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BAYVIEW WINDOWS

Introduction

If you are considering door replacement in your home, protect your investment before you make your purchase.

"Almost everything you need to know about doors" is a complimentary guide that will help you get the most out of your window purchase.

Buying doors can be a tricky endeavor, there are so many brands, so many options, so many door installation companies. This guide will help you get a better understanding of the options available and some of the pitfalls to watch out for when shopping for new or replacement door.

Imagine the possibilities - everything from energy saving efficiencies to what your choice might suggest about you - pick a style to match your home, your personality, your budget and make informed decisions to maximize your purchase.

Your friendly staff, Bayview Windows





Door - types



1. Sliding patio door

Predominant location:

• side or back door

Standard configuration:

- one operational door
- one fixed

Plenty of options available:

- colours, interior/exterior
- faux wood, paintable interior
- interior blinds, locks, glass
- custom sizing available

2. Entrance door

Predominant location:

• front, side, or from garage to interior of home.

Standard configurations:

• single solid slab door, no glass

Tons of options available:

- materials, swing direction
- styles, glass, stained glass
- sidelites, transoms, hardware
- slab or pre-hung.

3. Garden door

Predominant location:

• back door to back yard

Standard configuration:

- one operational door
- one fixed

Tons of options available:

- materials, swing direction
- styles, glass, stained glass
- sidelites, transoms, hardware



Door performance by type

Sliding patio doors, entrance doors and garden doors all perform differently in terms of energy efficiency, durability,security, warranty, maintenance, available options, light transmittance, and ease of operation.

Manufacturers use their own processes and materials in the manufacturing of doors which has resulted in varying levels of performance from one brand to another.

General summary

- some types of doors perform better than others
- some brands perform better than others
- the choice of entrance door material and options will affect overall performance
- overall solid slab entrance doors perform better than sliding patio and garden doors

Diagram: shows performance results as a general rule.





Door and open frame sizes

Door frames and doors are manufactured in standard widths and heights and are typically measured in Canada in inches.

Custom and metric sizes are offered by some manufacturers. Standard Entry and Garden Door thickness is 1.75 inches, while there is no standard thickness for patio doors.

If non-standard sizes are required, they are typically only available through manufactures that offer solid wooden door technologhy

Standard Single Entrance Doors						
Door Widths (inches)	28	30	32	34	36	
Door Heights (inches)	80	84	96			
Door Frame (inches)	ches) Add 2 inches to desired width and 2.5 inches to height.					

Standard (fixed/operational) Sliding Patio Doors						
Door Widths (inches)	58.5	59.5	70.5	71.5	95.5	
Door Heights (inches)	79.5	81.5	95.5			
Door Frame (inches) Add 2 inches to desired width and 2.5 inches to height.						

Standard Single Operator (2 doors) Garden Doors*							
Door Widths (inches)	30/30	32/32	34/34	36/36	36		
Door Heights (inches)	79.375	82.0625					
Door Frame (inches)	Add 2 inches to desired width. Add 1/2 Inch to width for double operator configurations. *North Star products shown. Many manufacturers buid to their own specific standard.						



What doors are made of

Exterior doors offer superior energy efficiency, security, rigidity and stunning visual impact to the exterior and interior of a home.

With years of development and material process perfection, today's doors have become works of art that surpass the original intent of allowing people to enter and exit a house quickly without compromising the interior home climate.

Wood

Wood, the traditional singular choice for exterior doors provides a natural uniqueness to every manufactured door. And with choices of maple, oak, mahogany, fir, and pine, there's plenty of room to find a wooden door to meet differing budgets. There is an abundance of colours, stains and varnishes to match your home's personality and enhance the beauty of every door.

Yes, wood is beautiful, but, it's also a natural product, so there's no way to know what it will look like, or how it will react to the environment years down the line. Some of the potential issues you might have with a wooden door include sagging, warping, and paint peeling over time, especially when it is repeatedly subjected to heat, cold and moisture that we are so unexpectedly used to in the Ottawa area.

Wood doors require more maintenance that doors made of processed materials such as vinyl, fibreglass, steel, or aluminium. A solid-core, woodveneer door will be a less expensive alternative to solid wood and it will be less prone to warping and may provide a better insulation value than a solid wood door.

Wood doors are best suited in sheltered entry ways where they will not be directly exposed to moisture and wind.

Steel

Insulated steel entry doors are durable, strong, secure and durable. They have a much higher insulating value than wood doors. They are also the most secure exterior doors you can purchase for your home and they require little maintenance.

Steel doors are typically less expensive than wood or fibreglass doors, they are available in many beautiful styles, and can be painted in just about any colour (standard and custom).

Although steel doors are pretty durable and strong and typically will not warp, if exposed to Ottawa's harsh climate they can rust, and if kicked or banged can become dented. Although they can be embossed to look like woodgrain finishes, they do not look as nice as real wood, and some finishes may require periodic retouching.

Fiberglass

Exceptionally durable and able to withstand extreme weather, fiberglass doors resist dents, rot, rust, and warping. They are more energy efficient and more secure than wood, but they are more expensive than most steel doors, and less expensive than wood.

The properties of fibreglass enable wood-like textures and finishes that look real, but unlike wood require little maintenance. Available in many colours and staining options, the only real disadvantage is that under certain conditions the colour can fade.

Vinyl

Typically the lowest-priced option, vinyl is often used for sliding patio doors. Vinyl is very energy efficient and requires little maintenance. Although most vinyl sliding patio doors are manufactured in white, they are also available in several colours depending on the manufacturing process.

Colour that is painted on is more susceptible to fading and laminated colours will carry the best in warranty. The interior of a sliding vinyl patio door can have a faux wood or paintable/stainable finish.

Aluminum

Aluminum entrance doors are similar to steel and fiberglass doors in durability, strength, and energy efficiency. With wood-grain or smooth finishes and very low maintenance requirements aluminium doors won't chip, rust, rot or warp.

Aluminium doors are strong, stable and very secure and will resist forced entry far better than vinyl, fibreglass or wooden doors.



Aluminium entry doors are much more typically more expensive than another other type of entrance door you could choose for your home.

Aluminium clad

Aluminium clad materials are typically available only for sliding patio doors. With a base material of either vinyl or wood. Aluminium clad patio doors have exceptionally clean lines, great insulating properties, good colour choices and great durability.



Sliding patio door - anatomy

When looking at a patio door, there are probably more component than most people would care to remember components can be very easy to confused.

And make it even more confusing, multiple terms can be used to describe some of the the same components.

If you need to talk patio doors, this labelled diagram should help get you started.





Sliding patio door - configurations

Most companies manufacture standard-sized patio doors that fit into standard 2-panel, 3-panel, and 4-panel widths but these standard sizes do not always offer vertical blind and triple glazing options.

Most manufacturers will also offer non-standard sizing and even greater than 4 panel configurations, but be prepared for a considerable price hike for a non-standard patio door solutions.

		Standard patio door widths in inches							
	2 Panel Doors 3 Panel Doors		2 Panel Doors		4 Pa	ane <mark>l</mark> Doc	ors		
HEIGHT	58 ¾	70 ¾	94 ¾	88	106	142	116	140	188
79 1⁄2	•	•	•	•	•	•	•	•	•
with Internal Mini Blinds	•	•		•	•		•	•	
with Triple Glazing	•	•		•	•		•	•	
95 1/2		•	•		•	•		•	•

Example from North Star Windows, other window manufactures may offer different options.







(Double - slide left)

(Triple - slide centre left or right)





(Quadruple - slide left & right from centre)

(Double - slide right)

Sliding patio door - lock options



Patio door hardware is mostly about locks because sliding patio doors do not have cranks. There are several options to consider, but not all manufacturers offer the same options. Some locking solutions involve aftermarket hardware.

Single-point latch locks (standard)

Single-point locks are standard locks for most manufactures, make sure they lock up rather than down (it's an anti-lift deterrent)

Multi-point latch locks (option)

Multi-point locks typically have two latches, one that locks up and another that locks down for a nice tight grip so that the door cannot be wiggled up or down.

