



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 insulated glass 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 insulated 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 insulated units, laminated makeups and single glass panels in a range of tints and high performance options, as per individual specifications.

FEATURES

Compatible with 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

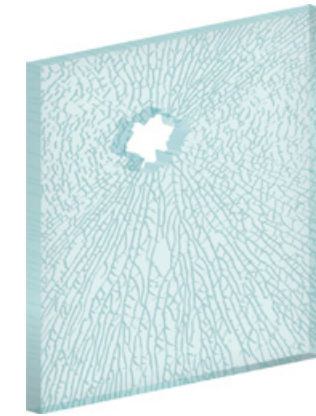
1800x3500mm

GLASS TYPES

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

*Custom types' available on request

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.





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 digital 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
- *Custom types available on request



INSULATED GLASS

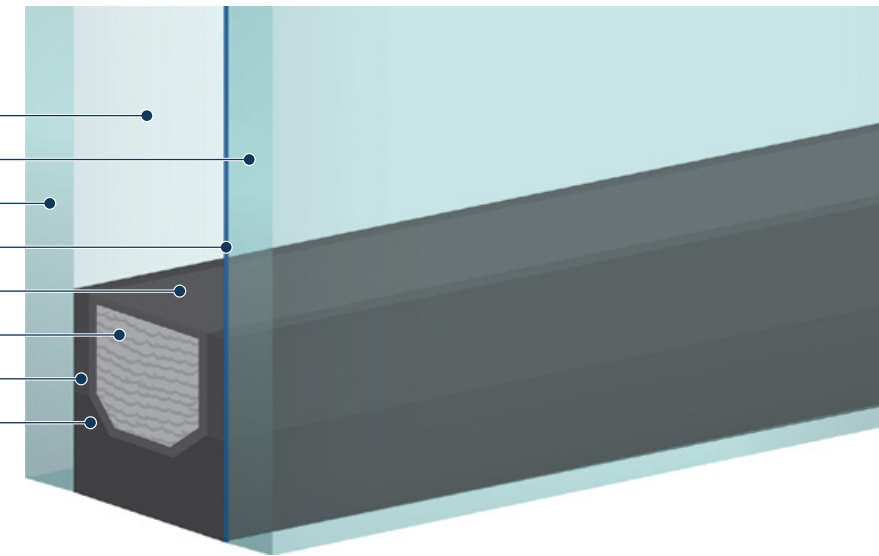
Integral Seal's Insulated Glass Units provide the flexibility & high performance required for protection against hot & cold weather.

Season weather differs a great deal in Canada range from one extreme to the other so it is important to be protected from the elements. 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.

Insulated 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.

Insulated Glass 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 digital printing and Coloured Interlayers for uniquely custom projects.

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

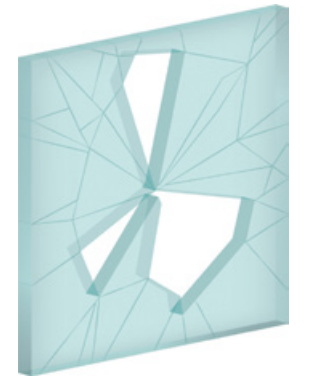
*Custom types' available on request

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.





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 with digital printing glass printed pattern or Coloured Interlayers.

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 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

