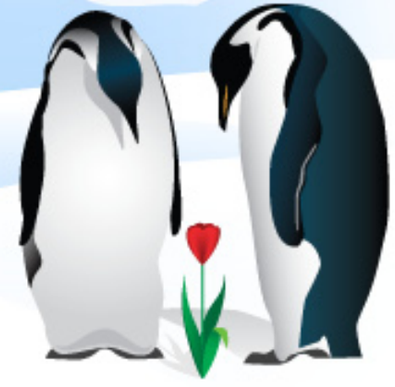
Bayview Windows

Everythng you need to know about windows



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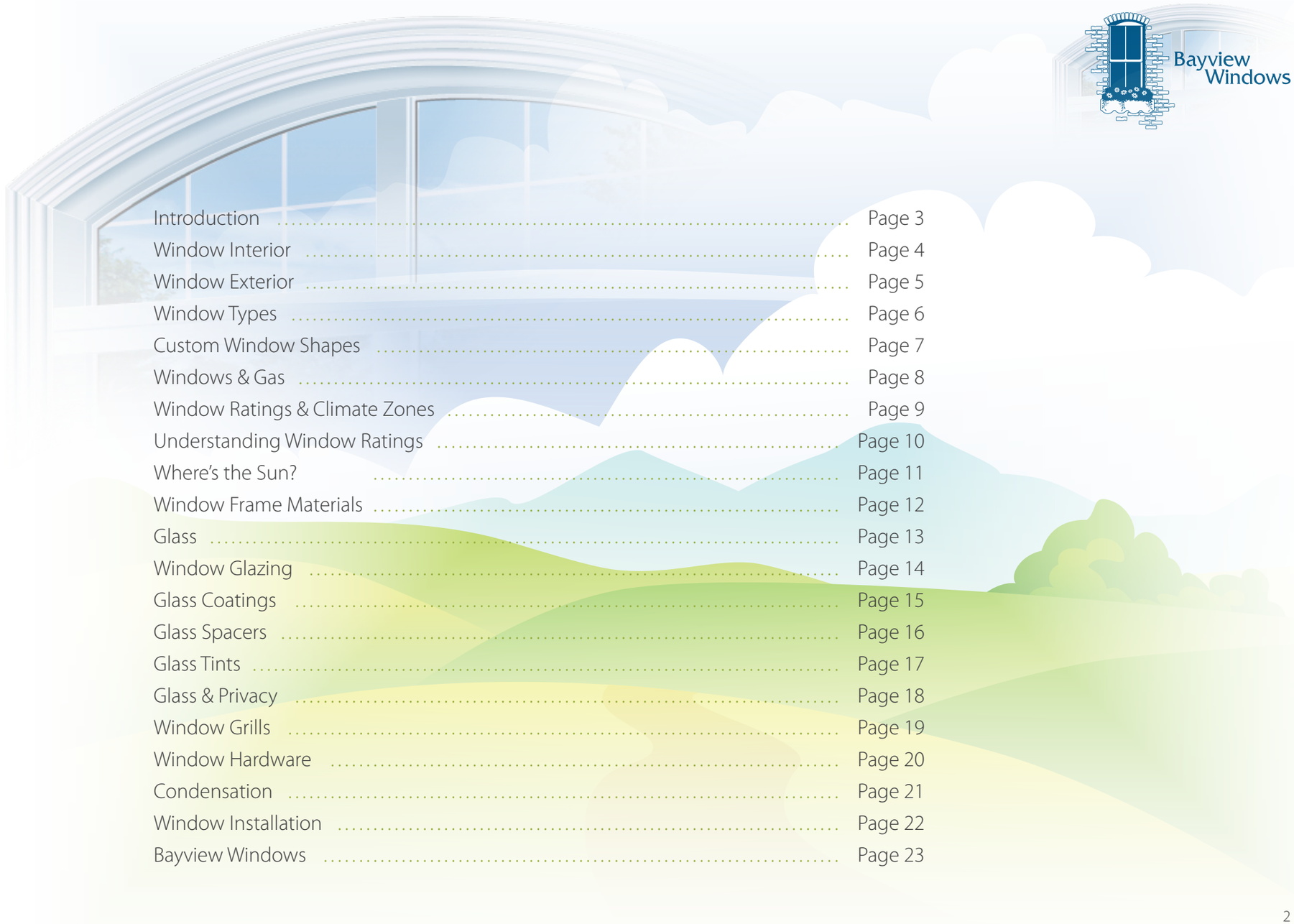

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Introduction

If you are considering replacing the windows in your home, protect your investment before you make the purchase.

"Everything you need to know about windows this holiday season" is a complimentary guide about the critical window technology factors that will help you get the most out of your window purchase.

If you have never purchased replacement windows, or maybe you have, but not within the last ten years, then there are lots of things to know about windows.

It's not surprising that technology has caught up with something as simple as a window, after all, energy-efficiency is a huge concern these days. But the technology has gone far beyond energy-efficiency.

This guide will help you understand and imagine all the possibilities from energy saving efficiencies to hid-away crank handles, so that you can make informed decisions that will maximize your options to suit your budget, energy costs, style and home comfort.

Happy Holidays, and all the best for 2017.
Bayview Windows

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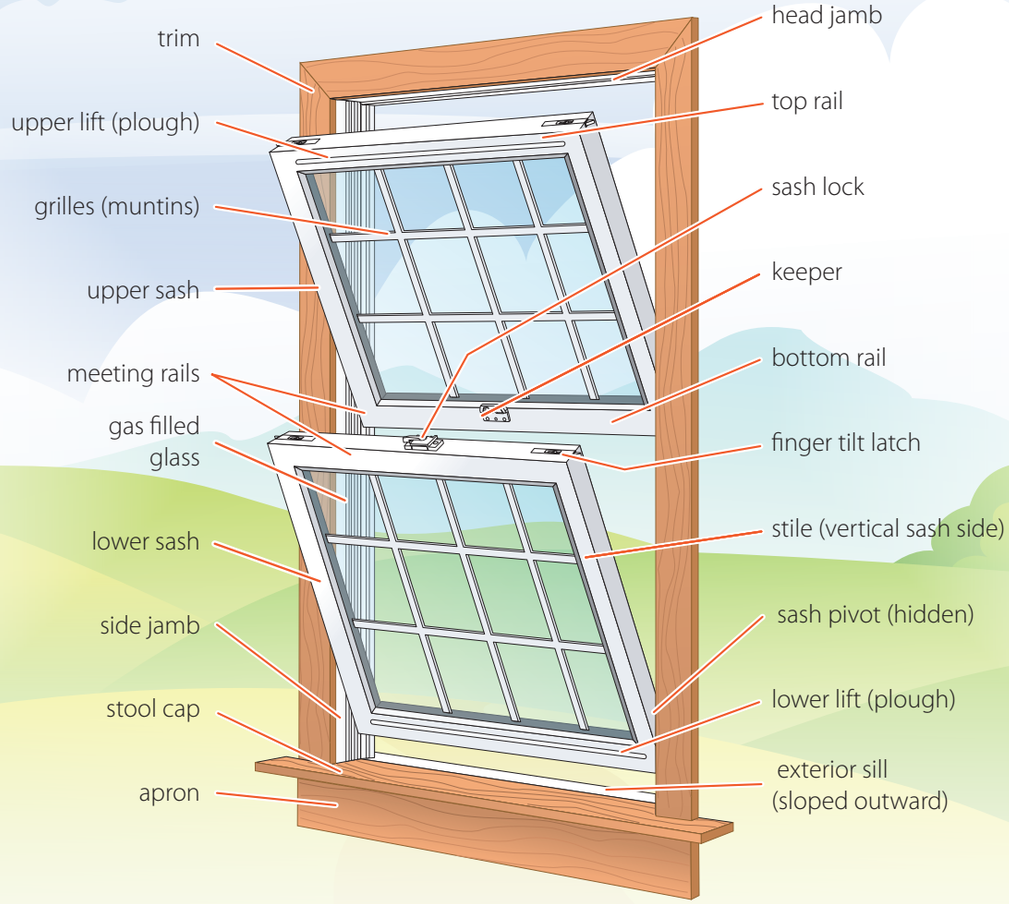
Anatomy of an Interior Window

Bayview Windows

At first glance, a window seems like a relatively simple concept, when breaking it down for the purposes of describing the individual components, a window can become a complex grouping of what-ya-ma-call-its that make it impossible to convey to others.

