entirely digitally allow flexibility when designing unlike tradition screen printing methods. The range has been designed to be scaled, coloured and configured according to each application without issue offering seemingly endless creative opportunities. Ideal applications range from external canopies, facades and railings to internal office partitions, backsplash’s and shower screens.

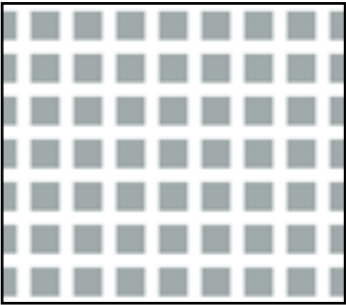
Patterns



Dots



Diamond



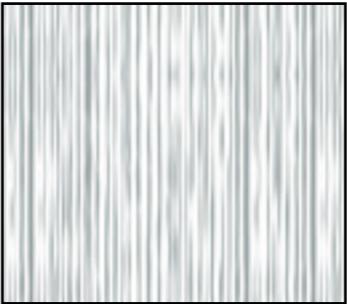
Square



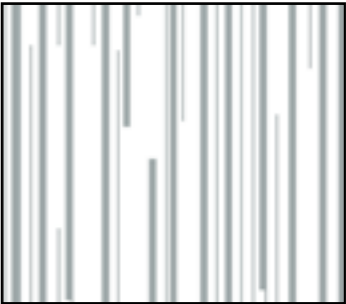
Fern Tales



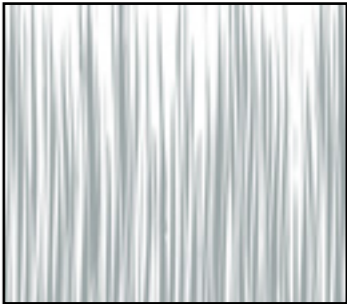
Barcode



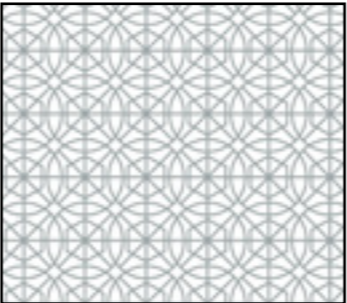
Double Back



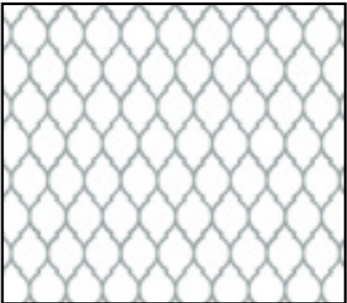
Peleton



Organic



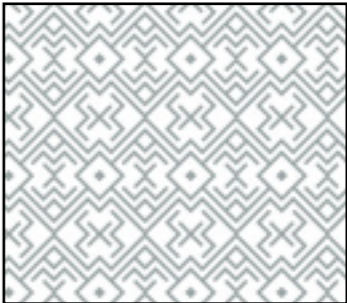
Roman Times



Victorian



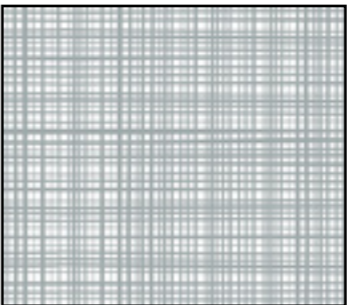
Interlaced