Dead bolt lock (option)

Dead bolt locks are usually positioned at the opposite side of the lock side of the sliding door - in the centre of the patio door, at the bottom or at the top and some manufacturers also offer keyed locking the dead bolt. Some dead bolts will allow you to lock your door in a slightly open position for ventilation and many also double as an anti-lift deterrent.

Key locks (option)

Key locks can be installed both inside and outside the patio door - check with the manufacturer if you want both. Manufacturers also offer keyed locking the dead bolt. Some dead bolts will allow you to lock your door in a slightly open position for ventilation and many also double as an anti-lift deterrent.

Anti-lift blocks

By their nature, lower-end sliding patio doors are sometimes susceptible to easy entry by lifting up the operational door and pulling it forward. Higher-end patio doors usually have an anti-lift component that prevents this and some manufacturers offer anti-lift blocks which can be pushed into the upper channel to prevent lifting.



Dead bolt lock



Optional keyed handle lock





Single vs multi-point locking mechanisms



After-market security bar



After-market security dead bolt

Entrance door - anatomy

At first glance, a door 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.





Most door manufacturers offer a plethora of styles to match your home or to enable you to unleash your imagination. The diagram to the right shows just a few basic styles.

There are plenty of standard and modern styles to choose from.

Be sure to tell your door consultant exactly what you want, they'll be able to show you reference materials and caution you on the pros and possible cons of what you are looking for.



Entrance door - configurations

Most door replacement projects are simply a case of replacing what's already there, but there are plenty of configuration possibilities available, as long as you are working within the same dimensions.

Even if you desire a larger opening, it may be possible as long as there is enough room, and it does not affect the structural integrity of your home.

Not sure what to do, talk to a door installation professional or consultant about your vision, and they'll help you understand what will work, and the obstacles might have to be overcome.

Without transoms a. Single door b. Single door, right sidelite c. Single door, large right sidelite d. Single door, left and right sidelite e. Double door, one active, one passive f. Double door, left and right sidelites

With Transoms g. Single door h. Single door, right sidelite i. Single door, large right sidelite j. Single door, left and right sidelite

k. Double door, one active, one passive I Double door, left and right sidelites

Both double doors can also be active and each door can either swing out (outswing), or swing in (inswing). Check the Ontario builders code to see if there are any configuration restrictions.







Entrance door - materials comparison





Residential exterior entrance doors are available in, three material types - Metal, fibreglass and wood. Each material is often marketed at different levels of quality - so not all door materials or brands will perform the same.

Although each material used in the manufacturing of a door has its own - set of pros and cons, some brands have developed solutions to address some of the more common negative characteristics. Be sure to learn how a brand provides solutions to specific performance issues such as water damage, air seepage, warping and maintenance requirements.

If you are looking for a durable, energy-efficient door that will last a lifetime, choosing the right product along with a reputable installation company will make a huge difference.

Appearance & customisation

Metal doors

- simple panel embossing
- smooth (non-textured) painted surfaces
- least customisable

Fibreglass doors

- great compromise to steel and wood doors.
- faux wood grain look
- well-defined panel embossments
- simulate a natural, stained or painted look

Wood doors

- visually appealing
- warm traditional look
- can be customized to be wider, higher and even thicker than steel and fibreglass doors

Durability & maintenance

Metal doors

- more susceptible to dents and scratches than both wood and fibreglass doors
- some brands may stand up better than others
 manufacturing processing can include different metals and core materials
- Condensation between the door and door frame edge can make the door susceptible to rusting
- requires very little maintenance
- a well-maintained metal door will last between 20 to 30 years

Wood doors

- prone to hot, cold, wet and dry weather
- moisture damage that may include rot, dry rot, mould, warping, delimitation and even insect infestation
- some types of wood perform much better than others
- solid wood doors will last much longer than doors made with veneers
- require regular maintenance and repair
- a well-maintained wood door will last between 10 to 30 years

Fibreglass doors

- offer the best weather resistant and durable
- composite exterior and fibreglass door skins repel water and resist warping, rot, rust as well as chipping and denting.
- a high-quality fibreglass door will last up to 50 years



Cost & quality

Metal doors

- least expensive residential doors on the market
- quality and price may vary from one door manufacturer to another

Fibreglass doors

- more expensive than metal doors
- each manufacturer will use their own specified core materials resulting in a variety of different qualities and prices

Solid wood doors

- more expensive than both metal and fibreglass
- cost reflected by type of wood used

Veneer wooden doors

- less expensive than solid wood
- cost reflected by type of wood used

Entrance door - materials comparison (continued)

Energy Efficiency

With environmental concerns and sky-rocketing fuel costs, more and more homeowners are opting for insulated front doors. Energy-efficient doors increase comfort and reduce energy costs.

Most entrance doors are sold in a pre-hung configuration that include a door frame, a door slab, hinges and locking hardware. But energy efficiency really only involves the frame and the slab.

While entrance door manufacturers continue to improve the insulating properties of doors (R7), they are still very poor performers when compared to a solid wall in a home (R13).

Certified Energy Star® products

According to Natural Resources Canada and Energy Star, doors that are Energy Star approved are 15% more efficient than the average non-EnergyStar door.

Energy Star approved doors provide tighter seals, superior insulated glass units and quality materials with greater insulating properties. Not all door manufacturers build doors the same way or with the same fillers, there are plenty of doors that do not even qualify for the Energy Star stamp of approval.

If energy efficiency is an important consideration, look for the Energy Star label this will help identify energy-efficient products and help narrow down your selection.

Glass in the door

The R-value of a solid door is much higher than a door with a glass insert or side lites. If you are purchasing a door with glass, be sure to compare the glass ratings. The higher the R-value, the greater the insulating properties.

Exposure

Before you purchase a door, consider the exposure it will get to the elements. For example, will the door be sheltered within a porch? Will it face southern sun exposures? Will it be installed behind a storm door?

Both wood and steel will be more resistant to the effects of climate if they are protected from the elements. Fibreglass will perform much better than both wood and steel no matter what the exposure.

Warranty

No matter what material a door is made of there will be different levels of quality and pricing to meet consumer budgets. Most door manufacturers offer varying degrees of limited warranties.

If long-term durability is the goal, look for warranties with few fine print limits and higher warranty duration - also look for installation companies that provide lifetime warranties on the installation (labour and materials).

Security

Doors and windows are by their nature the weakest link to the security of a home. Steel and fibreglass doors tend to be more secure than wood doors, however, the ultimate protection lies in the materials used in the door frame, and the locking mechanism.

Unfortunately, currently there are no standard security ratings for doors. No matter what material you decide on, look for frames that are made from solid materials such as composite, metal, or hardwood and multi-locking mechanisms and locking hardware made from hardened steel.

At a glance material performance grid

	Wood	Metal	Fibreglass
Aesthetic Customisation	Good	Moderate	Best
Size Flexibility	Customisation	Standard H & W	Standard H & W
Price	Most Expensive	Least Expensive	Moderately Priced
Durability	Moderate	Moderate	Best
Maintenance	Higher	Moderate	Very Low
Energy Efficiency	Good	Better	Best
Security	Good	Good	Best
Warranty	Good	Good	Best

Note: Table shows ratings by material as a general rule. Many manufacturers offer different qualities and technologies that could improve ratings. For example it is possible to have a high-quality metal door that performs better than both wood and fibreglass.



Entrance door - door swing





When purchasing a new door, most people don't realize that they have the option of whether an entrance door will open into (inswing), or out of (outswing) a home, but they do.

There are advantages to both inswing and outswing entrance doors. But because every home and the needs of each homeowner is unique, the choice of which direction the door will open should be based on the layout of your home and personal needs.

Inswing doors (push to open - push to close)



In the Ottawa area a majority of residential front entry doors open inward to stop snow buildup that could prevent a person from leaving a house.

Outswing doors (pull to open - pull to close)



Outswing residential entrance doors are not common in the Ottawa area - about 5% of our entrance door orders represent outswing doors.