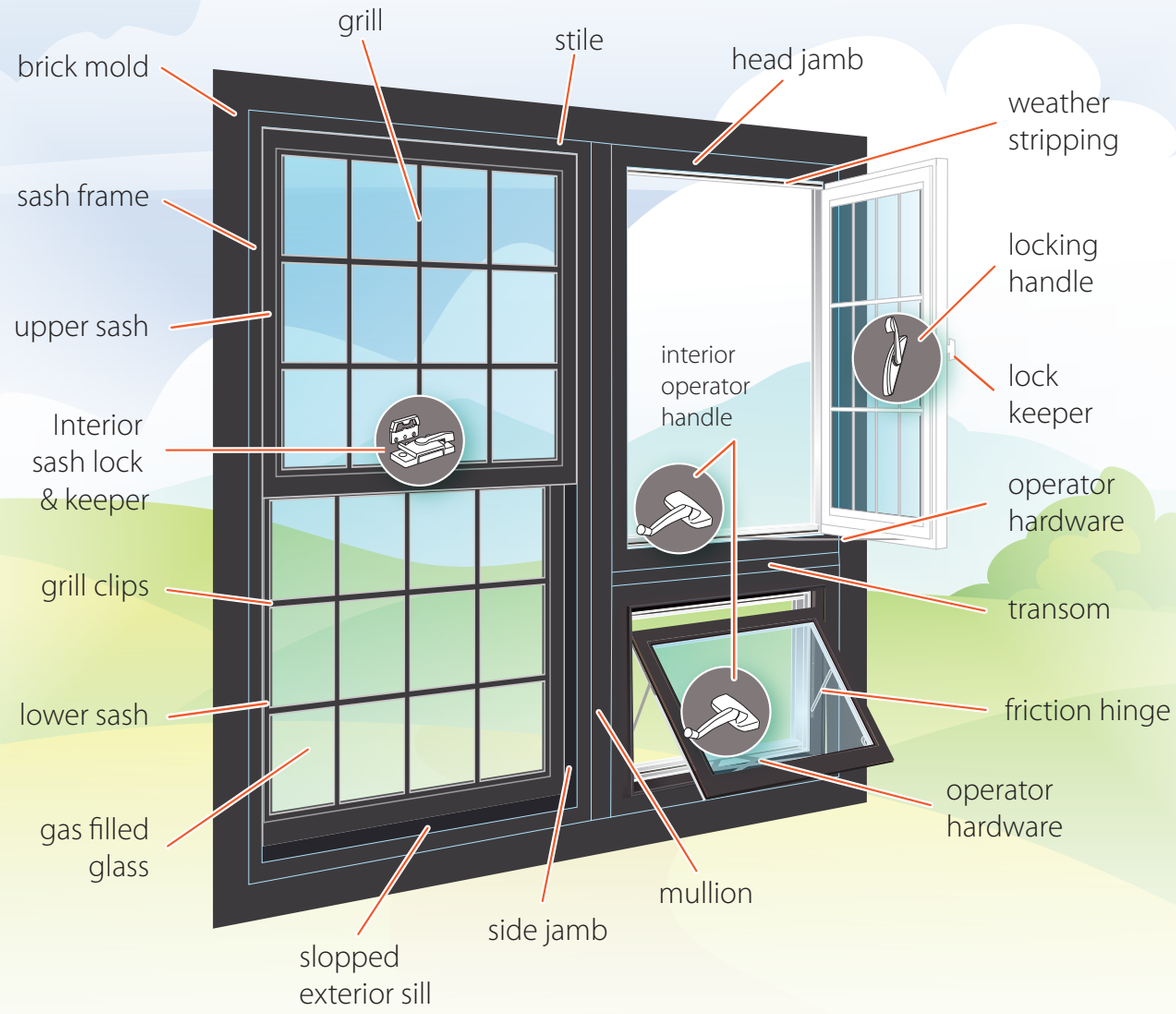
This diagram labels most, but not necessarily all of the more standard terms.



Anatomy of an Exterior Window

When looking at the exterior of a window, there are more parts than you'd probably care to remember. To make it even more confusing, multiple terms can be used to describe the same components.

This diagram includes a double hung, casement and awning window in the configuration.



Window Types

1. Picture Windows

Fixed non-operational window, most energy-efficient of all window types, offering largest possible surface area of all window types.

2. Casement Windows

Opens outward horizontally, these windows are more economical than sliders or hung windows and allow for the largest surface area and highest energy efficiency of all operational windows.

3. Slider Windows

One fixed plus one slider or double sliders, non-protruding, easy cleaning from inside the home. Also available in a triple lite configuration.

4. Hung Windows

One or two operational windows that slide up or down, non-protruding, easy tilt-in cleaning from inside the home.

5. Awning Windows

Hinged at the top, opens from below, great ventilation solution.

6. Bay Windows

A three-sided protruding extension, mix and match window types within configuration to create a personal and functional space.

7. Bow Windows

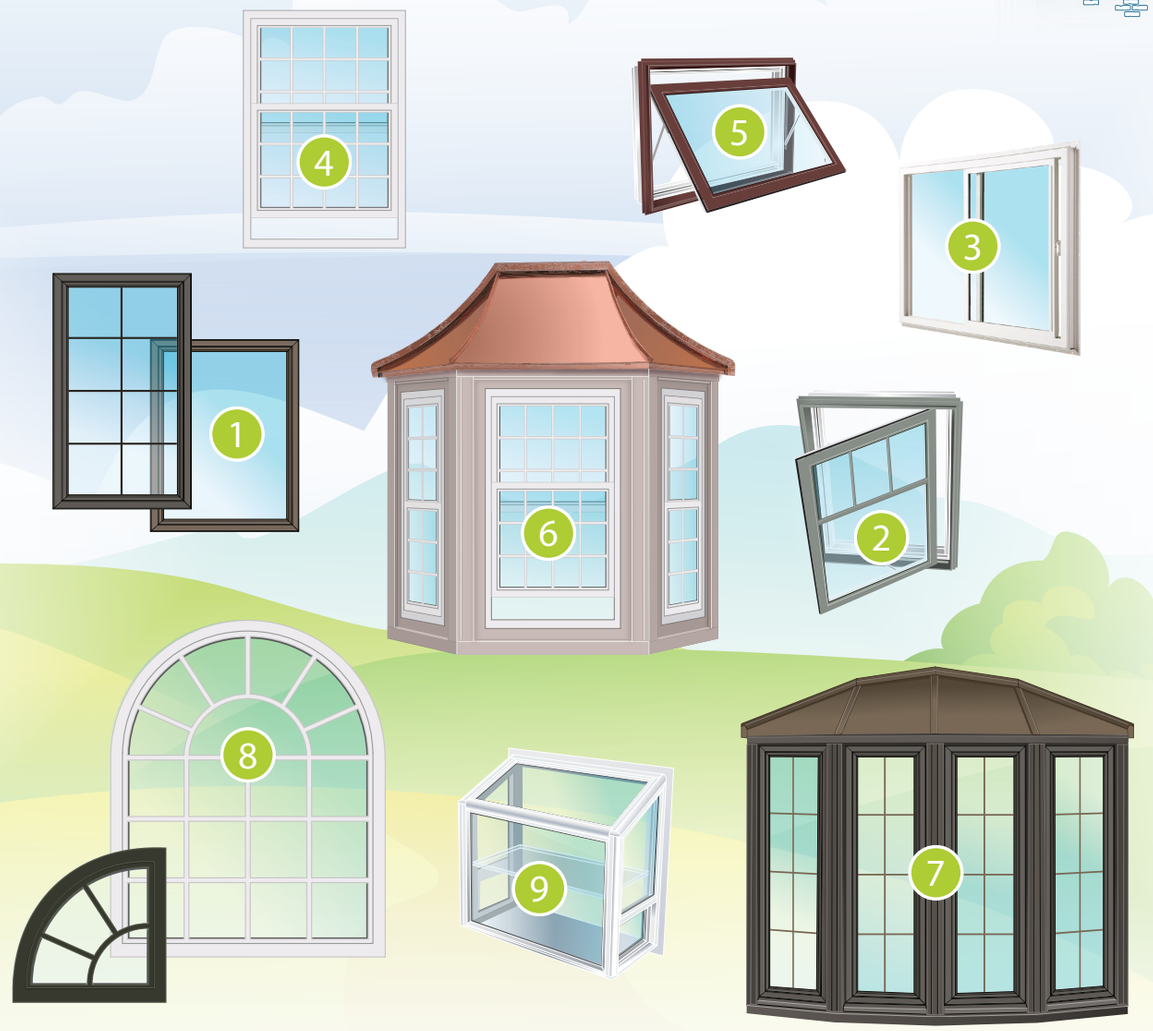
Similar to a bay window, but may be comprised of any combination of four to six individual sides forming a semi-circle. Typically made up of picture and casement windows, but can include awning and hung windows as well.