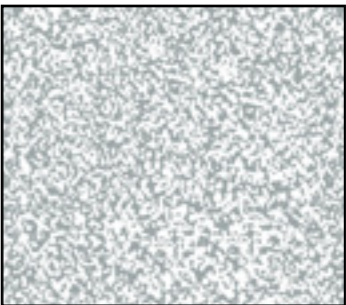
Crystal Maze



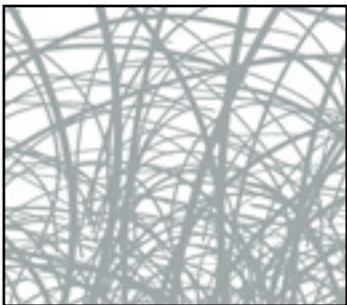
Weaving



Hessian



Rhubarb



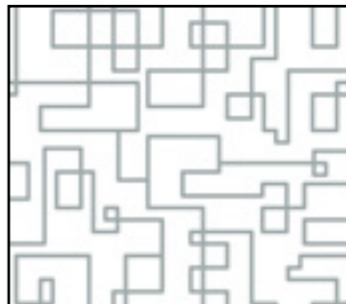
Grasslands



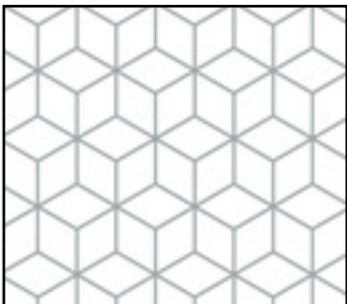
Beehive



Locked In



Screen Saver

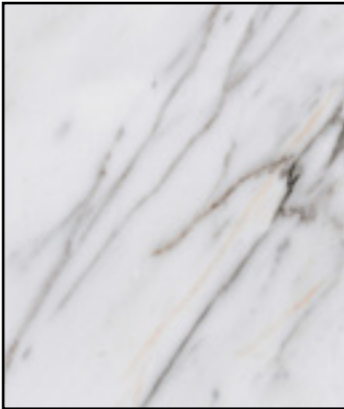


Boxed Levels

Textures



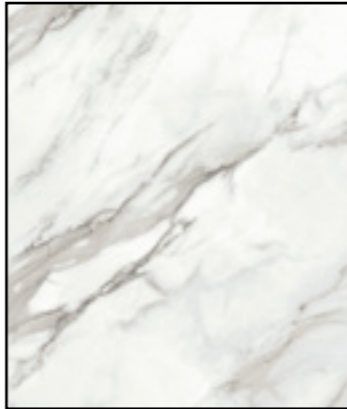
Light Stone 1



Light Stone 2



Light Stone 3



Light Stone 4



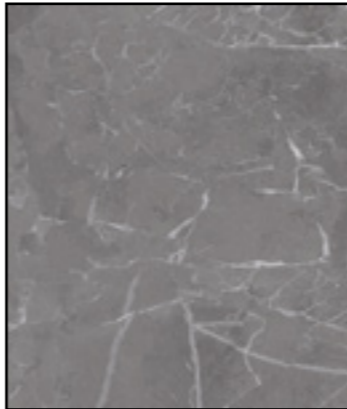
Mid Stone 1



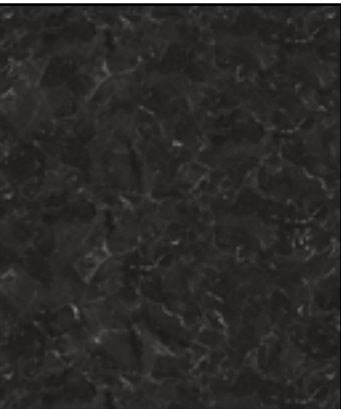
Mid Stone 2



Mid Stone 3



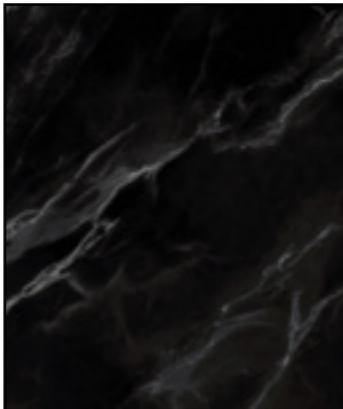
Mid Stone 4



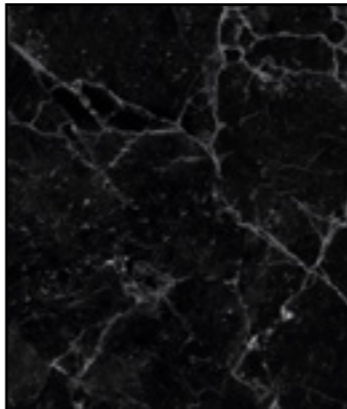
Dark Stone 1



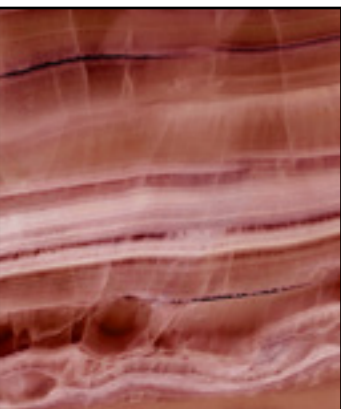
Dark Stone 2



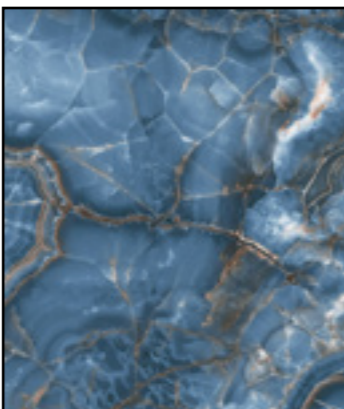
Dark Stone 3



Dark Stone 4



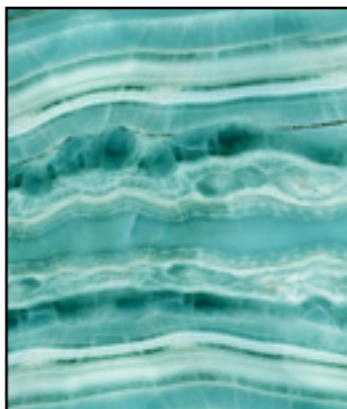
Red Stone



