

MAGNUS

WINDOW & DOOR



4500 EUROPEAN-STYLE SYSTEM

CRYSTALTM
WINDOW & DOOR SYSTEMS, LTD.
WWW.CRYSTALWINDOWS.COM

About Crystal



In operation for almost **30 years**, Crystal has grown from startup in 1990 to one of the top window manufacturers in North America. We operate nearly one million square feet of manufacturing space at five plants. Our corporate headquarters and flagship production facility are in New York City, and we have additional plants in Chicago, IL; Riverside, CA; Union, MO; and our newest plant is in Benton Township, PA. We employ over 600 people nationwide, and have sales and distribution branch offices in **Illinois (Chicago), Ohio (Cleveland area), and Missouri (St. Louis area)**. Crystal products are distributed in over **40 states**.



Crystal Window & Door Systems is an award-winning national manufacturer of quality, energy efficient vinyl and aluminum replacement and new construction windows, and high-end fenestration systems for virtually every residential, commercial and institutional building type. Our product and service benefits are many:

- Quality Workmanship
- Broad Product Line
- Energy Efficiency
- Innovative Product Features
- Custom Design and Engineering
- Experienced and Knowledgeable Staff
- Extraordinary Value

The Crystal family of companies comprises several integrated firms involved with the production, sale and distribution of windows and related products around the nation.

Crystal's state-of-the-art manufacturing completely integrates window production from profile extrusion through product and installation accessory fabrication. Crystal is a Vitro/PPG Certified Commercial Window Fabricator, and our window and glass assembly processes are NAMI and IGCC certified, and our products are tested to AAMA and NFRC standards. Our experienced R&D engineering team utilizes 3-D printing technology and its own in-house large scale, fully computerized window test chamber to fast-track product development and facilitate quality control.

Crystal's aluminum extrusion subsidiary in Missouri supplies most of the aluminum profiles needed for our aluminum window lines, vertically integrating the process to better manage quality, lead times and costs. The subsidiary also offers extruded aluminum products to other companies and industries, and is making major upgrades of its facility and equipment to remain ahead of the competition. Vinyl window lineals are extruded in-house at the New York facility.



Welcome to the world of windows and doors from MAGNUS

MAGNUS 4500

Top Performance, Intelligent Design, Timeless Style

These are the windows and doors from Magnus Series. They are engineered to perform. They are beautiful, durable, energy efficient and available in an extensive variety of styles, colors and configurations.

uPVC Delivers Where Others Fail

MAGNUS windows and doors resist fading or corrosion. The proprietary unplasticized polyvinyl chloride (uPVC) formulation and extrusion process result in superior profiles that outlast and outperform materials like aluminum or wood. Plus, uPVC is a natural insulator. It resists heat loss in winter and heat gain in summer.

Less Stress on the Environment

Our windows and doors offer long service life and excellent thermal performance that minimizes energy use. This conserves raw materials and prevents pollution associated with manufacturing and disposing of other, shorter-life alternatives.

CONTENT

3 The All-Round Talent

5 The Formulation

11 Tilt - Slide Doors

7 Tilt - Turn Windows

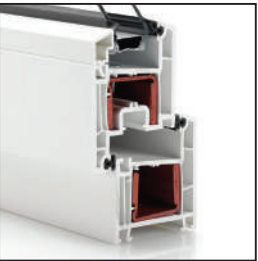
14 Swing Doors

THE ALL-ROUND TALENT



FUSION-WELDED CORNERS

In addition to the benefits of uPVCs thermal properties, MAGNUS's fusion-welded corners greatly reduce leakage potential and the need for costly sill pans/pan flashing systems.



STEEL REINFORCEMENT

The product sophisticated multi-chambered designs accommodate steel reinforcement and allow for big window elements. This, in turn, provides greater daylight openings and brighter interior designs.



COMPRESSION-SEAL TECHNOLOGY

When the wind is blowing strong and rain is pouring down, compression seals are optimizing the air and water performance of MAGNUS windows and doors.



MULTIPLE LOCKING POINTS

Multi-point locking hardware assures consistent compression on the seals all around the perimeter of the sash and frame for further performance enhancements and improved security.



HIGH-DEFINITION FINISH

Only occasional cleaning with soap and water is needed to keep the surfaces looking like new, even years after installation.

THE ALL-ROUND TALENT

SAVE ENERGY EASILY: WITH BETTER THERMAL PERFORMANCE.

Reducing energy usage is important. Not just for the occupant's wallet but also on a larger scale when it comes to sustainable building. Lower energy consumption with a good conscience – whether it's cold or hot outside.