Pros	Cons	Pros	Cons
• snow buildup will not affect door operation	• must leave room inside the home for door inswing	 more space and flexibility inside the home 	 exposed hinges (must be closed hinges)
 ability to close the door from inside the home 	more susceptible to wind and water at frame	• stronger, tighter more secure fit - wind and rough weather	awkward supplemental security devices
 security latch is easy to manage and operate 	more difficult to exit in emergencies	will push the door tighterwinds and rain can't blow	• removal of door at hinges rather than pins
 storm doors can be added for ventilation 	 difficult to access if a person has fallen against the door 	door inward difficult to force door open	• difficult operation heavy snow against it
 hinges are not exposed to the outside 	 easier to kick a inswing door in than an outswing door 	from outside	poor wheelchair accessibility
 good wheelchair accessibility 			 must step out of the nome to close the door
 door does not swing out into visitors 			• awkward when answering the door
 easily accommodates security devices 			 difficult operation in high winds

• few ventilation options - retractable screen

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Entrance door - door swing (continued)

Swing setups (single doors)





Inswing left (IL)

Hinges are on the left of the door - the door opens into the house or away from the opener. You must push the door, and it will swing to the left upon entry.

Inswing right (IR)

Hinges are on the right of the door - the door opens into the house or away from the opener. You must push the door, and it will swing to the right upon entry.

Outswing left (OL)

Hinges are on the left of the door - the door opens toward the opener or out of the house. You must pull the door, and it will swing to the left.

Outswing right (OR)

Hinges are on the right of the door - the door opens toward the opener or out of the house. You must pull the door, and it will swing to the right.

Building codes to consider

Exterior doors in detached single-family homes, town homes, rental units and businesses... provide security and serve as a vital means of exit during a fire or other emergencies. Building codes help to ensure that these doors are built and installed to meet national, provincial and local requirements.

Depending on where doors are being installed, manufacturers and contractors abide by building codes that regulate door construction, size and which direction the door opens.

There are several organizations that provide guidance and recommended rules to provincial and local municipalities. However, local governments incorporate their own rules, so it's important to check local guidelines before installing an inswing or outswing residential entrance door.

Ontario Building Code (OBC)



The Ontario Building Code is a regulation under the Building Code Act. It establishes detailed technical and administrative requirements and minimum standards for building construction.

International Building Code (IBC)



The International Building Code (IBC) is the foundation of the complete family of international codes. It is an essential tool to preserve public health and safety that provides safeguards from hazards associated with the built environment. It addresses the design and installation of innovative materials that meet or exceed public health and safety goals.



National Fire Protection Association (NFPA)



Exterior doors require single-operation egress, which means that a person should be able to unlock and open the door using only a single action.

Accessible Canada Act (ACA)

Canada

Although this act applies mostly to public buildings and spaces, it involves identifying, removing and preventing barriers in federal jurisdiction.

The Accessible Canada Act (ACA) not only applies to the construction of new spaces and buildings, but it also governs organizations that:

- offer goods and services
- employ Canadian workers
- provide accommodation
- use a building and/or operate a business

Entrance door - turning a window into a door



The primary advantage of converting a window into a door rather than cutting a new door is that often most of the rough carpentry has already been done (depending on widths).

The top of the window open frame often will line up with where the top of the door open frame would be. As well, windows are never built into load-bearing walls because the window cannot bear weight - making for the perfect placement of a new door.

This is not a simple do-it-yourself project - changing a window into a door should only be done by an experienced, licensed contractor.

Doors that qualify for conversion

- Sliding patio door
- Garden door
- Swinging entrance door

Why turn a window into a door?

- Maybe you've just added a new deck to your home, and the existing window placement would be a perfect place for a door.
- Maybe you want to create a more convenient access point or easier access to parts of the home that are closed off to the exterior. i.e. a side door.
- Maybe you want to provide a more open view of your property. i.e. a patio or garden door.

Anatomy of a wall

Here's a basic illustration showing some of the required carpentry for a window and a door.



Hurdles and considerations

Building codes

Check area building codes for minimum door width requirements. If the door will be positioned higher than ground level, a landing and steps may be required to ensure the pathway out from your new door is safe.



Permit requirements

- Before you buy check local permit requirements
- Permits are not typically the responsibility of the installer
- Expanding the opening of a wall to accommodate a patio door (wider than the hole for the existing window) almost always requires a permit.
- Because cutting a bigger opening requires the removal of king studs in the wall, reinforcing or replacing the weight carrying header above the window, and potentially compromising electrical work around the window, work must be done in accordance with city permits.

Structural

- Structural integrity of a wall must be retained, in some instances, more than just one hole for the door may be required in order to install proper framing.
- Not all windows will have framing high enough for a door, so in these cases, the pre-existing header will have to be removed and replaced to the proper height.
- Some materials such as brick, stone, stucco, concrete used on the exterior facade of the home pose structural and refinishing considerations that will drive the cost of the installation up.

Electrical

Sometimes electrical wiring may run below a window. Professional contractors have the equipment to trace wires through the wall and can establish whether there is wiring. If there is electrical wiring, the breaker for the electrical wiring circuit will need to be switched off and once the door opening has been cut, the electrical wiring will need to be rerouted by a professional electrician. There are specific building codes that have to be adhered to when splitting wires and creating junction boxes.

Entrance door - turning a window into a door (continued)

Plumbing

Generally speaking in the Ottawa area, plumbing is not run through the outside wall because of potential freezing in winter. However if the doorway will be located where an external faucet is located, a plumber may be required, and the water may need to be shut off temporarily.

Cleaning

Converting a window into a door is a messy job. Although good installers will try to ensure the cleanest working site possible, be prepared for above average amounts of dust inside and outside your home when all the cutting is done.

Accessibility

Before you decide on a location for your new door ensure that its positioning allows for an unobstructed opening. Typically exterior swing and garden doors open into a home, but it is possible to have them open out - ask your specialist for advice if you are not sure what you should do.

Energy efficiency

Although the insulating properties of doors has become increasingly more efficient over the years, they are still not as energy efficient as a wall. A solid door will be more energy-efficient than a window, but if you are widening the opening to accommodate a patio door or garden doors there could be a slight decrease in overall efficiency.

Finishing

Advanced carpentry requirements for altering a load-bearing wall is pretty much done for you in the door installation. But once conversion has been completed, there may still be several finishing items required. Some installers will do everything, but many won't, you may need to hire a handyman. Be sure to ask your installer what they will and will not finish.

- Drywall repair
- Exterior finishing
- Interior trim
- Exterior landing/steps if required

Steps required

- 1. Contact a door installer for a consultation.
- 2. Have a professional check for electrical, plumbing and other obstructions in the area where the door will be installed. Professional Installers have the equipment to trace wires through the wall.
- 3. Determine whether a permit will be required.
- 4. Approve installer quote and pay the required deposit.
- 5. The contractor will map out and mark the internal and external area where the door will go.
- 6. If there is electrical wiring behind the wall, the breaker will need to be turned off.
- 7. Removal of the window framing/casing and studs below the window will take place.

- 8. The external facade will be cut out, insulation will be removed.
- 9. If electrical wiring or plumbing has to be diverted, it will be done at this point.
- 10. Because most cut-outs are done from outside the home, they present a bit of a challenge in preserving the drywall inside the house.
- 11. Most window installers are trained and comfortable with doing cut-downs and cut-outs through dry-wall, stucco, and siding.
- 12. However, if you're looking for a walkout from the basement you may have to subcontract the concrete cutting company.
- 13. Temporary structural support may be required if the header has to be expanded beyond the projected opening of the door.
- 14. The area around the new door will be reframed to the building code so that it can hold the weight of the door.
- 15. Once all the structural considerations have been taken care of, the new door will be installed.
- If the interior and exterior detailing will be required, you may need to hire a separate contractor or finish the detailing yourself. Be sure to ask your contractor to what point they will finish the detailing.
- 17. Once the door has been installed as per the contract, the contractor will remove the debris and the old window and clean up the site. In most cases, you will now be able to use the door immediately.