Blue Stone



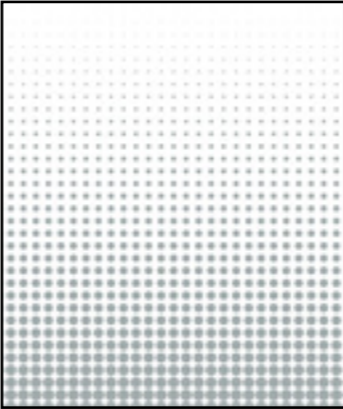
Yellow Stone



Turquoise Stone



Gradients



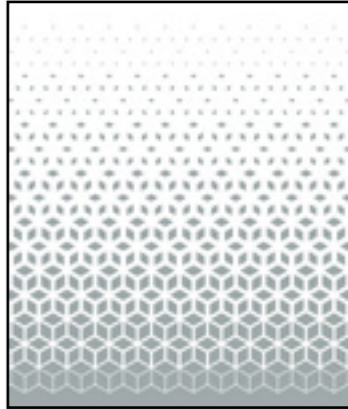
Dotted



Lined



Offset Dotted



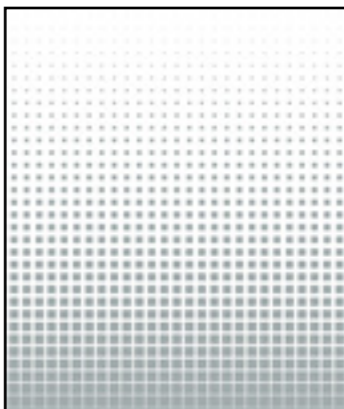
Boxed



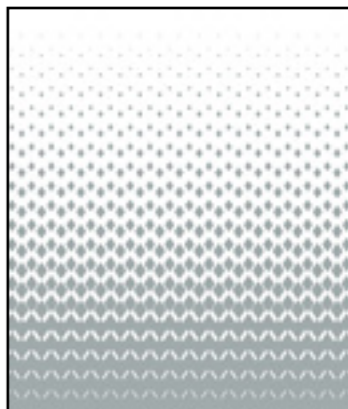
Tilting



Angular



Square



Diamond



SEALED GLASS UNITS

Integral Seal's Sealed Glass Units provide the flexibility & high performance required for protection against hot & cold weather.

Season weather differs can great deal, ranging from one extreme to the other, so it is important to be protected from the elements. Integral Seal's Sealed Glass Units, also known as Insulated Glass Units (IGU's) consist of two layers of glass separated by an argon filled gap. This spacer gap decreases the air to air transfer insulating internal temperatures creating a barrier from the external elements.