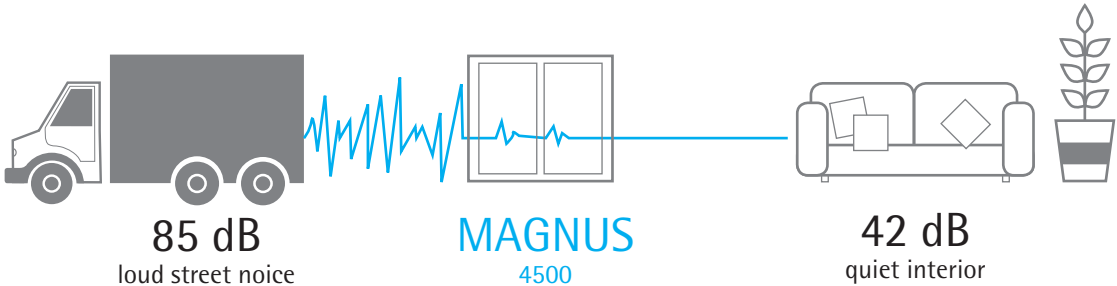
	System 4500 Windows	System 4500 Doors
U-value Standard (dual pane, low-E)	0.28	0.30
U-value Advanced (triple pane, low-E)	0.20	0.24

MINIMIZE MAINTENANCE: WITH EASE OF OPERATION, EASE OF CLEANING.

Thanks to a high-quality, high-definition finish (HDF), smudges can be quickly and easily removed using conventional detergents. As far as maintenance, the occasional application of a quality lubricant to the moving parts, such as hinges and lock mechanisms, is all that is needed. The newly developed sealing technology assures optimal closing pressure. Due to advanced engineering and close cooperation with hardware suppliers, window and door operation is smooth and easy. Reduce maintenance and cleaning effort to a minimum.

ENSURE PEACE AND QUIET: WITH A VIEW ON MUTE.

Noise is disturbing and over time, it is even unhealthy. Increase occupants' feeling of well-being with the previously unattained values in noise protection.



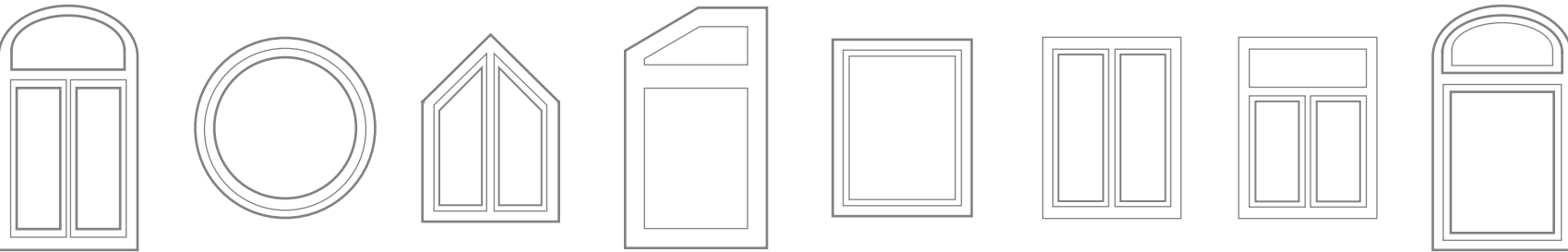
TRUST HIGH LEVELS OF SAFETY: WITH SUPERIOR SECURITY FEATURES.

In combination with the appropriate hardware, System 4500 windows and doors enhance security with multiple locking points, fusion-welded corners and steel-reinforced, multi-chambered design. Enjoy the security you are looking for.



EXPERIENCE CREATIVE FREEDOM: WITH COUNTLESS SHAPES AND COLORS.

System 4500 allows for a wide choice of customized shapes, e.g., round, half-round, triangular, rake-top, ellipsoidal windows. In addition, extensive design variations with brilliant colors and patterns will liven up any building interior and exterior. Get creative with countless design options.



Wood	Light Oak	Mahagony	Golden Oak	Irish Oak	Soft Cherry	Douglas Fir	
Solid	Bronze	Silver	Midnight	Choco Brown	Burnt Almond	Medium Brown	Black
Profile	White	Beige	Clay				

THE FORMULATION



BETTER FORMULATION = BETTER DURABILITY

MAGNUS contains proprietary uPVC formulation and extrusion process produces superior window systems that outlast and outperform alternative materials like aluminum and wood-clad products. Those corrode and rot from exposure to weather and pollution.

The formula includes above-average quantities of TiO2 stabilizers and impact modifiers to protect against fading from solar radiation. When put through five years of weather testing in Arizona, this formula showed its strength; MAGNUS uPVC performed better than standard vinyl.

The unique uPVC formula from MAGNUS also results in a higher than average surface gloss level. This enhanced the ability of MAGNUS window systems to repel dirt and retain their color.

TILT-TURN WINDOWS

UNIQUE OPERATION AND UNMATCHED PERFORMANCE



Performance Summary

NAFS: up to Class CW-PG70

STC: up to 41 dB

U-factor: down to 0.20

TILT-TURN WINDOWS

ALSO AVAILABLE FOR HOPPER AND FIXED CONFIGURATIONS

MAGNUS 4500 comes in a variety of different colors: Whether you are looking for a change from white with a different core profile color or something totally unique such as modern solid foil on the window exterior with a wood look on the interior, our color options offer something for every taste.



MAGNUS 4500 window designs offer a very unique product for large openings in both residential and commercial markets. The versatile design is three windows in one: A secure top-venting hopper in the tilt position, an inward opening casement in the turn position and a tightly sealed picture window when closed for outstanding thermal and acoustical performance.