8. Custom Shapes

Fixed non-operational custom shaped window includes circular, half circle, diagonals.

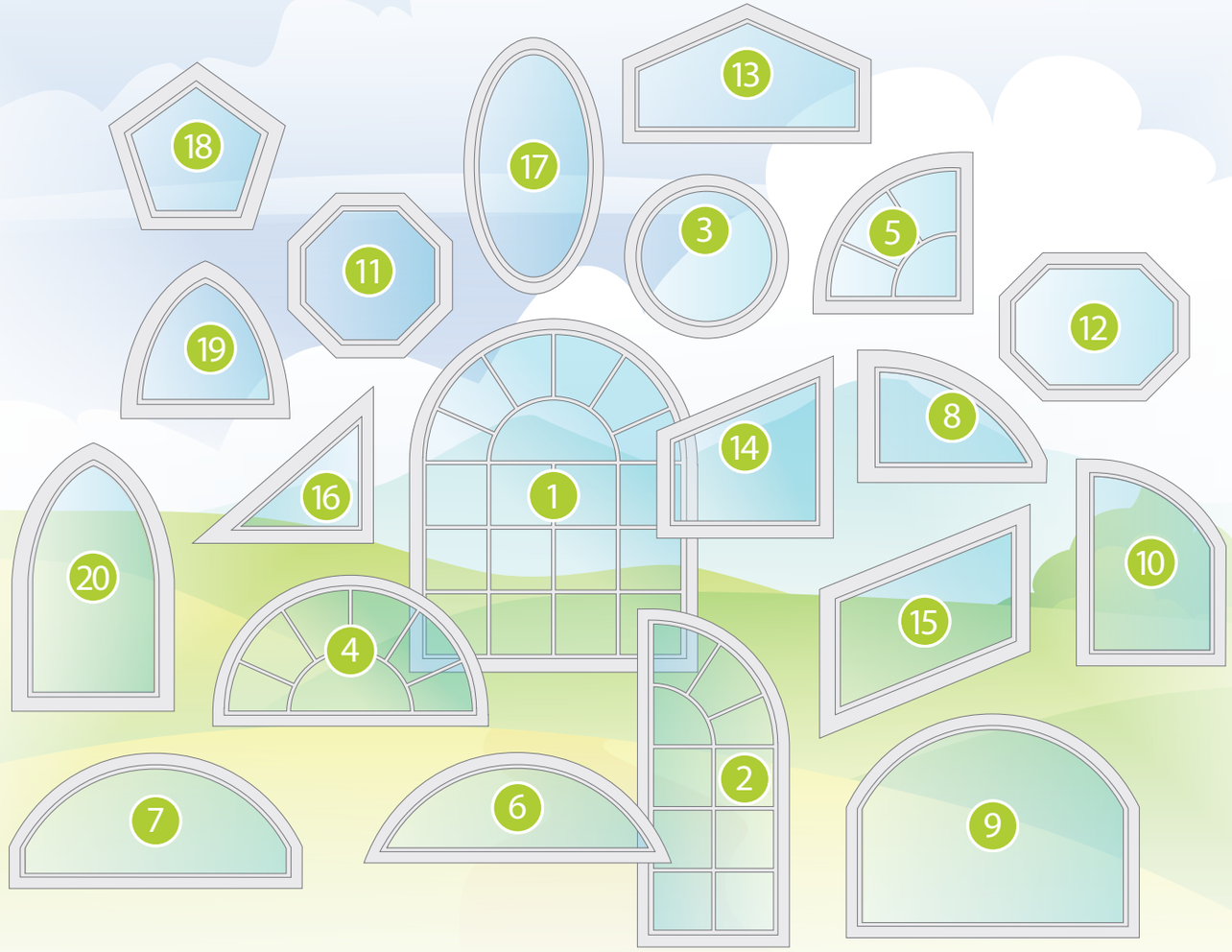
9. Garden Windows

Protrudes from home to add another dimension to a room, fitted with proper glass allows UV rays in for small plants and herbs.



Custom Window Shapes

1. Extended half round shaped window
2. Extended quarter round shaped window
3. Full round shaped window
4. Half round shaped window with optional grill
5. Quarter round shaped window with optional grill
6. Full chord or eyebrow shaped window
7. Extended ellipse shaped window
8. Half chord shaped window
9. Extended full chord shaped window
10. Extended half chord shaped window
11. Octagon shaped window
12. Extended Octagon shaped window
13. Peakhead shaped window
14. Rakehead shaped window
15. Quadrilateral shaped window
16. Triangular shaped window
17. Oval shaped window
18. Pentagon shaped window
19. Gothic shaped window
20. Extended gothic shaped window



Gas Filled Windows

Filling the space

Initially, multiple pane window spaces were filled with air or flushed with a dehydrated nitrogen just before sealing. Through continuous testing and development window technologists discovered that air currents between the glass panes carry heat to the top of the window along the inner pane and settle down the outer pane into cold pools at the bottom.

Over time, manufacturers discovered that by filling the space between the glass with a less conductive slow-moving gas such as Argon and Krypton. These odorless, colourless & non-toxic gasses, minimize convection currents, reducing conduction through the gas and the overall heat transfer (lowering the U-factor) between the interior and exterior, thus improving the overall performance of the glazing.

Slow deterioration

Maintaining the long-term thermal performance of a window is always a concern, and many manufacturers have developed processes to seal in the gasses. But, testing has shown there is still a small breakdown in gas, less than 0.5% leakage per year in a highly ranked efficiency unit, that's only about 10% loss in total gas over a twenty-year period.

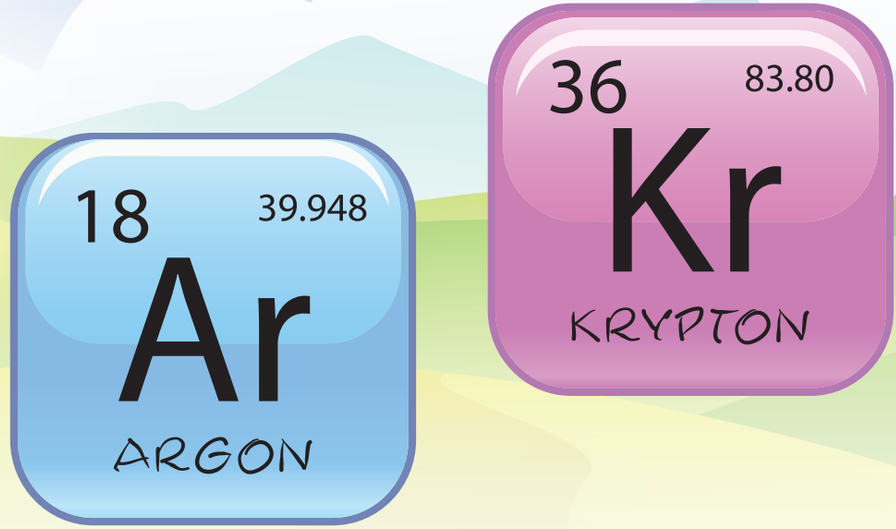
Stability in gas life increases with the quality of the window design, materials used, and efficient assembly of the glazing unit seals.