Sealed glass units are most effective when combined with Low-E performance glass and are customizable with a range of different spacer widths available. These options assist in maintaining a comfortable living environment without obstructing views Aiding in reducing the cost of heating in winter and cooling in summer months. If you find these options are still not sufficient to reach the performance goals you require, Integral Seal can also manufacture Triple Glazed Units.

FEATURES

Compatible with Low-E glass to increase performance capabilities of units.

Excellent solar and thermal control to reduce air conditioning and heating costs.

Argon filled panel gaps helps reduce outside noise transmission.

Can be combined with Fuse-Ink printing and laminated glass for custom and safety options.

THICKNESS & SIZE

Custom thickness', Sizes & Make-ups are all available including Triple Glazed options.

GLASS TYPES

Clear, Low Iron, Grey, Bronze, Low-E



Sealed Unit

Argon Filled Space

Outer Glass Panel

Inner Glass Panel

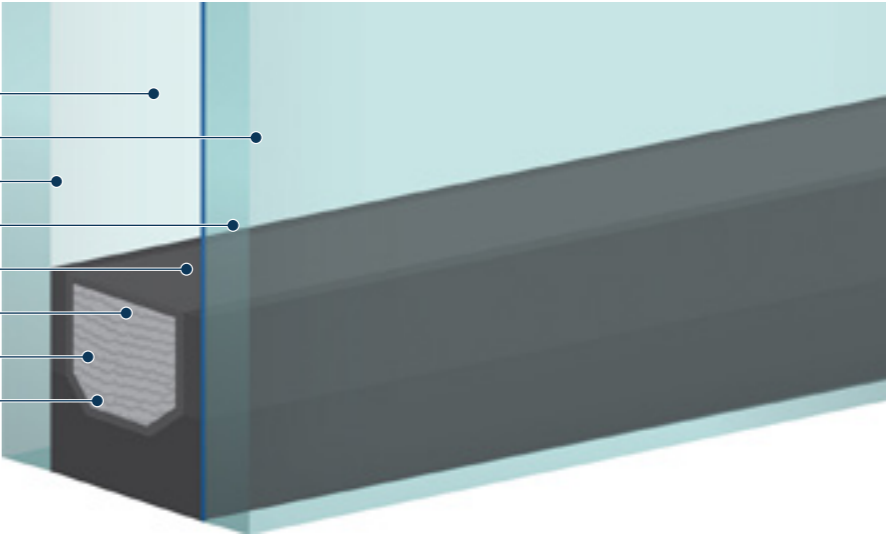
Low-E Coating

Spacer Bar

Desiccant

Primary Seal

Secondary Seal



Cutting Edge

Integral Seal remains at the cutting edge of glass technology and employ advanced automatic unit assembly lines. These lines have gained international recognition for both innovation and precision. To ensure that the highest quality is reach all units are double or triple sealed reducing of any unwanted problems in the future.





LAMINATED GLASS

Offering a host of advantages Integral Seal’s Laminated Glass is the ideal option when designing for any architectural application.

Laminated panels are a form of safety glass that are manufacture to hold together and remain secure when shattered. In the event of breakage, they are held in place by a specialized interlayer called EVA (ethylene-vinyl acetate). This interlayer holds firm upon impact remain bonded under high strength and preventing unsafe large sharp pieces from falling away. The result is a “spider web” cracking effect when impacted, which unlike single panels, is not enough to completely pierce the glass.

Its various architectural applications generally stem from the possibility of human impact where the glass could fall if shattered. Many building codes now require laminated glass to be used particularly for exterior balconies containing glass railing. Not only are laminated panels safe but they are also secure and can be used as theft protected, especially if panels have also be tempered. These custom tempered make-ups become exceptionally tough removing the need for wire mesh or steel bars.

Another benefit to laminated panels is increasing the sound insulation rating of a glass window. Testing found significant improvements in sound attenuation compared to single monolithic glass panes of the same thickness. The benefits continue when laminating performance glass panels, creating a truly custom option for whatever the project may require.