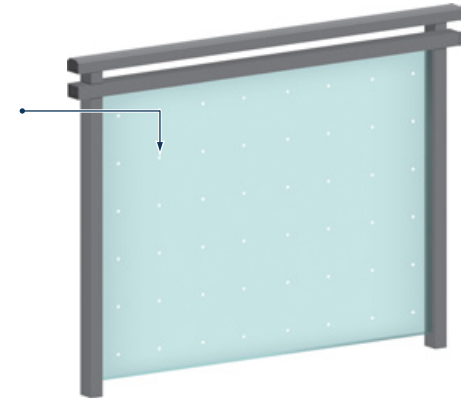
*Custom types' available on request

Railing Example

Bird Friendly Print

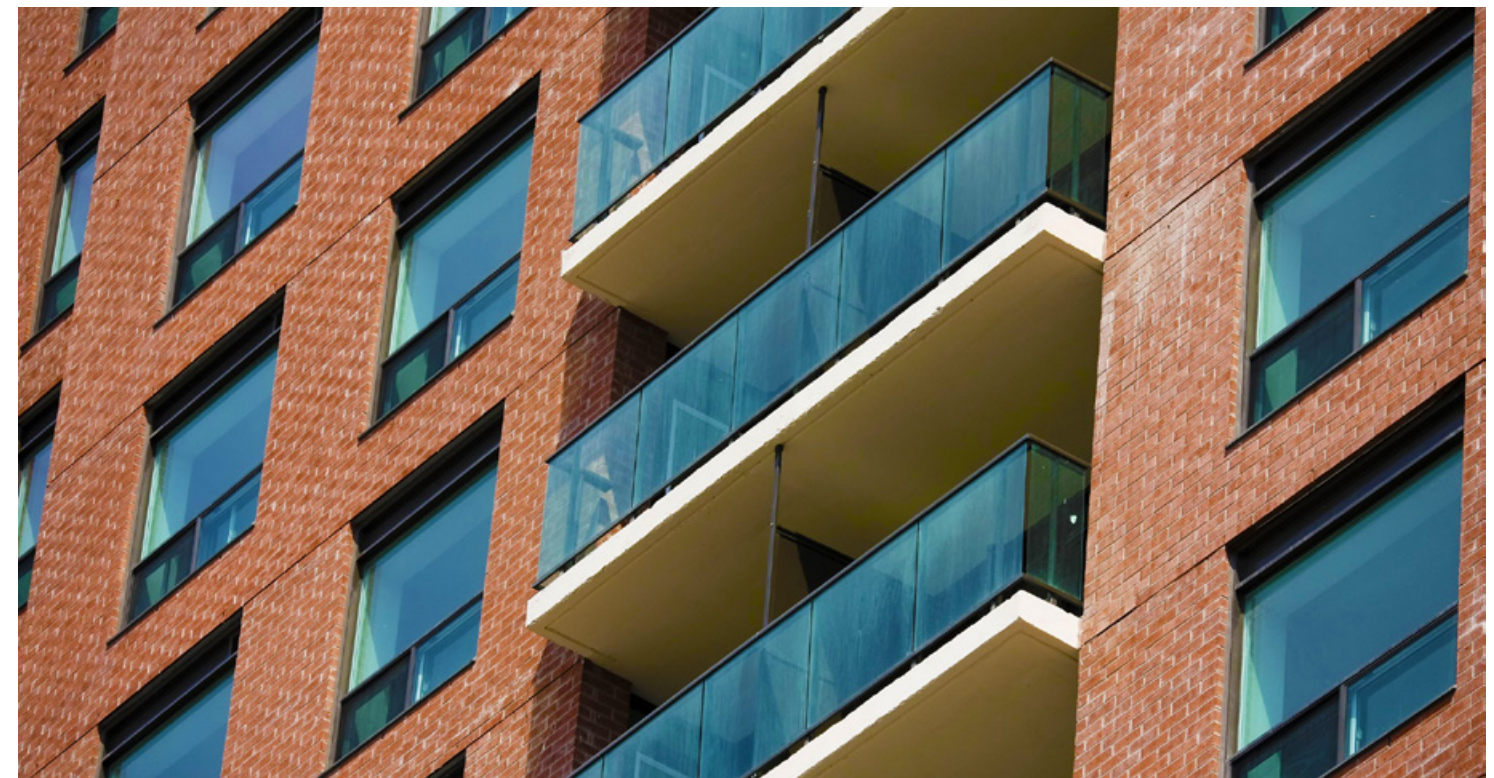
Digital Printing or Laser Etching

5mm Dots
100mm Spacing



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.





LASER ETCHING

Integral Seal's specialized Laser Etching offers an ideal method for adding a personalized appearance and finish to your next glass project.