Argon

Argon is the more widely used gas as it is readily available and much less expensive than krypton. The optimal spacing for an argon-filled unit is about ½ inch. In combination, argon gas and Low-E coatings will quickly yield energy savings exceeding their cost.

Krypton

Typically Krypton is used in applications where the total glazing unit thickness must be minimized, for example, ¼ inch. Its thermal properties are more efficient than Argon but more expensive. A mixture of krypton and argon gasses can be used to compromise cost and thermal performance.



Window Ratings & Climate Zones

Solar heat gain coefficient (SHGC)

The SHGC is the solar heat allowed into a home through a window. The higher the SHGC, the more solar heat is getting into your home.

For mixed climates such as Ottawa, choosing different levels of glazing for different areas of your home will maximize your interior home comfort.

Rooms that are exposed to the sun during the day will be warmer than rooms that are not. By choosing a low SHGC you will keep the room cooler, a high SHGC will keep it warmer.

U-value / U-factor

The U-factor is a measurement of HEAT TRANSFER through a window. The lower the U-value, the better a window is at insulating. When comparing U-values between different window manufacturers, be sure you are comparing the entire window, not just the glass. A .22 U-value is 35% more efficient than a .30 U-value.

R-value

The R-value is the measurement of the THERMAL RESISTANCE to conductive heat transfer. The higher the R-value, the greater the insulating effectiveness.

Energy rating (ER)

The ER rating is a measurement that expresses the overall performance of a window. The higher the number, the more energy efficient the window.

Condensation resistance (CR)

The higher the window CR measurement, the less likely condensations is to occur on a window.

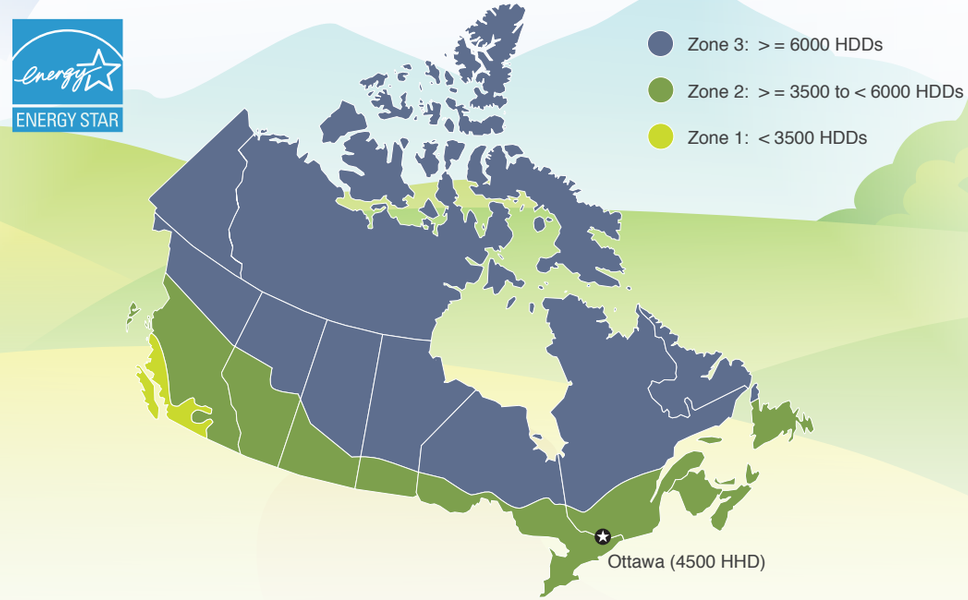
Visible transmittance (VT)

The higher the window VT measurement, the more daylight is allowed into the home.

Energy Star climate zones

Effective February 1st, 2015 window zone classification in Canada changed from 4 zones to 3 zones. Each zone is represented by a range in HDD (heating-degree day). The higher the HDD value, the cooler the location. Ottawa (4500 HHD) is in Zone 2, as such windows that are certified for zone 2 meet the minimum certification requirements.

However, not all zone 2 certified windows are equal, and windows with ratings exceeding minimum standards or that are certified for zone 3 will perform better. Comparisons of U-factor and SHGC values will reveal most energy-efficient windows. Be sure to look at full window specs, not just the glass specifications.



Understanding Ratings & Values

Solar Heat Gain Coefficient

Let the sun shine in, or not. The Solar Heat Gain Coefficient (SHGC) measurement can help you achieve a desired increase or decrease in the amount of solar radiation (heat) passing through a window into your home.

Window U-factor

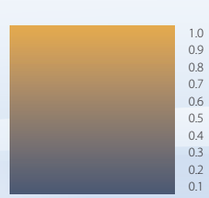
In Ottawa, our windows lose heat to the outside during the colder months and gain heat from the outside during the warmer months. U-factors allow consumers to compare the insulating properties of different window products in order to optimize home comfort.

The Energy Star Energy Rating

Although windows and doors do not consume energy, they can be a significant source of energy loss. If you are buying windows with energy efficiency in mind, then the ER will help you make standardized window product comparisons.

The R-value

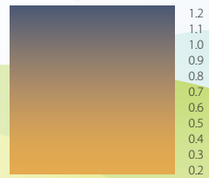
The R-value which has actually been around for some time now has become an increasingly popular measurement for the use in window sales.



larger number means more heat gain

(SHGC)

(U-value)



smaller number means less heat loss

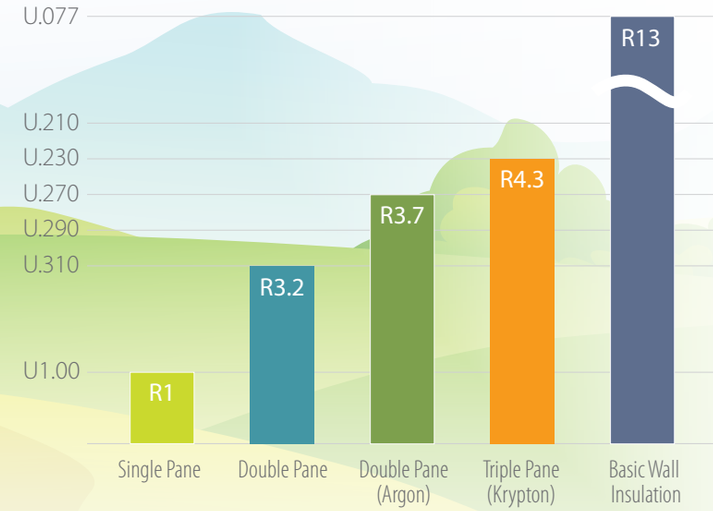
ENERGY STAR

larger number means more energy efficient

(ER)

Comparative Window Example

R-value vs U-value



Where's the sun?

Keep energy costs down and comfort level up with window orientation optimization

Windows provide light, warmth and ventilation, but they also decrease home energy-efficiency and can affect the comfort in your home. Choosing the right glass option will allow you to find a balance between energy costs and the desired level of home comfort.

No matter what the season, when it comes to energy-efficient windows there are several factors to think about:

Orientation of home with respect to the sun
Seasonal shading elements such as trees or buildings
Interior window treatments
Permanent awnings or shutters

We all know the sun rises from the east and sets in the west. However, that's not entirely true. In Ottawa for example, the sun actually rises somewhat south-east in the summer and even more south-east in the winter and it sets somewhat south-west.

The sun is never directly above us at any point during the day no matter what month of the year or time of day.