FEATURES

Compatible with Fuse-Ink digital printing for a uniquely custom project.

Glass can be tempered for additional safety and security options.

High Performance options available for improved UV and solar protection.

Improved sound insulation properties reducing outside noise transmission.

THICKNESS

6.76mm - 17.52mm
*Custom thickness, make-ups & sizes available

MAXIMUM SIZE

1800x3500mm

GLASS TYPES

Clear, Low Iron, Grey, Bronze, Low-E

Glass Comparison

Broken Laminated
Broken pieces remain held in-place by laminate.

Broken Annealed
Large sharp dangerous pieces brake off.

Software & Equipment

Integral Seal’s lamination line allows panels to be cut much faster and more efficient than by hand removing excess waste thanks to the computerized optimization software. The process is carried out by our specialised production equipment which scores, cuts, heats and trims the interlayer all at the push of a button, removing human error and giving a far more precise finished product.





COLOURED INTERLAYERS

Create a truly unique project by incorporate some colour, using Integral Seal's eye catching Coloured Interlayer range.

Designed form maximum clarity along with stability over a long period of time Coloured Interlayers offer a simple yet stunning option to any internal glass project. Permanently laminated between two panels of glass, the wide array of colours range from subtle blues and greens to vibrant bright reds and purples.

Because the film is laminated between panels the adhesion lasts far longer than regular stick on films, removing the chance of those unseemly peeling edges. Coloured Interlayers are manufactured from sustainable materials and maintain their impact resistance. They reach the all typical safety standards of Integral Seal's regular EVA laminated glass panels.

FEATURES

Improves the glass panels acoustic and thermal performance capabilities.

Additional Transparent, Frosted & Opaque colour options available.

Combine with Fuse-Ink digital ceramic printing for uniquely custom projects.

Glass can be tempered for additional safety and security options.

THICKNESS

8.76mm - 17.52mm

*Custom thickness' and makeups available

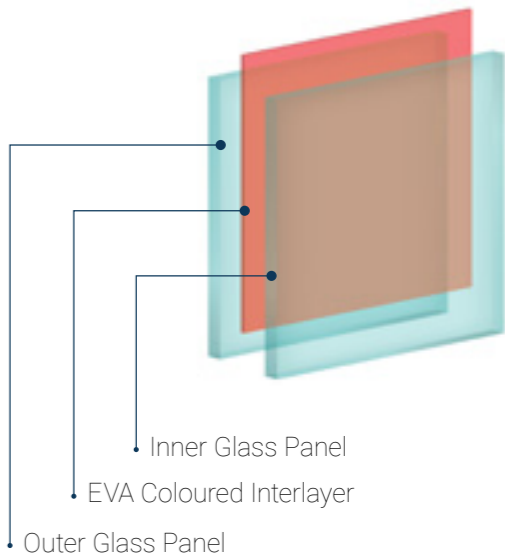
MAXIMUM SIZE

1800x3500mm

GLASS TYPES

Clear, Low Iron, Grey, Bronze, Low-E

Glass Make-up



Custom Options

Transparent, frosted and opaque options are available allowing you to achieve the perfect vibrancy and intensity when glazing. Further more colours can be layered together creating almost endless options. For a truly custom look and style combine Coloured Interlayers with a design utilizing Fuse-Ink printing.





GLASS RAILING

Glass Railings are becoming an industry standard and are ideal for providing safety with minimal obstruction of views.

Integral Seal's Glass Railing systems feature sleek profiles that have been designed not only to look good but for safety and support. Produced to suite individual styles and compliment any project glass railings allow maximum visibility with minimum viewing disruption whilst reaching building safety standards.

A variety of fixing methods and handrail systems are available to suit whatever the positioning and style. Glass railings can be custom cut and shaped to accommodate challenging installation spaces and teamed with low-e or tinted glass providing increased performance characteristics. Add a unique twist to a glass railing project by incorporating a design utilizing Fuse-Ink glass printed pattern.