Costs involved

- Converting a window to a single door will cost between \$3000.00 \$4500.00.
- Special options such as stained glass, sidelights and premium hardware will increase the cos.
- Exterior walls other than wood or vinyl (concrete, brick) will increase the cost.
- Premium exterior finishing and trim will increase the cost.
- Hidden load bearing issues may increase the cost.

Professional installation

Because there are many risks and steps to consider, window-to-door conversions should be completed by experienced professionals.

The project will go smoother if you're working with trademen that have the experience, knowhow and tools to complete the project expertly.

Entrance door - choosing a colour



What colour should you choose for your door and what does your colour choice say about you, or about your house?

The psychology of colour

The study of colour psychology is primarily used in marketing and advertising, however, the conclusions drawn by these studies can be applied to colour choices for clothing, cars, homes and so much more.

The interpretation of colour and how it affects us is often deeply personal and rooted in your own experience. Our colour preferences are based on a whole host of factors, including experience, environment, personality, upbringing, and how our brains process colour.

Colours can have both negative and positive associations.

What a colour suggests

While perceptions of colour are often subjective, there are some colour effects that have a general universal meaning.

Blue

- invokes a feeling of calmness and serenity
- implies strength, stability, dependability, integrity, and order

Purple

- invokes a feeling of spirituality and wisdom
- implies royalty and wealth
- mysterious, imaginative
- people will either love it, or loathe it

Green

- invokes feelings of friendliness, calm, peace
- implies growth, luck, wealth, health, envy
- refreshing, tranquillity, associated with nature
- relieves stress and promotes healing

Orange & Yellow

- invokes a feeling of happiness and vigor
- implies playfulness, enthusiasm
- people will either love it, or loathe it

Pink

- invokes a feeling of joyfulness and creativty
- implies youth, romance, and feminism
- depending on where/how it is being used pink might be considered a risky colour

Red

- invokes feelings of passion, desire, love, power and energy
- implies playfulness and fun for some, others may feel it is too bold, exciting, or overbearing
- physiological effects include increased heart rate, energy levels, appetite, blood pressure

Brown

- invokes a feeling of happiness, enthusiasm, spirituality
- implies security, strength, isolation, reliability
- people will either love it, or loathe it

Black

- invokes a feeling of being grounded to your environment.
- implies elegance and power
- in the western world black is also typically associated with death and mourning

Grey

- invokes a sense of being safe
- implies neutrality
- subtle and underbearing

White

- invokes feelings of optimism and inspiration
- implies good taste and wealth
- clean, simple, and creates a sense of space
- in many eastern cultures white is associated with death, sterility, unhappiness and misfortune



The effects of colour

- influences mood and tone
- creates an impression
- expresses personality
- emphasizes uniqueness
- creates a sense of belonging

Shades of colour

All colours can be adjusted by shade (lighter/ darker) and vividness. Darker colour shades may be preferred by conservative personalities while lighter or vivid colours may be preferred by creative and socially outgoing personalities.

To make things even more complicated lighter shades of primary, secondary and tertiary colours all have their own set of corresponding cultural and personal characteristics.

Colour applied to doors

For most people an entry door is one of the first things a person will see when approaching a home, so choosing the right colour should be one of your most important door design decisions.

Entrance door - choosing a colour (continued)



How does colour work with doors?

Although studies have found that different colours have different meanings and invoke a variety of emotions on both a cultural and personal level, when thinking about integrating colour into an entrance door, you should look past the universal, psychological and personality findings.

Consider how the colour works with the exterior of your home and fits into the environment in which you live.

Most door brand offer a large selection of tried and tested standard colours that have successfully proven themselves to a majority of their clients over time. So you can't really go wrong with your colour choices, as long as they work with the rest of your home and the desired emotional feel.

Most standard colours have a positive influence on the desired perception and personality of a home.

Some manufacturers offer the ability to incorporate custom colours, but beware unless you are matching it up with another element on your house, results may not be what you desire.

What colour is right for you?

Although the psychology of colour makes some great observations. As a general guide for doors - the illustration below says it all.



Entrance door - lock options



Entrance door locks serve a critical function in the home. They should complement your door, fit into your lifestyle and provide maximum security. That's why it is important to invest time in proper research before selecting a door lock for your home.

So, where do you start? This article covers some of the things you should think about when purchasing a new entrance door.

Introduction

Your front door is more than just an entrance, it's also a showpiece – it's one of the first things a guest sees after they glance at your beautiful new door. That's why it's important to choose the right lock, handle or handle set. It's typical for most entrance door manufacturers to offer a selection of standard handle sets that go along with their doors, but most door installers will offer their clients the option to choose a door handle/lock solution from alternative sources.

Every door lock and handle style presents lots of benefits and other considerations, so think carefully about your security needs and your lifestyle when deciding which type and style are right for you. Below you find a summary of points to help get you started with a selection.

Styles and design

Entrance door locks and handsets are typically available in sleek contemporary styles that show off clean lines, smooth polished surfaces and enhanced detailing, and traditional ornate styles that combine classic timeless styling. When choosing door hardware, think about matching it to the style of your door, your windows and the rest of your home - i.e. a contemporary modern style might look out of place on a classic victorian style home. Most door handle manufacturers offer a multitude of metal finishes that include matt/gloss black, matt/gloss brown, chrome, satin chrome, brass, antique brass, nickel, brushed nickel, satin nickel and bronze. Be sure to read product reviews and look at physical samples before you make your selection.

Lifestyle

Whether you are a parent that wants to be notified when your kids come home from school; a renter who needs to change the locks on a regular basis; a busy professional that needs to provide access to cleaners, contractors or a dog walker; or just someone looking for a simple secure key-entry solution to protect your home and property. Choose from a variety of mechanical, electronic or smart locks solutions that function to meet your needs - be sure to weigh the pros and cons of door knobs versus levers and how they fit your lifestyle. With so many options available today, there's bound to be a hardware solution that's perfect for you.

Security

Not all door devices provide the same security, to ensure the highest residential security from a door, look for products that meet ANSI/BHMA



- Grade AAA or Grade 1 or 2 certifications (strength and cycle performance). These devices will be drill and saw-resistant, pickproof, bump-proof, and kick-in resistant.
- Grade 3 certified locks are not recommended for exterior residential doors.

For Smartphone enabled devices, make sure the whole process is protected with 128-bit encryption and check specifications and user reviews for potential vulnerabilities.

Concealed multi-point locking solutions (or 3-point locking) are available from some but not all door manufacturers. These locking mechanisms need to be incorporated into the door during manufacturing. Aftermarket multipoint systems are available but are often clunky and visually unattractive. Multi-point locks can be used on single doors, but they are typically used for double doors or garden doors.

Durability

Durability should always be front and centre when purchasing a new door or new hardware. You don't want to have to replace your hardware again in five years. Quality and durability is usually, but not always reflected in the price. Look for a lifetime warranty on mechanical, finish and electronics.

Entrance door - lock options (continued)

Typical lock types

Metal door locks were invented sometime around 800AD and over the years have evolved to suit the needs of the homeowner. Today many of the old-style door locks are still being used however they have been adapted to new technologies.

Whether you are looking for a simple key-entry door lock, or a complex internet enable lock that can open remotely, there are hundreds of different functionalities and several brands to choose from.

Mortise lock



- traditional lock that is encased within a door
- originally operated with a skeleton key
- more difficult to install than today's more modern lock types
- requires a sizable pocket cut into the side of the door to house the mechanism
- found in older buildings and more common in Europe

Deadbolt lock



- contemporary lock operated with a key or an access control system
- available as a single (twist knob key on the outside only) or double cylinder (key - key on inside and outside)

Spring knob lock



- typically acompanies a dead deadbolt
- it can be keyed or non-keyed
- often used as a secondary lock
- easily broken into with a hammer or heavy object





- top, middle and bottom locks
- operated with one key action
- typically driven by mortise lock mechanism often used on garden and double doors

Keypad lock



- uses a numerical keypad or key
- battery-powered or mechanical
- available as a deadbolt or mortise-like lock



Smart lock



- locking and unlocking by smartphone, fingerprint, key or keypad
- available for deadbolts, mortise locks, rim locks, various multi-point products and even spring knob locks

Rim lock



- traditional locking device
- installed on the inside face of a door
- keyed access from outside
- has evolved from old-style keyed locks into modern styles that incorporate keypads and smart lock technology

Entrance door - lock options (continued)

Technology (deadbolts)

Over the last 20 years, advancements in door lock technology have forever changed the way we securely lock and open doors.