At Integral Seal we continue to make advancements in glass production technologies, as clearly demonstrated in our state of the art Laser Etching equipment. This cutting edge technology provides you the ability to etch custom imagery and patterns onto glass. The process is a quick, simple and cost effective solution to other products such as vinyl stickers. Whether it be an annealed clear panel that has a Low-E soft coat or a tinted grey panel that is tempered, Integral Seals Laser Etching can be applied to any glass type or makeup that we provide.

The Etching process is achieved with a CO₂ Laser beam removing a small amount of material and melting the glass surface. A big advantage of using a Laser on glass surfaces is that it is far less subject to dirt built-up and fingerprints than those of traditional sandblasting or rough Etching. Durability along with sustainability are further pros to Laser Etching due to the lack of need for paints or vinyl stickers, which may fade or peel off over time.

FEATURES

Flexible application means Annealed, Tempered and Heat Strengthen options Available.

Etching can be placed on building exterior of Insulated Units for compliance with Toronto Green Standards.

Laser capable of various intensity settings to allow for image recreation on glass.

Durable against weather, scratches and UV fading, while remaining eco-friendly and sustainable.

THICKNESS

Single: 4mm - 8mm

Lami: 8.76 - 17.52mm

*Custom thickness' available on request

MAXIMUM SIZE

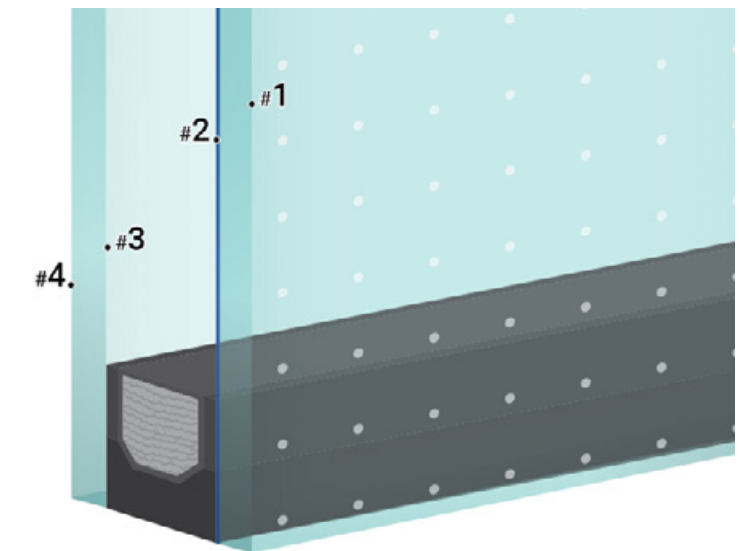
1800x3500mm

GLASS TYPES

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

*Custom types' available on request

Insulated Glass Unit Example



1. Surface #1 Building Exterior, Laser Etching
2. Surface #2 Inside Unit, Low-E Coating
3. Surface #3 Inside Unit
4. Surface #4 Building Interior

Bird Friendly Glass

This specialty product has been design with a Low-E Solution in mind, by etching the Bird Friendly pattern onto Surface #1 and allow the Low-E coating to remain on Surface

This is in accordance with the **Toronto Green Standards (TGS)** Tier 1 terms. These terms state that **visual markers** must be;