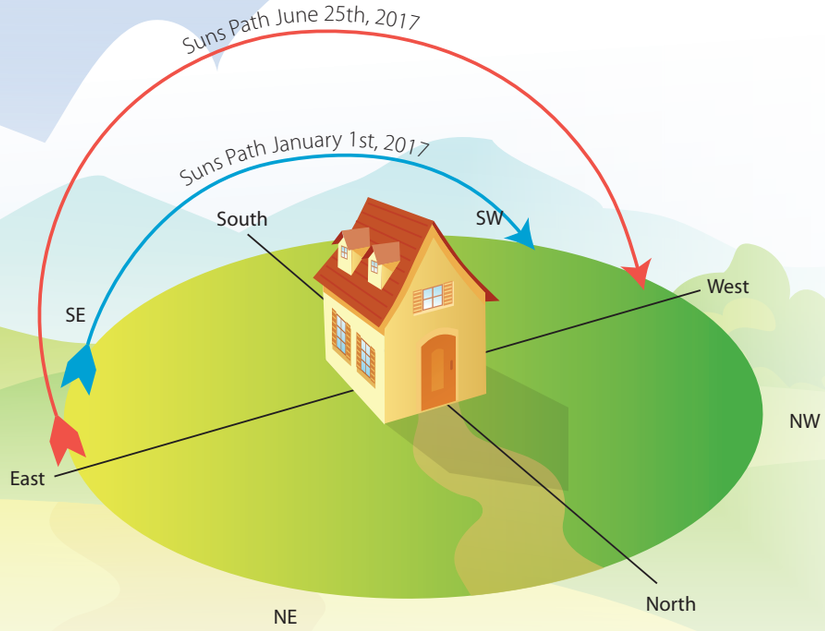
In Ottawa as a general rule windows that:

Face the direct south are exposed to the sun for almost the entire waking day

Face east get morning sun exposure

Face west get afternoon and early evening sun exposure

Knowing where the sun is going to be, allows us to take advantage of glass options (coatings, glazing and tints) that can help us produce a desired comfort level on a room-by-room basis.



Window Frame Materials

Windows are available in several materials to meet consumer requirements. Offering a range of cost, colour flexibility, durability, style, energy efficiency, and comfort.

Not all windows within each category are made the same, essentially, you get what you've paid for. There are high-end and low end-products at each level, be sure to compare warranties and energy-efficiency rating specifications that include the frame and the glass.

Exterior colours

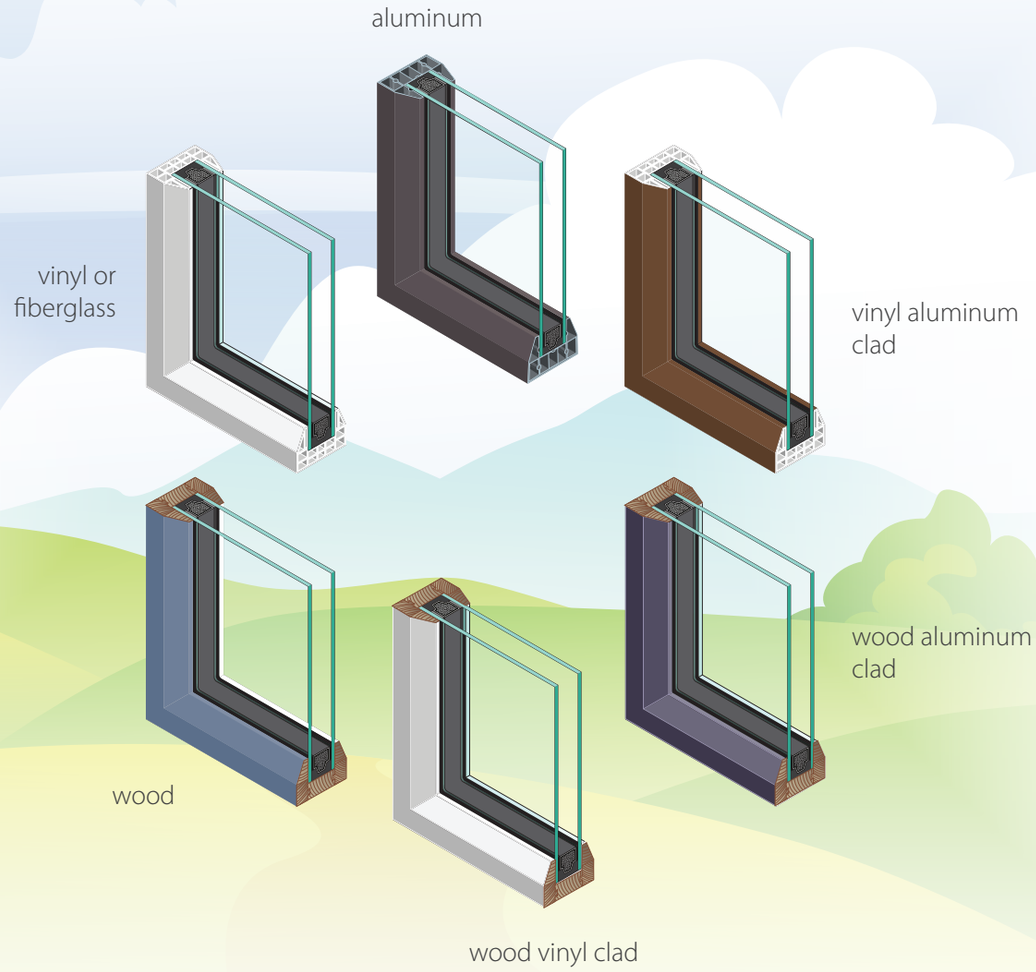
Best assortment of window colours are available with wooden windows which are virtually limitless (stains), followed by aluminum which is typically available from various manufacturers in about 30 colours (powder coated), then vinyl/fiberglass which is are limited to about 8-10 standard colours (vinyl spray or laminate).

Colour warranties vary from manufacturer to manufacturer. And prices vary considerably depending on your preferred material, so when looking at prices, be sure you are comparing like materials.

Interior colours

The standard colour for all interior windows is white, but many manufacturers offer, various woods, simulated wood, vinyl wrapped wood, or stainable vinyl materials providing plenty of interior window colour flexibility.

Prices vary depending on the material you choose.



Glass

Advancements in window technology, have taken window selection for the home to a whole new level by providing options and solutions that can be applied on a per room basis.

Glass can be ordered in various thicknesses, and strengths.