Not only that, but today's tecnology allows us to integrate our locks into networks and devices to monitor and manage our doors remotely from just about anywhere in the world.

Wi-fi connectivity

- keyless entry
- single cylinder configuration
- touchscreen passcodes
- temporay passcodes
- deadbolt connected to the home Wi-Fi network and a smartphone
- lock and unlock door from anywhere you can connect to the internet
- touch-finger entry that can accommodate several users
- alternative keyed entry during power outages and system issues
- coloured LED lights indicate lock status, low battery power, nework issues
- batteries required

Bluetooth connectivity

- keyless entry even when power is out
- single cylinder configuration
- manage touchscreen and temporay
 passcodes
- lock and unlock door within bluetooth range
- touch-finger entry that can accommodate several users
- alternative keyed entry
- coloured LED lights indicate lock status, low battery power
- batteries required

Z-wave and Zigbee connectivity

If your home has a security system, some deadbolts will integrate and work with your compatible z-wave smart home network technology that connects and exchanges device control commands and data to each other. Be sure to talk to your security provider before you buy. Batteries required.

Non connected electric keypad

- not as sophisticated as other electric-driven smart lock-driven deadbolts
- programmed at the lock
- typically provide access to fewer users
- cannot be opened or locked remotely
- does not provide data to a smartphone
- alternative key functionality
- low battery and backup battery options
- batteries required

Re-keying

Some locks (both conventional and high technology) provide the ability to re-key (conventional metal keys) the system

What else?

Some manufacturers offer products (Microban coating) that inhibit the transfer of bacteria.

Tips before you buy or select

- Let the style of your door and home exterior be your guide when picking a style of handle set
- Consider the styling of your interior door handles as well
- Look for an option that provides the level of security you need
- Choose a finish that coordinates or complements the other finishes on your home's exterior
- Think about your users and how they will gain access to your home as well as potential issues around key entry
- You get what you pay for, look for the best warranties to ensure long life, you don't want to have to replace the door handle every 5 years
- If you are replacing your front door, you may want to replace the hardware on all other entrance doors in your home, so they all work with the same key or entrance code.



• If you think you may need to change locks often, look for re-keying solutions that will allow you to change or adapt a new key

For Security

Door locks are categorized by three standard s security grades and there is a significan difference from Grade 1 to grade 3.

Grade 1

Requires a key-in-knob that must hold up to 300 lb-in and a lever lock that must withstand 450 lb-in.

Grade 2

Requires a key-in-knob that must hold up to 150 lb-in and a lever lock that must hold up to 225 lb-in.

Grade 3

Requires a key-in-knob that must hold at least 120 lb-in and a lever lock that must withstand at least 180 lb-in.

Garden door - anatomy

Not all garden doors are set up the same, but they will be similar.

When looking at a garden door, there are plenty of parts and components to talk about and remember - it can be very confusing.

And to make it even more confusing, multiple terms can be used to describe some of the the same components.

If you need to talk about garden doors, this labelled diagram will help get you started.





Garden door - configurations



Single hinged garden doors

One door is fixed, while the other opens as an active door. Fixed doors create the illusion of a full lite sidelite and allow additional sunlight into a room and providing a full view of the outdoors. Select your configuration - inswing or outswing, left or right handed. Additional fixed panels can usually be added, to a maximum of four.

Double hinged garden doors

Complete with multipoint astragal, this product allows both doors to be securely locked and sealed. Select your configuration - inswing or outswing, left or right handed. These configurations typically have an astragal in the middle between both doors

Inswing vs outswing

By building code, most patio doors in the Ottawa area should be inswing (swing into the home) as opposed to outswing (swing outward from the home).

If you are interested in outswinging doors they may be allowed in enclosed areas where winter snow will not accumulate.With outswing doors, the hinges must be placed on the outside (exterior of the door frame)





Garden door locks secure your home, add beauty, and conviently allow entry into your house. There are lots of hardware brands, styles, finishes, configurations and functions to choose from.

Garden doors come with reinforced secure hinges, and although some manufacturers provide door handles and locking hardware, it is often left up to the customer to pick from a limited standard selection. If you don't see what you are looking for, you may be able to search out hardware (to specification) from alternative sources.

Although garden doors and double entrace doors are similar in nature, the hardware treatment is usually a little different.

Garden doors typically have an active and inactive door with a single handle or knob plus an exterior keyed or smartlock locking mechanism. You may also pair non- functional dummy handles and knobs to match the active locking hardware.

Know your options

There are so many different ways to configure a garden door - smart locks, multi-point locks, keypad locks, conventional locks...

Be sure to explore all your options with your door consultant in order to find the best locking solution for you.

(see page 21-22 for more hardware considerations).





Transoms & sidelites



Above and beside

. . . .

Sidelites

Transom windows go above a door while sidelights flank one or both sides of the door.

Whether you have a single door or something more, transoms and sidelights let more natural light into your home and turn your doorway into a focal point inside and out.

Customization

Transom requirements may well be unique to a home's particular situation. Many window and door manufacturers can custom create a transom to your exact specifications, giving you the flexibility to choose the design you want in the shape you need. Sidelights are alway rectangular in shape and can be full height with various glass treatments, or they can be paneled with partial glass.

Transom styles

Transoms can be stationary, and some can be opreational (typically in awning formats only). They are available in 4 different standard shapes.

RectangleElipticalHalf roundSegmented

Available for all door types

Transoms and sidelites are a great way to open up your home to natural light. They can be used with entrance, sliding patio, and garden doors.



Glass - technology

Advancements in window technology, has taken doors with glass panel glazing and side lite selection for the home to a whole new level by providing options and solutions that enhance performance, security, privacy and energy efficiency.

Glass can be ordered in various thicknesses and strengths as well as tints and textures. Energy efficiency can be optimized through multi glazing, spacers and special inert gasses. And sound can be dampened with a combination of optimized multi glaze spacing and special insulators.

Smart Glass

Glass & Safety

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. In today's window and door market, dual pane glass is pretty much the standard for new home and replacement projects. 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 and door manufacturers.



Glass - 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(or gas as is used today's windows) spaces in between improve the insulating value of the window considerably.

In Canada, double-gazed glass has become the standard. However triple-glazing and even quadruple-glazing windows are also available from most window and door 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.

WHAT ABOUT SOUND?





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 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®

Swiggle[®] Spacer System

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. 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.



Bayview Windows

Glass - tints

At times the sun, heat and peeping-eyes can be very invasive and uncomfortable, especially if there are no external trees or hedges to filter them out. Glass tints are available in various colours and strengths to help make your home more private and comfortable.

Marginal Efficiency Gain

Daytime Privacy

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. 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 difficult 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.

Clear glass - coatings

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.

Talk to your local window consultant for a optional solution that's right for you.

LoE 180 glass

LoE 272 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 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

- Balanced option when room is
 hot in summer and cold in winter
- U-factor of 0.30Maximized 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

Door window privacy can be managed through various obscure glass options offered by many window and door dealers. Let the light in and keep prying eyes out.

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.

Processes Glass

There are thousands of door glass treatments and patterns available to suit your taste or match the style of your home - silkscreen patterns, wrought iron, stained glass, pressed glass, etched and sandblasted finishes.

Acid-etched

Although some manufactures produce their own specialty glass inserts, many partner up with companies that specialize just in glass inserts.

Integrated mini 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.

Glass - gas fills

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 guality 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 1/2 inch. In combination, argon gas and Low-E coatings will quickly yield energy savings exceeding their cost.

18

ARGON

Typically Krypton is used in applications where the total glazing unit thickness must be minimized, for example, ¹/₄ 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.