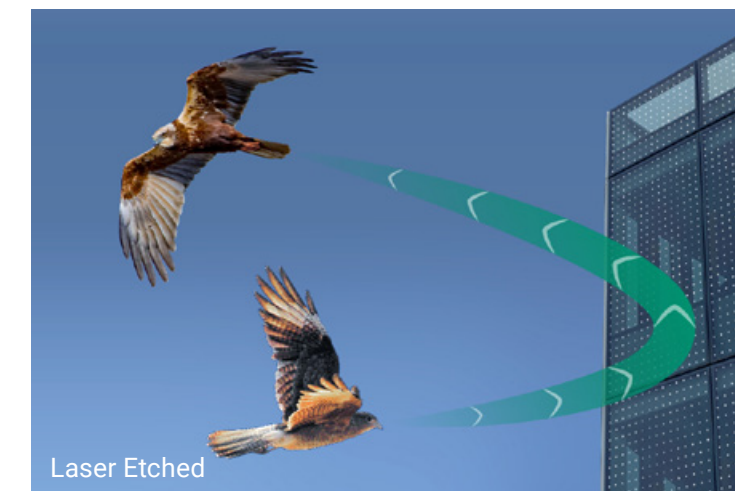
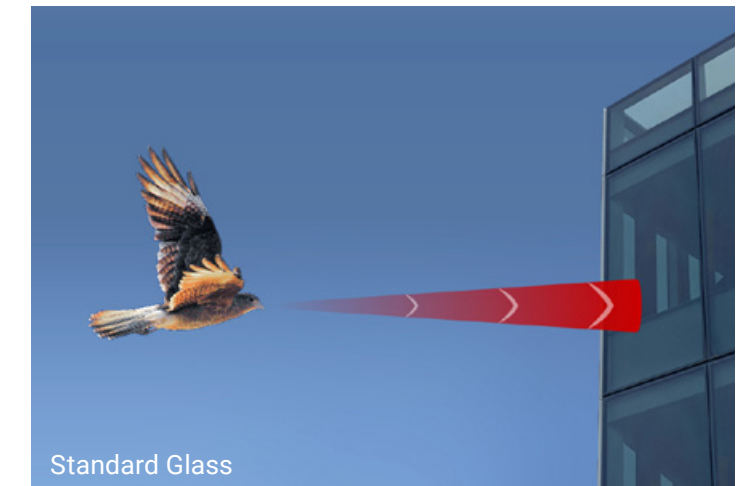
1. High in contrast to glass.
2. On the exterior face (surface #1) of glass.
3. On the first 12m (30ft) of glass from ground level.

The Laser Etching process can be applied to any glass type and makeup that we provide including Heat Treated, Laminated and Insulated Glass Units.

Custom Imagery

Create a truly one of a kind project by Laser Etching a custom picture or pattern onto the glass. The state of the art Laser is capable of recreating high definition imagery with its options for various levels of transparency and weight.

Stuck for ideas have a look through our graphic range where we provide a wide variety of ready to go fully scalable patterns to suite any project.





FEATURES

Digitally printed 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

*Custom types' available on request



DIGITAL PRINTING

Integral Seal's Digital Ceramic Printing is the perfect solution for vibrant yet durable printing directly to the surface of the glass.

Integral Seal's large format, digital glass printing process is capable of reproducing full colour photography, vector graphics and textures directly onto the surface. Utilizing specialised ceramic inks, free of lead and cadmium, digital 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 digital printing 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.

Print Surface

Due to the durability of the ceramic inks, printing can be done on any surface of a glass panel. The ink will appear different depending on the surface which it is applied, particularly on tinted glass types.



Internal Surface

Reflective Appearance
Externally



External Surface

Matt Appearance
Externally



Inside Laminated

Reflective Appearance
Internal & External



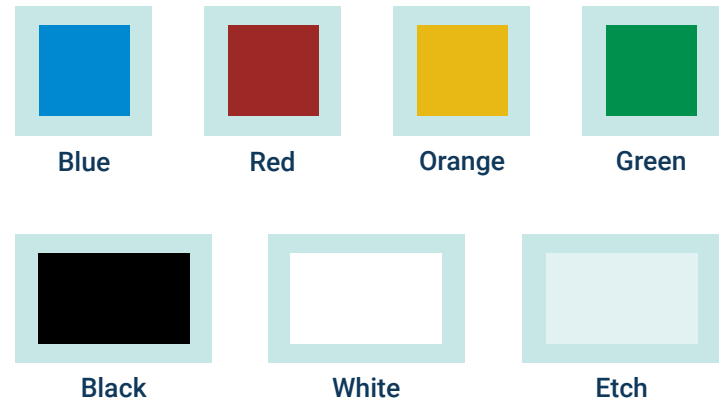
Inside IGU

Reflective Appearance
Internal & External

Colours Gamut & Etch Style Ink

The ceramic colour gamut allows for a wide variety of colour matching options and photo recreation opportunities. Rich deep blacks and bright whites are a particular strength, enhancing privacy while maintaining aesthetics.