FEATURES

- Printing available for industry required high rise bird friendly dot pattern.
- Glass is custom cut to suit and fits a wide range of hand rails currently used.
- High Performance options available for improved UV and solar protection.
- Compatible with Fuse-Ink digital ceramic printing for uniquely custom projects.

THICKNESS

6.76mm - 17.52mm
*Custom thickness' and makeups available

MAXIMUM SIZE

1800x3500mm

GLASS TYPES

Clear, Low Iron, Grey, Bronze, Low-E

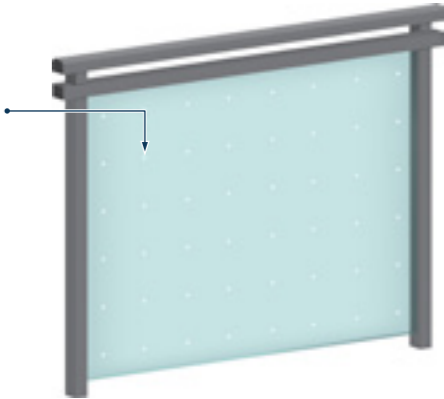
Environmental

The past decade has seen a swell of interest in environmental issues from government, industry and citizens. One such issue is the protection of birds from fatal collisions with glass buildings. Utilising digital glass printing technology Integral Seal is capable of incorporating the mandated bird safety dot pattern efficiently on all glass railings without the hassle of stickers and films.

Railing Example

Bird Friendly Print

Fuse-Ink Ceramic
White Printing
3mm Dots
100mm Spacing





PERFORMANCE DATA

See tables for Clear and Tinted Glass performance data in single, laminated and Insulated make-ups

Single Glaze

Glass	Thickness	Visible Light			SHGC	Winter U-Value	Summer U-Value
		Trans	Refl. Out	Refl. In			
Clear	4	89	8	8	0.85	5.90	5.32
Clear	5	89	8	8	0.86	5.87	5.30
Clear	6	88	8	8	0.82	5.84	5.27
Clear	8	86	8	8	0.78	5.81	5.24
Grey	6	45	5	5	0.60	5.84	5.27
Grey	8	34	5	5	0.53	5.76	5.21
Bronze	6	54	5	5	0.63	5.84	5.27
Bronze	8	44	5	5	0.56	5.76	5.21

Laminated Glass

Glass	Thickness	Visible Light			SHGC	Winter U-Value	Summer U-Value
		Trans	Refl. Out	Refl. In			
Clear Clear	6.76	88	7	7	0.79	5.79	5.23
Clear Clear	8.76	88	7	7	0.78	5.73	5.18
Clear Clear	10.76	87	7	7	0.76	5.68	5.14
Clear Clear	12.76	84	7	7	0.73	5.62	5.09
Clear Clear	16.76	84	7	7	0.69	5.58	5.04
Grey Clear	12.76	43	5	5	0.54	5.62	5.09
Grey Clear	16.76	33	5	5	0.49	5.55	5.03
Bronze Clear	12.76	51	5	5	0.57	5.62	5.09
Bronze Clear	16.76	42	5	5	0.51	5.55	5.03

Sealed Glass Units

Glass	Thickness	Visible Light			SHGC	Winter U-Value	Summer U-Value
		Trans	Refl. Out	Refl. In			
Clear Clear	4 + 12.7 + 4	81	14	14	0.77	2.59	2.75
Clear Clear	5 + 12.7 + 5	80	14	14	0.76	2.57	2.73
Clear Clear	6 + 12.7 + 6	78	14	14	0.73	2.56	2.72
Grey Clear	4 + 12.7 + 4	50	8	8	0.55	2.59	2.75
Grey Clear	6 + 12.7 + 6	40	7	12	0.47	2.56	2.72
Bronze Clear	4 + 12.7 + 4	57	9	13	0.59	2.59	2.75
Bronze Clear	6 + 12.7 + 6	48	8	12	0.48	2.56	2.72

**If you require more information such as 'Low-E performance options' please visit our website or feel free contact us and ask to speak to a sales representative.



Integral Seal Mfg. Inc.

Delivering exceptional quality
products & solutions

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