39.948

Krypton

36 KRYPTON

83.80

Glass - grills & operational inserts

Door glass 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.

The image on the right show examples of some of the more common grill styles.

Simulated Divide Lites

Grill Materials

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.

Operational door windows

Some manufacturers offer hung and casement window inserts along with screens for ventilation through the door. 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.

Energy-efficiency -Energy Star[®] climate zone

Even though windows do not consume energy, they can be a significant source of heating and cooling loss in a home. ENERGY STAR qualified windows will save you money by reducing the overall annual home energy costs. If you are buying new windows in the Ottawa area, Energy Star approved windows are highly recommended.

ENERGY STAR windows will also help keep your home more comfortable all-year-round and may have less condensation in cold weather compared with a conventional non-certified product.

Out with the old and in with the new!

We live in a world of ever-changing and evolving products, policies and procedures - made to make our lives easier. So, it's no surprise that in January, 2020, the Energy Star Window Standards in Canada, and the Climate Zones areas associated with these standards became much simpler.

No more thinking required

The three distinct Energy Star Climate Zones that had previously existed (2015 to 2019) in Canada have now been combined into one zone.

As of January 1, 2020, the Energy Star window program which includes standards for manufacturers, installers and residential home builders has been simplified.

The new zones do not mean that the specification requirements have been lowered. In fact, for areas of Canada that experience less extreme temperatures, the bar has been raised. The New Energy Star Climate Zones (Jan, 2020) One zone for all of Canada

Ottawa

Energy-efficiency -Energy Star[®] ratings

When buying energy-efficient doors for your home it's important to consider their energy performance ratings in relation to the local climate and your home's design. Look for the Energy Star[®] label to help identify energy-efficient products, this will help narrow your selection.

In Canada, an Energy Star[®] door must be tested using the Canadian Standards Association (CSA) A440.2 standard. Its performance is rated on seven metrics which may or may not be used depending on a product characteristics.

Door manufacturers achieve energy-efficiency through continuous improvement and by setting specific rules for qualified installation. Below is a list of some of the components that they look at.

- Foam-filled insulation core
- Compression foam seal on the edges for a perfect seal
- Thermal break (plastic insulator in the frame)
- Low-E coatings on glass inserts and side lights
- Installed by a company experienced with installing Energy Star[®] products

According to Natural Resources Canada and Energy Star®, doors that are Energy Star® approved doors are 15% more efficient than the average non Energy Star®.

Energy Star[®] approved doors provide tighter seals, superior insulated glass units and superior materials with greater insulating properties.

Energy Star[®] is the mark of high-efficiency products in Canada.

Who does the ENERGY STAR certification?

When you buy ENERGY STAR certified windows, they have been tested against current Energy Star standards by an accredited laboratory, and the test results are verified by an independent third party. Doors sold in Canada may be certified for energy performance by:

- CSA International (CSA)
- Intertek Testing Services (ITS)
- Quality Auditing Institute Ltd. (QAI)
- The National Fenestration Rating Council (NFRC)
- Labtest Certifications

Not all door manufacturers build doors the same way or with the same fillers, there are plenty of doors that do not even qualify for the Energy Star[®] stamp of approval.

Understanding the 7 metrics

1. U-factor

Rate of heat transfer through a door or window

The lower the U-factor measurement, the more energy-efficient the door is

2. 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

3. Solar heat gain coefficient (SHGC)

A solar head gain coefficient is a ratio that shows how much of the sun's heat can pass through a product

The higher the measurement, the greater heat gains from sunlight

4. Energy Rating

The ER rating is a measurement that expresses the overall performance of a window.

The higher the number, the greater the efficiency

5. Condensation resistance

Condensation rating that is optional for manufacturers to include, so you may or may not see it on the label

The higher the number, the better a product resists condensation

Glass inserts, transoms and side lites

6. Visible transmittance

Number depicting how much visible light can pass through a product

The higher numbers mean more light can pass through

7. Centre-of-glass rating

A value that measures only the rating of the glass area of the product, not the product as a whole

The lower the measurement, the greater the efficiency

Energy-efficiency entrance door materials

With environmental concerns and sky-rocketing fuel costs, more and more homeowners are opting for insulated front doors, but which door material are the most energy efficient?

What are doors made of - how energy-efficient are they?

Most entrance doors are manufactured and sold in a pre-hung configuration that include

- the door slab (door by itself without frame),
- the frame (including the sill),
- hinges and locking hardware

Maximum energy efficiency is only achieved when replacing the entire unit.

When purchasing a total door/frame solution and material type, doors are categorized by the door slab material, not the framing material.

- metal and fibreglass doors are actually metal or fibreglass skins that cover a reinforced frame and insulating material
- wood doors are typically solid wood (without any core insulation)
- veneers wood doors (wooden skins that do have an insulated core)

While entrance door manufacturers continue to improve the insulating properties of doors (R7), they are still very poor performers when compared to a solid wall in a home (R13).

composit rails (top & bottom)

- up to 6 times more energy-efficient than solid wood
- generally considered the most energy-efficient and durable residential doors

door sweep

Fibreglass or vinyl doors

- poor conductor of heat perfectly suited in helping to keep inside-the-home temperatures stable while warding off the hot and cold outside temperatures
- typically more expensive than steel doors but less expenive than wood doors
- great thermal value

metal sill

 not as energy-efficient as fibreglass but typically better than solid wood

metal sill-

• metal conducts heat - thus metal doors are more susceptible to the transference of outside temperatures into the home

door sweep

Steel or aluminium doors

wood, composit

or stiles (right & left)

nsulated

foam core

molded

wood or

composit rails (top & bottom)

steel

skin

foam insulation

- in extreme prolonged temperatures you'll may be able to feel the change in temperature on the inside of the door when you pass by it
- not all metal doors are constructed the same, some may provide better insulation than some wood or fibreglass doors
- be sure to check for the Energy Star[®] symbol, and compare it with other non-metal doors that you may be considering

- solid wood doors absorb heat more easily than metal and fibreglass doors and allow outside temperatures to pass through into the home.
- considered the least energy-efficient door R-value is typically less than half that of an insulated steel or fibreglass doors.
- if you're adamant about wood, look for a thicker, solid-core wooden door for better insulation - the thicker the wood the higher the R-value.
- wood veneers doors are more efficient than solid wood doors
- wood veneer doors hav a similar R-value to fibreglass and steel doors

Wood doors (R-value between R2-R3)

Bayview

Windows

Energy-efficiency lowering costs and raising comfort levels

Replacing an entrance door is a great way to freshen up a home's curb appeal, but it is also a great opportunity to make your home more energy-efficient.

What does "more energy efficient" mean:

- lower energy bills, higher efficiency
- insulation that works efficiently in both hot and cold environments
- consistent comfort throughout the home (if the whole house is optimized i.e. including windows)
- natural light that doesn't heat up the inside of the home
- less fading of furniture
- you help reduce the carbon footprint

In areas with extreme hot and cold weather conditions such as Ottawa, losing indoor heat in the winter or cold air in the summer can drive up energy costs while contributing to the compound effects of global warming. Your home's exterior doors can significantly contribute to temperature transfer and air leakage into the home, especially if they are old, poorly insulated, or improperly installed.

Of course, entrance doors don't use electricity or burn fuel, so when we are talking about doors being energyefficient we are talking about the potential to help reduce the energy usage and costs associated with heating and cooling a home.

In Canada and the US, a government-sponsored Energy Star® program provides unbiased testing, Energy Star®

certification, and energy ratings (ER) for door products that meet or exceed the strict technical specifications for energy-efficient performance.

Other energy-efficiency considerations

Although the door slab (door by itself without the frame, hinges and hardware) is the biggest surface area to consider when looking for an energyefficient entrance door solution, the frame, frame insulation, weatherstripping and glass (if used) are just as important. All the components must work together to produce the desired energy efficiency, if any of the components do not have equal insulating properties, they will diminish the door's overall U-factor and R-value. Be sure to consider the entire door (slab, frame, weatherstripping, and glass) when looking for energyefficient doors.