In addition to our regular colours we also provide an etch style alternative. The benefit of this Etch Style Ink is its ability for transparency. This makes it ideal for units, railings, and other applications where a more subtle appearance is desired.





FEATURES

Digitally printed 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

*Custom types' available on request



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.

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 digital 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.





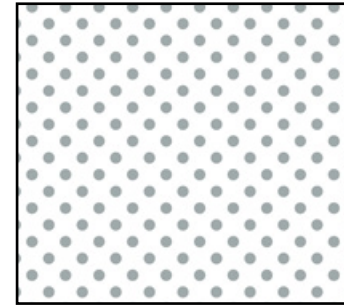
GRAPHIC RANGE

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

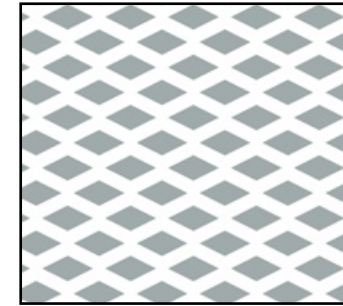
Incorporating creativity into a glass project is made easy with Integral Seal's Graphic Range. Developed a purpose built for digital printing the collection of patterns and textures is ensured to impress. The comprehensive Graphic range provides shading, diffuses light and decreases glare adding a performance 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.