Smart Glass

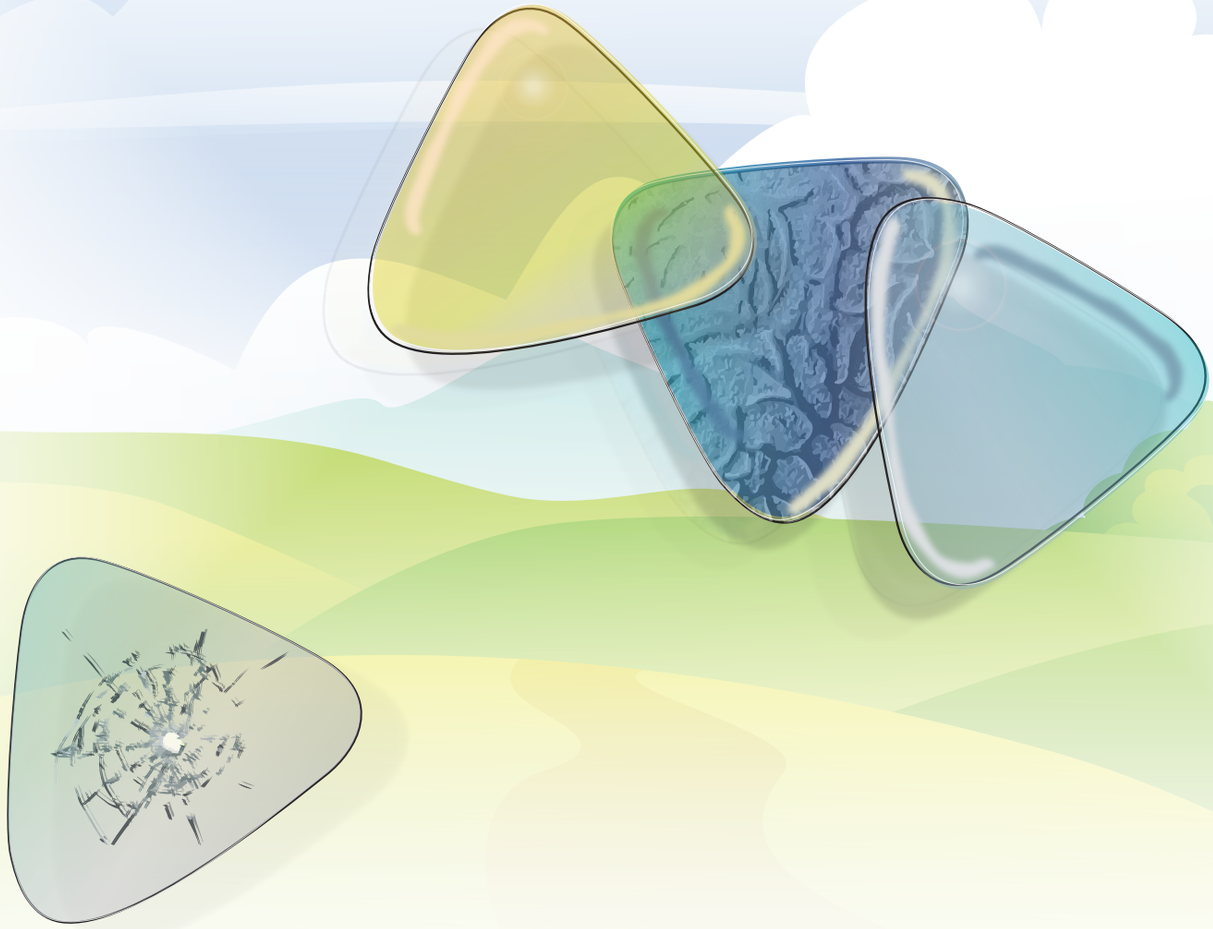
A specialty product, smart glass has special coatings that react to natural light levels by increasing reflection or darkening or both.
This smart function can be activated manually or programmed to control heat gain, lighting, and add privacy.

ENERGY STAR qualified smart products are available but are qualified based on ratings achieved without using the smart features.

Glass & Safety

In today's window market, dual pane glass is pretty much the standard for new home and replacement windows. Dual pane, also known as double glazed makes entry into a house difficult and loud.

If maximizing security is important, toughened tempered glass or laminated safety glass is available from most window manufacturers.



Window Glazing

Glass Panes

One of the shortcomings of glass is its relatively poor insulating qualities.

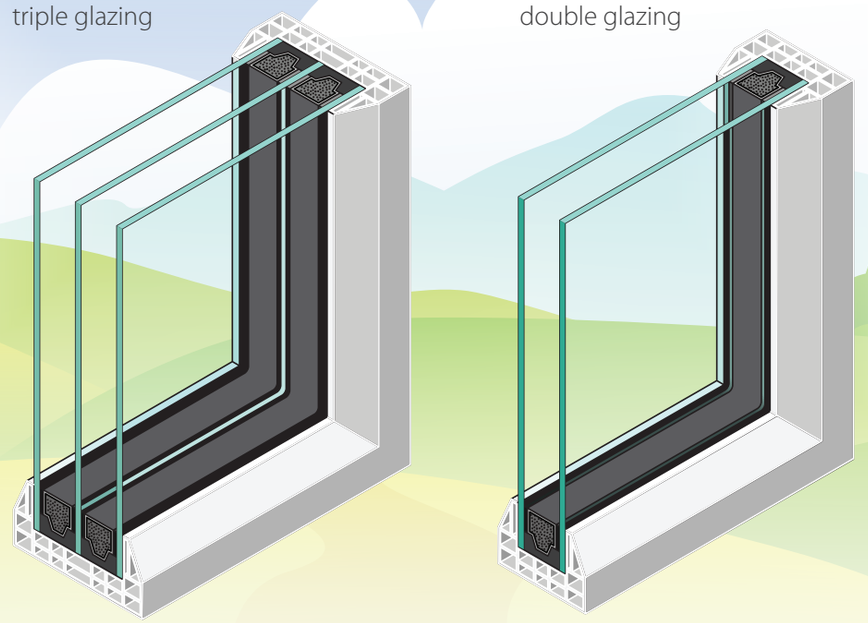
Window glazing refers to the glass framed within a window (IGU's - insulated glass units). Multiple panes of glass with air spaces in between improve the insulating value considerably.

In Canada, double-gazed glass is pretty much the standard. However triple-glazing and even quadruple-glazing windows are also available from most manufacturers.

More is more energy efficient

Each additional pane of glass adds to the insulating value of the assembly, but it also reduces the visible light transmission and the solar heat gain coefficient. Adding a low-E coating to a surface of the double-pane unit will increase the energy performance. Adding a gas fill between the layers of glass will also improve energy efficiency.

Not all insulated glass windows are created equal, be sure to compare glass, frame and combined glass/frame ratings.



Coated Glass

Low-E/LoE

Low Emissive Glass has a distinct microscopically thin layer of silver applied to the surface which acts to reduce the amount of heat that can flow through the glass. It reflects heat in both directions keeping heat out in the summer and in during the winter.

Coated glass is available in several configurations to produce the desired balance between solar gain, light transmission and UV blocking.

See your local window professional for an option that's right for you.

LoE 180 glass

- Highest Energy Star energy rating
- U-factor of 0.31
- Maximized solar gain of SHGC 0.68
- Allows for 79% light transmission
- Blocks 70% of damaging UV rays
- Reduces energy costs in the winter

LoE 272 glass

- Balanced option when room is hot in summer and cold in winter
- U-factor of 0.30
- Maximized solar gain of SHGC 0.41
- Allows for 72% light transmission
- Blocks 84% of damaging UV rays
- Moderate solar gain in winter and controls heat in the summer

LoE 366 glass

- Best insulation option, keeps heat and sun out of home and hot/cold inside the home
- U-factor of .29
- Maximized solar gain of SHGC 0.27
- Allows for 65% light transmission
- Blocks 95% of damaging UV rays

Glass Spacers

Spacers separate panes of glass. Typically the older technologies utilize metal spacers which conduct heat and can encourage the formation of condensation (year round) and ice crystals (winter).

Newer spacer technologies focus on providing durability, gas retention and thermal performance, with the goal of keeping the edges of the window glass warmer inside the home through the reduction of heat transfer.

There are several spacer technologies available, and each manufacturer will claim to have the superior technology. When comparing windows, be sure to look at CR values and overall performance of the window.

Super Spacer®

Warm edge spacer system that uses a high-performance acrylic adhesive and foam spacer as along with a moisture vapor seal that provides a structural seal.