Glass & glazing (side lites and door inserts)

Glass in a door will decrease its energy efficiency, but some options will help improve the insulation value:

- glass with a higher low-E (low-emissivity) coating will reflect both outside and inside temperatures back to the source
- glass thickness can contribute to overall window efficiency (thicker is better)
- gultiple panes (glazing) of glass (2 or 3 panes) allow for the insertion of low conductive gases and add another insulating barrier that reflects or absorbs heat
- low-conductivity gases between the glass inhibit heat transfer through the glass

 plastic thermal frame breaks (around the glass) can insulate between the inner and outer parts of the door inhibiting temperature transfer from the glass to the door

Core insulation and slab framing

Metal and fibreglass doors are typically filled with a rigid polyurethane foam insulation core that strengthens, insulates and helps maintain the home's inside temperature.

Metal, composite and wood framing are used to help strengthen a door slab. Each of these framing materials conducts or absorbs the temperature from inside or outside the home differently.

Non-solid wooden doors with a polyurethane foam core are available through some manufacturers. This type of doorway may provide better insulative properties than solid wood doors.

Caulking/Foam insulation

During the entry door installation procedure, installers follow strict manufacturer's instructions (including materials such as caulking and low expanding insulation) to ensure the installation replicates the testing environment with the intent of matching the set Energy Star[®] specifications.

Weatherstripping & door sweeps

Plastic, rubber and thermoset plastic foam core weatherstripping and sweeps (door shoes) between gaps and pockets of the door ensure the seal between the frame and the door is airtight - weatherstripping and sweeps can be extremely effective in eliminating air leaks and retaining indoor temperature.

National Fenestration Rating Council (NFRC) vs Energy Star[®]

Although most Canadian window and door manufacturing companies place Energy Star® rating labels on their doors (rather than NFRC rating labels), you will find some manufacturers use one or the other, or both labels. Both performance rating processes rate products based on U-factor, R-value, Visual Transmittance (VT), and Coefficient of solar heat gain (SHGC)

In the US the NFRC is responsible for testing and rating windows, doors and skylights. Then Energy Star[®] provides a stamp of certification for those products that meet or exceed government specifications. The NFRC is committed to advancing the continuous improvement of windows, doors, and skylights, contributing to making buildings more comfortable and energyefficient. Certified Products Directory

In Canada, it is a different story - windows, doors and skylights are tested and rated by Natural Resources Canada (NRC) authorised independent testers. Then the eligible Energy Star[®] results (Energy Efficiency Ratings) are posted on the Canadian Government's website under Natural Resources Canada. Certified Products Directory

For the most part, you will have more success comparing ratings for doors sold in Canada by comparing products that are Energy Star[®] rated.

Energy-efficiency -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.

Understanding condensation

Condensation can form on the inside or outside of a window at any time of the year depending on external or internal humidity levels, the temperature, and differing environmental conditions inside and outside a home.

Whether you are buying new windows, or looking at the condition and performance of your existing windows. Condensation should always be a concern for the health of your home and it's occupants.

Most people believe that by buying energy-efficient windows, they will alleviate the problem of condensation, however, even the most efficient windows on the market can not create a 100% insulating barrier between the inside and the outside of a home. In fact, windows are still very inefficient (R4) compared to walls (R13).

Your window panes will generally be the coldest or warmest surfaces (depending on the time of year) in any given room because the glass will have direct contact with the outside air. As a result, they are prone to condensation especially as outside and inside temperature differences are extreme.

Condensation variables

To understand exactly what's going on, we need to comprehend the nature of a few important variables and how they are related:

Vapour (V)

All air contains water vapour of varying quantities. The lower the air temperature, the smaller the maximum possible capacity for vapour. Humidity is water vapour or moisture in the air. Cold air does not retain moisture as much as hot air does.

Vapour Saturation (VS)

Vapour saturation is a state in which temperature can hold a maximum amount of water vapour (in a gaseous form). The higher the temperature the more water it can hold.

Absolute humidity (AH)

Absolute humidity is the measure of water vapour (moisture) in the air, REGARDLESS of temperature.

Relative humidity (RH)

The relative humidity is the measure of water vapour in the air, but RELATIVE to the temperature of the air. As relative humidity increases, so does the dew point. The temperature must increase to increase relative humidity.

Dew Point (DP)

Dew Point is the temperature that air has to be cooled to in order to reach vapour saturation. The higher the Dew point, the higher the water content in the air. Dew point is calculated using air temperature and relative humidity.

When air is cooled, relative humidity increases until it reaches a dew point (air becomes saturated). Further cooling below the dew point will induce condensation.

The temperature of the dew point will depend upon the absolute content of water vapour, that is the absolute humidity (AH), measured in g/m3 (grams per cubic metre). The dew point of humid air will be higher than the dew point of dry air. Temperature (T)

When temperatures are high (hot), the air in the atmosphere can handle more water vapour than when the temperature is low (cold). As a temperature increases, so does the dew point.

When an object is cooler than the air around it, the water molecules in the air come together and stick to its surface, forming a thin layer of water droplets. Both air temperature and absolute humidity will determine what type of condensation will occur when the air is cooled.

Condensation (C)

Condensation occurs when water vapour in the air is returned to its original liquid state. Condensation is not a matter of one particular temperature but of a difference between two. Condensation of water vapour occurs when the temperature of the air is lowered to its dew point. Condensed water is called dew when it forms on a solid surface, or frost if it freezes. Window condensation is a simple occurrence that takes place under the right conditions of temperature and humidity.

Differing environments

Another important factor when looking at window condensation is the difference in temperatures between the inside and outside of a home, there will always be a transference of hot or cold on the window glass.

Other considerations

Extreme hot and cold temperature changes in a short period of time inside or outside the home can result in condensation on the window glass.

Installation professional vs DIY

If you are going to have windows installed by a window replacement company, you can expect to pay anywhere from 20% to 50% of the cost for installation.

If you have the skills, know-how, confidence, patience, and to take on a window installation project, you may be tempted to do the installation yourself. But, before you commit to a new do-it-yourself project, there are plenty of reasons why you may find much more value by having the professionals install for you.

The benefits of using professional installers

Time

Experienced professional installers work in teams and are fast, proficient and attentive to detail. Some window replacement companies efficiently install and repair windows in all 4 seasons with winter being the least busy season of the year.

Professional installers can remove and install an average-sized window in as little as 1-2 hrs. A home with 20 average-sized windows will typically only take 2 days to complete.

Insurance

Worker's insurance: A reputable replacement window company will have insurance coverage for accidental injury to their employees.

Property insurance:

A reputable replacement window company will have insurance coverage to cover accidental damage to a customer's home and property.

Protection

Your home:

Installers will protect your home with tarp and floor mats, they'll make all necessary machine cuts outside your home, and they'll clean everything up when they are done.

Damaged products:

If a product is damaged through the installation process (glass, hardware, window framing...) the installation company will fix or replace the window at no charge.

abour warrant

Some companies provide labour and material warranties on defective installations performed by their installation crews.

Tools & materials

Installers typically have a truck full of proper tools and installation materials to ensure that the removal of old windows and the installation of new windows will be correct and efficient.

Training & professionalism

Working with heig

All window replacement companies in Ontario are required to have their installation crews trained for working with heights.

Product trainin

All installers are typically trained in the proper installation procedures for each brand and type of window or door, they are installing.

Renovation training:

Trained installers know how to deal with hidden problems that may be uncovered during the removal stage.

Waste disposal

A good replacement window company will clean up thoroughly and dispose of all waste including the old windows to an appropriate waste disposal facility.

Why you may NOT want to do it yourself

Time

Depending on experience, it could take 3 to 5 times longer for a do-it-yourselfer to install a window than a professional installer.

Assistance:

Most window installations require at least 2 people to get things in place safely and correctly.

Damage

Most do-it-yourselfers will be prone to injury unless they have specialized training for lifting heavy materials, working with heights, and specialized tools.