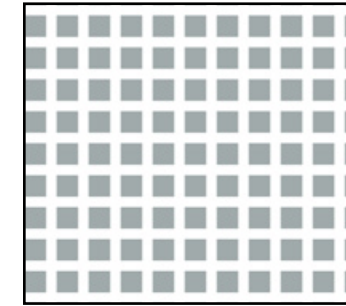
Patterns



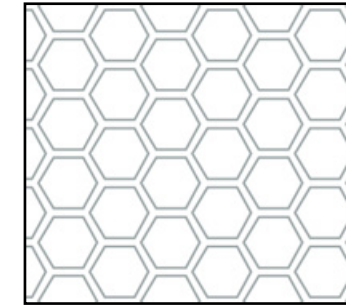
Dots



Diamond



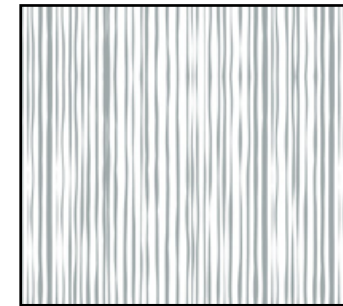
Square



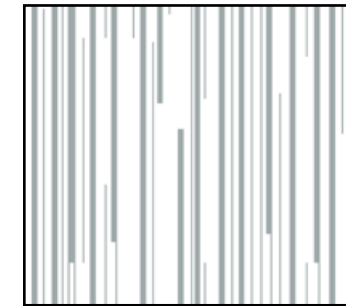
Beehive



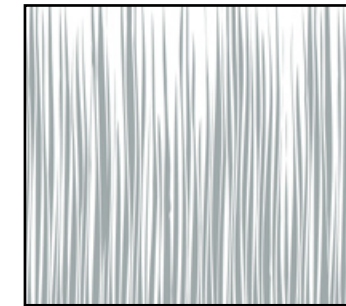
Barcode



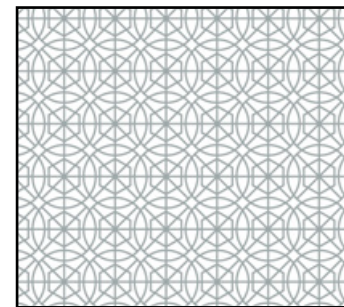
Double Back



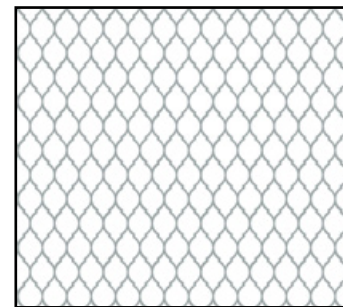
Peleton



Organic



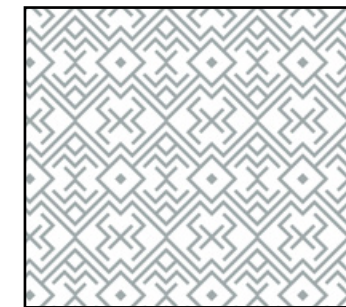
Roman Times



Victorian



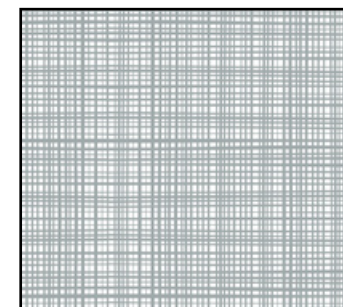
Interlaced



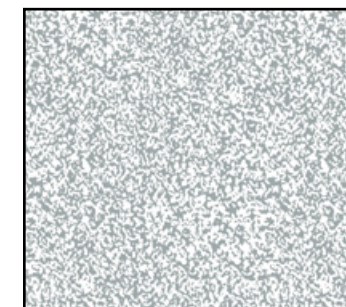
Crystal Maze



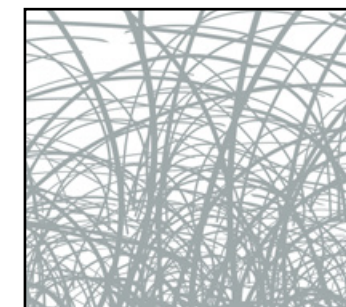
Fern Tales



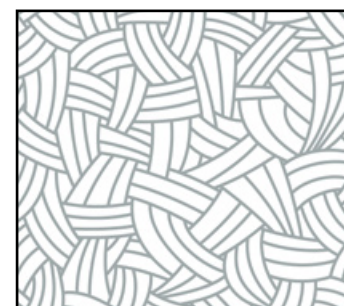
Hessian



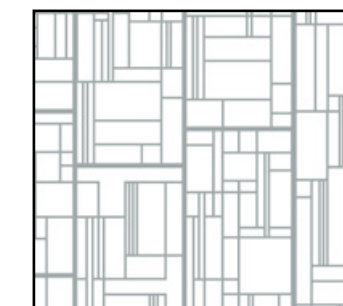
Rhubarb



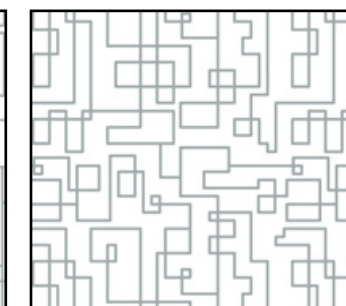
Grasslands



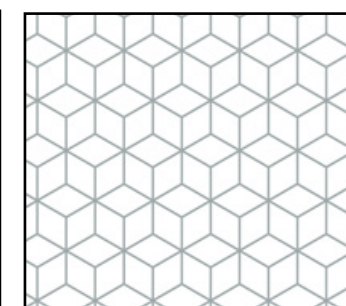
Weaving



Locked In



Screensaver



Boxed Levels