Intercept® Spacer

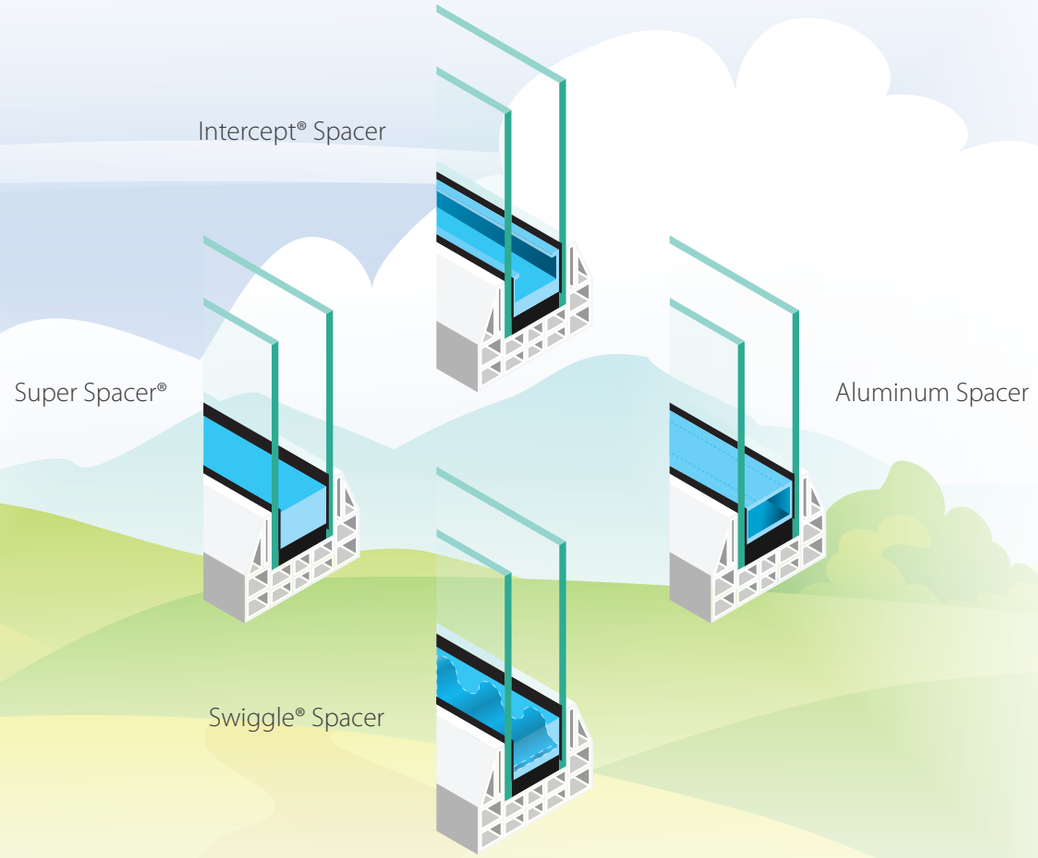
Uses a one-piece, tin-plated or stainless steel, U-channel design that absorbs flexing when temperatures shift.

Swiggle® Spacer System

The seal consists of a aluminum or stainless
steel "swiggle" between a butyl rubber seal.

Aluminum Spacer

One of the first materials used as a spacer because it was rigid, however creating sealant stress and stress cracks that ultimately lead to seal failure.
If you are replacing old windows at this time, they most likely have aluminum spacers.



Window Tints

Marginal Efficiency gain

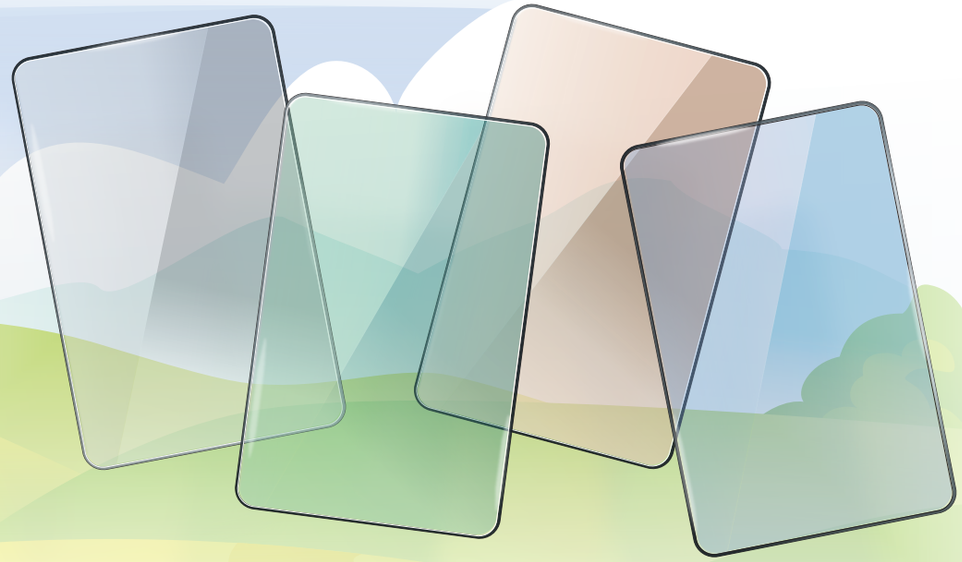
Tinted glass absorbs and re-radiates light and solar energy reducing heat, brightness, and glare in the summer, but lose heat in the winter at the same rate as non-tinted windows.

Every change in color or combination of different glass types affects visible transmittance, solar heat gain coefficient, reflectivity, and other properties. Glass manufacturers list these properties for every color, thickness, and assembly of glass type they produce.

Daytime Privacy

Tinting changes the color of the window and can increase visual privacy during the day. However, at night the effect is reversed, and it is more harder to see outdoors from the inside.

Tinted glass is available in a number of colour tints (gray, green, bronze & blue). These colours are produced by adding metal oxides to float glass (untreated glass) during manufacture.



Privacy

Window privacy can be managed at the glass through various options offered by many window dealers. By incorporating the privacy option into the glass, the buyer can neglect window treatments that require cleaning or cluttering of living spaces.

Textured glass

Many window manufacturers offer an assortment of obscure glass options to provide privacy. There are 4-5 standard patterns, but many manufacturers offer more.

Integrated blinds

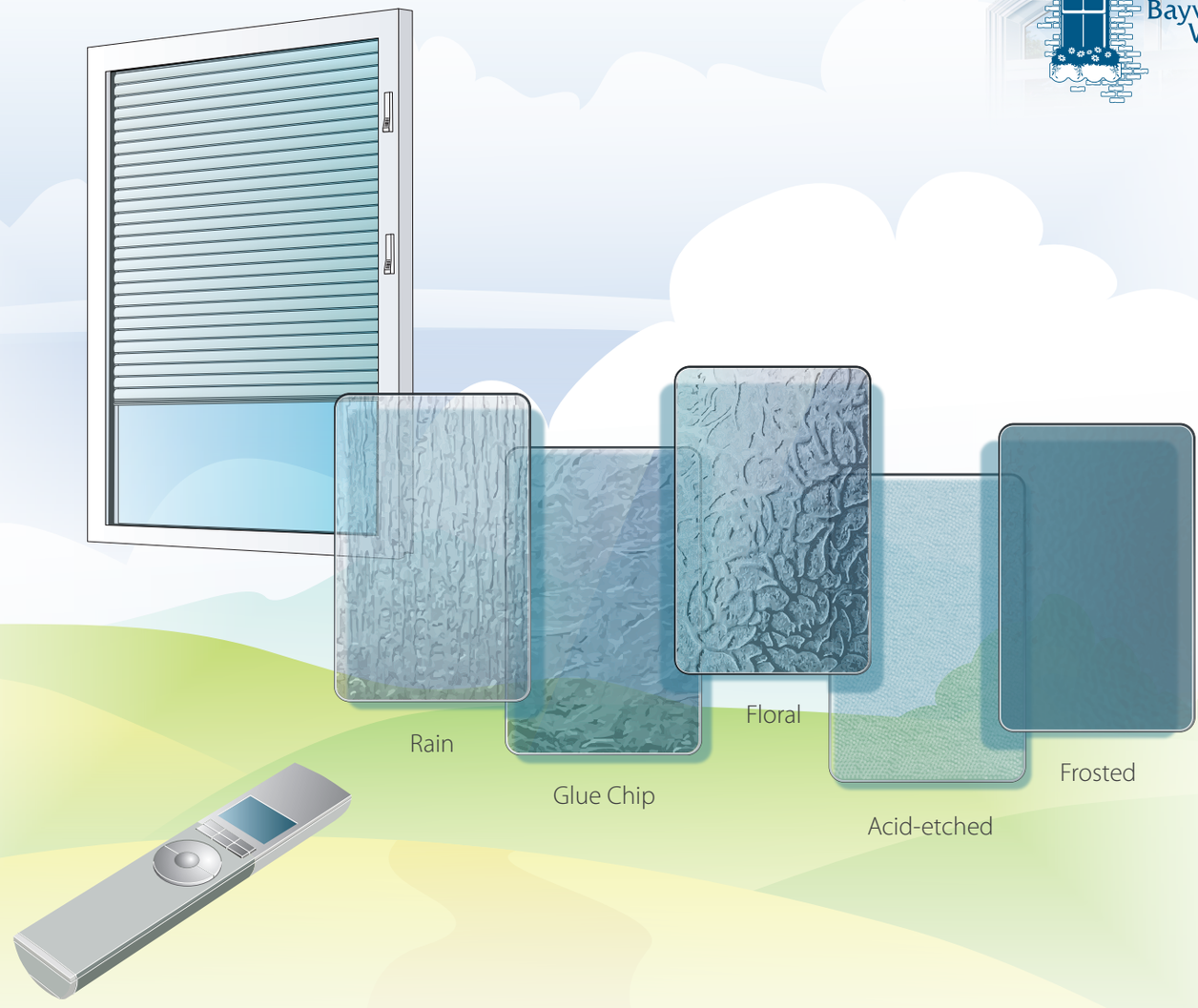
Dynamic windows have integrated insulating blinds between the panes that can be used for privacy as well as to reduce heat loss in winter and solar gain in summer.