Property damag

There are lots of ways to damage property when installing windows - accidents happen, and when they do, household insurance probably won't cover it. So you'll be out of pocket for any damage done. You will also need to protect your furniture and the inside of your home from dust and waste materials.

Product damage:

If you break it, you pay for the repairs or replacement and you could also void the product warranty.

Incorrect installation

Preparation is an important step to the installation process. It is also an opportunity to fix items that may not have been put in place correctly in the first place. It is not uncommon to find leaks, rot, mould, hazardous materials, missing structural components or poor construction practises - all of which will need to be taken care of in order to ensure the health and longevity of the new installation.

daptive engineerin

An experienced installer will see potential installation issues right away and utilize adaptive solutions to fix the problem (sill extenders, sill adapters, frame extenders...), but a do-it-yourselfer may not discover issues, may not know how to resolve specific problems and they find performance issues after the installation.

Bends, bows and poor practices:

Window installation is not terribly complicated, but it does have to be done according to some standard practices. The overtightening of screws can lead to bends and bows in the frame as well as problems with operational windows. Screws (or wrong-sized screws) in the wrong places and blockage of weeping holes can cause window leakage and breaks. Over inflation of foam insulation or the incorrect type of insulation can also cause performance and operation of windows.

Tools, equipment and materials:

Window installation can require specialized tools including ladders, scaffolding, benders, suction cups and even cranes for bigger windows. Adhesive tapes, vapour barriers, caulking and flashing may also be required and in some cases will require other specialized tools that may not be in the arsenal of an average do-it-yourselfers toolbox.

The incorrect installation of new windows may void any product warranty you may have and you will need to take care of the expenses and materials required for any installation problems that may occur in the future.

Finishing

You'll have to finish the inside and outside of each window on your own (capping, caulking, trim, insulation materials)

Cleaning and waste disposal

Once the installation is complete, you will need to dispose of your old windows and all other waste materials to the appropriate disposal facilities. You will also need to do your own cleanup.

Installation what to expect

Buying replacement windows is not always an easy task. what should be a very simple process, can be more complicated than most of us would care to deal with

To help put your mind at ease, and so you know what to expect, you'll find the typical steps and procedures that are required to get you through the entire process.

Contact

- After researching prospective installation companies it is a good idea to request quotes from at least 3 candidates (by phone or website form). This will help you get the best price, products, service and schedules available as well as help you get a better understanding of what's available in a window product.
- Once contact is made, your coordinates will be passed on to a window expert who will call you to set up an appointment to discuss your requirements and to make initial measurements for quoting purposes.

Consultation & measurements

Discuss what you want and don't want (energy efficiency, UV protection, privacy, colours...).

- Don't be afraid to ask guestions
- List all concerns will your blinds, shutters, window treatments still fit?
- Ask about inside and outside finishing options and if there are any costs involved.
- Name your rooms tell your consultant (this will ensure that you are both on the same page for questions, ordering and window placement)
- Trust your gut, if you want a certain type of window (for example a hung window or sliding window, but the window expert recommends a casement, ask why they are making that recommendation - some brands do not offer all window types).
- Make sure the windows you'll be ordering are all the same brand, not all windows are made alike and subtle differences may be noticeable after installation.

The quote

- Some companies/sales personnel will offer on-the-spot guotes, while others will go back to the office and take the time to ensure that you are quoting exactly what you are looking for (there are so many glass configurations available). If your intent is energy efficiency, then all your windows should have the same energy efficiency ratings, no matter what type of window you are ordering.
- If the quotes do not include energy-star window ratings and
- specifications, ask for them price differences from one company to another are often hidden in the details.
- If you have any guestions or concerns, be sure to point them out, don't assume anything.

Deposit and ordering

- Most installation companies will require a 15% to 25% deposit to secure an order.
- Be sure to read the terms and conditions in the guote and ask questions that may be of concern to you.
- Once the deposit has cleared your order will be placed.

Scheduling

- Scheduling is dependent on many factors including market demand, government incentives and continuous bad weather.
- Most companies follow a queue that is base on a first-come, firstserve basis.
- In Ottawa, permits are not required for contracted window replacement, so permit requirements won't slow down the process.

- Weather is often the biggest contributor to installation day delay, it
- can set the installation day back days or and sometimes even weeks. Most window companies will provide a rough idea as to when an installation will occur, they typically will not provide exact details
- until they are certain that they can meet their proposed dates (usually a week in advance).
- No matter whom you are purchasing your windows from, the manufacturing of windows is also influenced by consumer demand, facility capabilities, supply-demand and industry incentives. 6-2

Preparing for installation day

- Turn off the window and door security, remove security devices, or have a specialist remove/reinstall them for you.
- Make room for any required equipment (ladders, workbenches...) Keep in mind most of the required cutting will be done outside.
- Decide which doors can be used (that you feel most comfortable with for home access).
- Find a safe place for your pets, where they will not be bothered by installers.
- Ensure that children are away from the work area for the entire install.

- If weather is very windy or rainy, or snowy (winter installation) there is always a possibility that the installation will be cancelled. Your installer will usually call the day before the installation if it looks like there may be a problem.
- When the installer arrives, they will typically introduce themselves and then take a guick tour of the rooms to get an understanding where all the windows are going.
- Before they start work, the installation team will prep the project area with protective coverings.
- Depending on the size of the crew, the weather... As a general rule, only one window is removed and replaced, at a time.
- Until a window is removed, the installer won't know if there are
- underlying issues that may need attention.

Installation plan

- · Replacement window installation is a messy job and it is easier and more efficient if the installer starts at the top floors and works their way down.
- The installer will typically suggest a structured order for the installation.
- If there are any preferences to the order, you should inform the installer before they start the process.

- Prepare for the Mess: The installation crew will work as carefully and cleanly as possible, but replacing windows is an unavoidably messy job.
- The installer will typically lay down carpeting or other protective materials in your home drop cloths in your yard or over your garden. This will help catch dust and debris and make clean up much auicker.

- The installation crew will remove each window and inspect the opening hole framing for leaks and rot.
- If issues should occur, your installation expert will assess the situation and explain a process that will produce the best results.
- If materials need to be replaced, you will be appraised of any issues and informed if there will be any additional cost associated.
- The frame will then be prepped and made ready for installation.

- Windows are usually replaced from the outside, however, some situations may require them to be installed outside.
- Generally speaking, there will be one installer working on the outside and one on the inside.
- They will put the window in place then, using shims on the bottom and side will position the window to adjust to plumb and level.
- The sides and bottom of the window will be screwed in as per the manufactures specifications.
- Low expansion foam insulation will be injected between the wall frame and window frame.
- The inside trim (usually pre-primed in white) and outside capping treatment will be put in place.
- Caulking will be applied to both the interior and exterior of the window.
- The installer will typically leave all labelling on the windows, so you can cross-check their specifications.
- Window cleaning is generally left up to the homeowner.

Inspection

- · After your windows have been installed, perform a walkthrough with your installer.
- Test all operational windows to make sure they are working correctly.
- · Windows should sit flush again the wall with no gaps.
- Note any deficiencies (scratches, broken glass, difficult operation...)

Cleanup and disposal of old windows and waste materials

Once all the work has been completed, tarps will be removed and all waste materials will be collected and disposed of. Your old windows will also be properly disposed of by your contractor.

Settlement of the final bill

When all the work has been completed, including the cleanup, it is typical for the installers to request the balance due.

Warranty package

Once you have approved all the installed windows and settled your account, it is typical for the window installation company to hand over a warranty package.

Upgrading your windows and doors is a great opportunity to improve the energy efficiency in your home, but there are lots of things to think about. When talking to your window consultant, be sure to explain what you are trying to achieve - they'll provide excellent advice to help you choose a product style and brand that's just right for you.

Installation - door company check list

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

Not all window and door 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.

- Punctuality (did they get back to you when you called or filled out an RFQ form
- 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 installers
- Detail oriented
- Clean up & disposal of waste
- Satisfaction guarantee
- Follow up after the installation
- Timely service calls if problems are detected after the install
- Flexible payment options

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