Textures



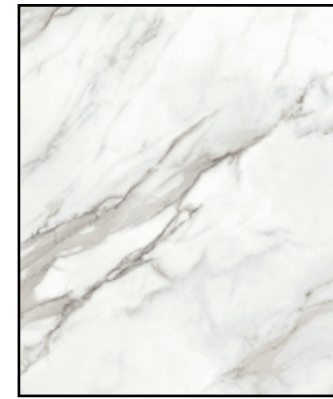
Light Stone 1



Light Stone 2



Light Stone 3



Light Stone 4



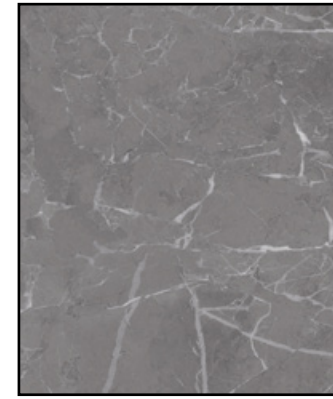
Mid Stone 1



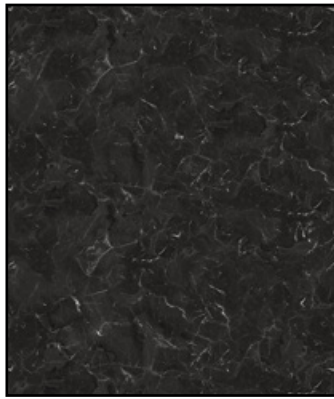
Mid Stone 2



Mid Stone 3



Mid Stone 4



Dark Stone 1



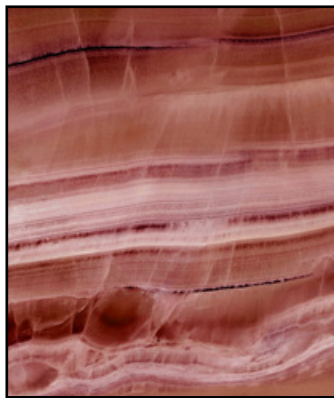
Dark Stone 2



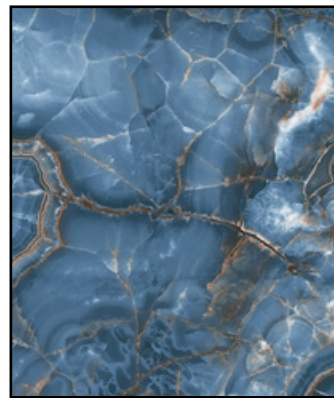
Dark Stone 3



Dark Stone 4



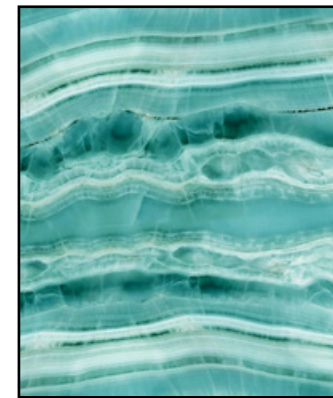
Red Stone



Blue Stone



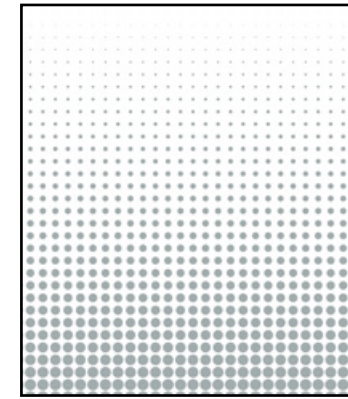
Yellow Stone



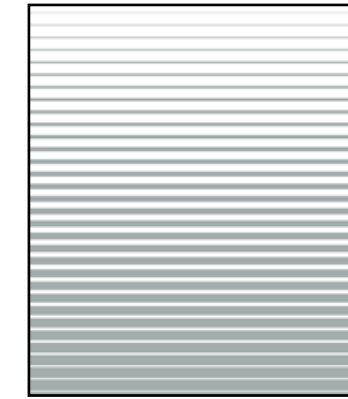
Turquoise Stone



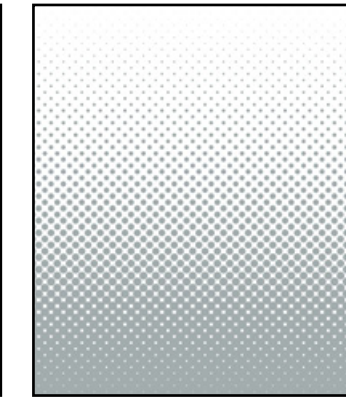
Gradients



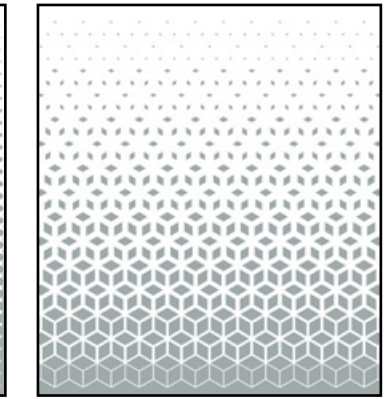
Dotted



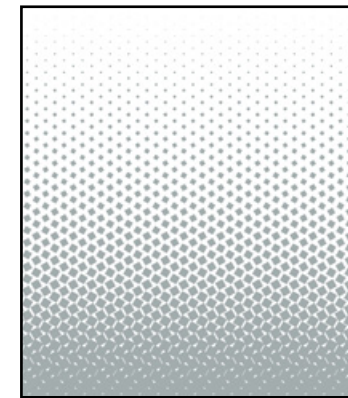
Lined



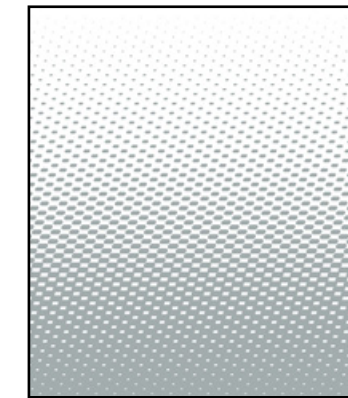
Offset Dotted



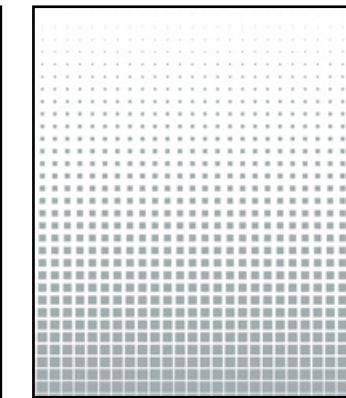
Boxed