Smart windows

Not offered by many window manufacturers, smart windows are a specialty product that is not readily available.

The glass has special coatings that react to natural light levels by increasing reflection or darkening or both. This smart function can be activated manually or programmed to control heat gain, lighting, and add privacy.

ENERGY STAR qualified smart products are available but are qualified based on ratings achieved without using the smart features.



Window Grills

Grills

Grills are a great way to add style and elegance to your windows. And with today's multiple window pane technologies, many manufacturers offer standard and custom configurations between the panes, and even simulated dividers on the exterior of the glass to provide a more traditional look. Below, are some of the more common grill styles.

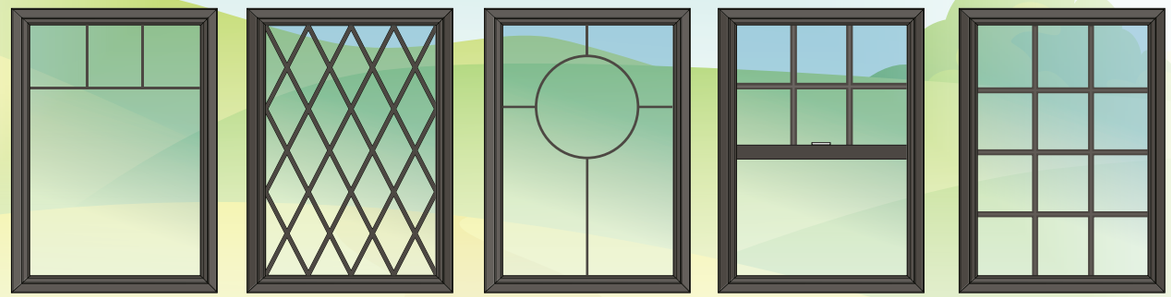
Simulated Divide Lites

A simulated Divide Lite (SDL) give a window a traditional separated window pane look. The divider is applied right to the glass on the inside and outsides surfaces.

Grill Materials

A standard grill is a white 3/4" contour, but many manufacturers also offer 1" contour as well as 5/8", 7/8" flat, 1/4" square and simulated divide lite (SDL) in a variety of colours and metallic options to help you create a perfect custom style that suits your home, or your taste.

Colonial | Prairie Frame | Prairie Glass Hung | Traditional Hung | Simulated Hung



Fractional | Diamond | Custom Patterns | Simulated Divide Hung | Simulated Divide

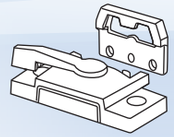
Typical Window Hardware

Standard and optional window hardware is available tosuit your budget, or the style of your home. Standard hardware typically comes in white only, and performs only basic functions such as manual locking and opening.

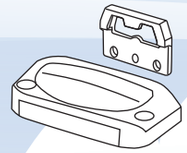
Optional hardware is usually available in metallic finishes such as nickel, pewter, and brass. Optional hardware also offers more ease-of-use and functionality.

For example nested handles provide folding handles that allows for smooth and easy movement, and an innovative low profile that tuck out of the way and gives window styles a sleek, elegant look. Self-locking locks ensure ease of mind locking with a click, or a colour indicator.

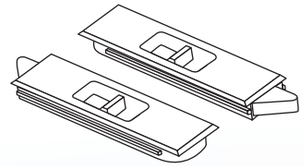
Hung & Sliding Window Hardware



Standard Cam Lock

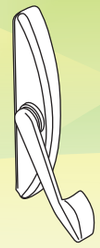


Self-locking Lock

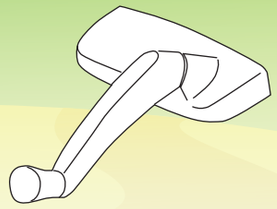


Finger-tilt Latch

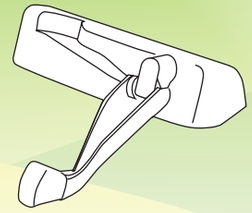
Casement & Awning Window Hardware



Multi-point Lock Latch



Standard Crank Handle



Hide-away Crank Handle

Condensation

What is window condensation?

Window condensation is a visibly physical condition that can be characterized as a fogging and ice formation that occurs on the inside of a window pane or window frame. In Ottawa, we most often see condensation on windows in frigid temperatures during the winter months, although it can happen to a lesser degree any time of the year depending on conditions.

Condensation occurs on windows when warm inside home air containing water vapor (humidity) comes in contact with a cold surface. As the warm air touches the cold surface, it is cooled causing the airborne moisture to condense into a liquid. The larger the differentiation between inside and outside temperatures, the more excessive the results of condensation.

With fluctuating inside/outside temperatures and humidity levels, condensation typically goes through a cycle of freezing and thawing, leaving puddles of water on the window frame, sill or walls, and floors. Small amounts of condensation appearing on a window surface may not necessarily be a problem, depending on the amount of moisture that forms, how long it stays, and whether it accumulates in an area that can be damaged by water.

The rate of condensation is dependent on the temperature and humidity level in your home versus the temperature outside. Condensation can be short-term during a severe cold spell or may be limited to a localized area in the home such as bathroom or kitchen where humidity is highest.

Dealing with condensation

In Ottawa, the recommended relative humidity level varies between winter and summer, but as a general rule should be maintained between 25% and 40% during the winter months accompanied by in-home temperatures between 18°C and 24°C.

Daily humidity levels will vary daily depending on activities inside the home and the volatile temperatures outside the house. Cooking, cleaning, bathing and even breathing, all increase levels of vapor in the air. High levels of humidity will cause condensation, mold, musty smells, allergic reactions and damage to walls and interior finishes. Low levels of humidity on the other hand, especially in the winter will cause breathing difficulty, sore throat, static electricity and dry skin. Finding a perfect balance can be a little tricky especially in older homes.

Windows manufactured using an energy efficient low-emissivity (or low-E) glass actually restricts heat exchange across the space between the two panes of glass. This keeps the inner pane of glass warmer thus reducing the instances when condensation can form. Also, the use of a "Warm-edge" spacer bar made of the insulating material will reduce the risk of condensation at the edges.

Windows Installation

Bayview Windows

Your time is valuable, and your investment should be appreciated.

Not all window installation companies are equal, and the ones that don't perform well, don't last long. See what your prospective services' customers are saying, look for Homestar, BBB, and Google reviews.

Here's a list of items that might help you decide what companies are more deserving of your business.

What to look for in a replacement window installer

- ☐ Punctuality
- ☐ Good references, reviews & referrals
- ☐ Established business record
- ☐ BBB Accreditation - good standing
- ☐ Knowledgeable and up-to-date with current technologies
- ☐ Great window brand options to match your budget
- ☐ Full time installation teams
- ☐ Labour warranty that covers the installation and installation materials
- ☐ Respectful of your property
- ☐ Friendly and pleasant to deal with and able to answer any of your concerns
- ☐ Accurate measurements
- ☐ Safety conscious
- ☐ Qualified & bonded
- ☐ Detail oriented
- ☐ Clean up & disposal of waste
- ☐ Satisfaction guarantee
- ☐ Follow up
- ☐ Timely service calls is problems are detected after the install
- ☐ Flexible payment options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