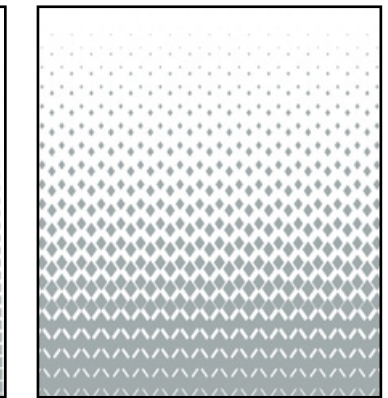
Tilting



Angular



Square



Diamond



FEATURES

Glass can be tempered for additional safety and security options.
 Transparent, Translucent & Opaque colour options available.
 Combine with digital ceramic printing for uniquely custom projects.
 Improves glass panels Sound, Solar and UV performance capabilities.

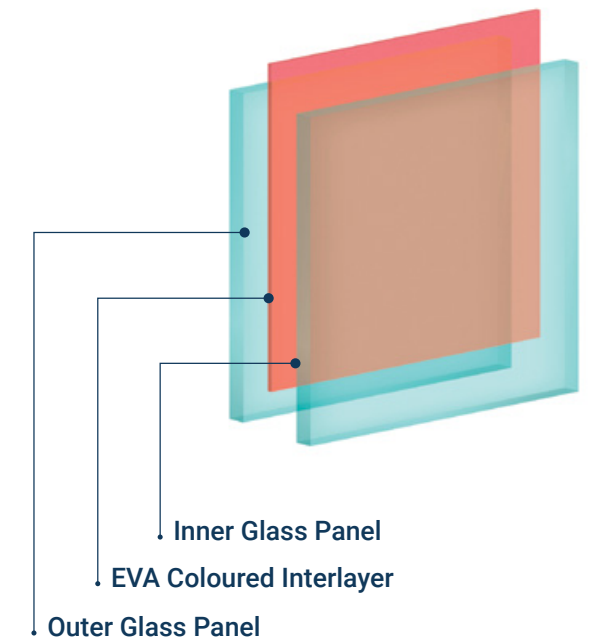
THICKNESS MAXIMUM SIZE

8.76mm - 17.52mm 1800x3500mm
 *Custom thickness' and makeups available

GLASS TYPES

Clear, Low Iron, Grey, Bronze, Low-E
 *Custom types' available on request

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 digital printing.



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.



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

Insulated 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.





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