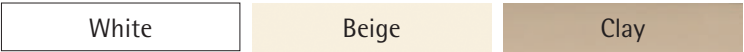
With the MAGNUS 4500, tilt-turn, awning, hopper and fixed configurations are possible. Matching doors in a variety of configurations are available.

The dominant window style in Europe, tilt-turns are gaining popularity in North America as more stringent energy performance targets become the norm.

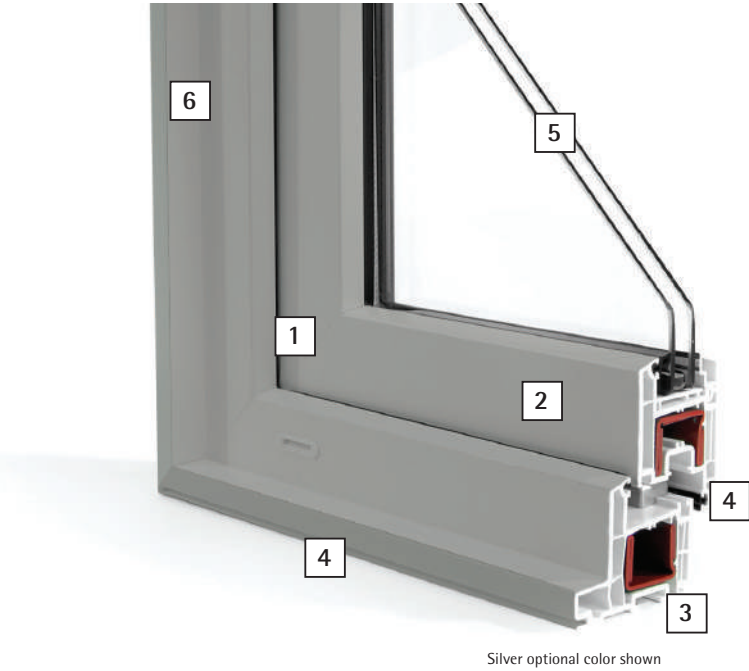
Tilt-turn hardware allows the sash to tilt inward at the top for secure ventilation or turn inward providing a wide opening for ease of cleaning the glass surface and for emergency egress. When closed, this compression-seal design provides outstanding thermal and acoustical performance.

System 4500 windows have also passed Miami-Dade County hurricane protocol tests, allowing them to be specified for projects that reference this standard in all coastal regions, from Texas and Florida all the way to Long Island, NY.

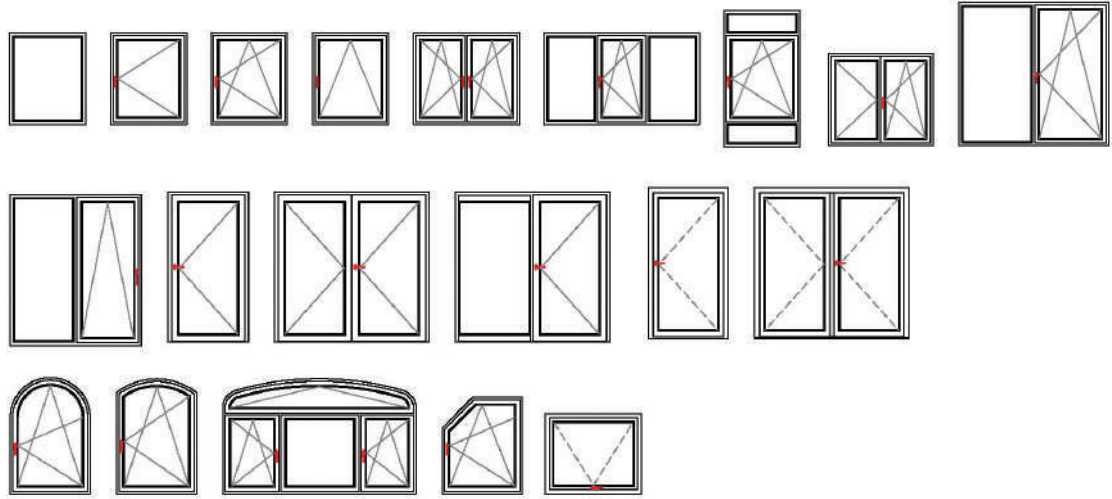
AVAILABLE COLORS



Ask about our foil option in other solid colors and wood-grain.



- 1. Unique tilt-turn hardware
Operates in both top-venting and inward-swinging positions
- 2. Multiple locking points and dual weather seals
Provide optimal air and water tightness
- 3. Large chambers
Accommodate reinforcements required for large openings in heavy commercial applications
- 4. Accessory groove
Accepts a variety of accessories such as brickmolds, extension jambs and profiles to couple window elements
- 5. Up to 1 3/8" (35 mm) glass
Increases energy efficiency and acoustical properties
- 6. 3 1/4" (83 mm) North American frame depth
Allows for hassle-free replacement installation; we also offer the 2 3/8" (60 mm) European frame



Tilt-turn designs are three window styles in one: a secure top-venting hopper in the tilt position, an inward opening casement in the turn position and a tightly sealed fixed window when closed.

Performance Summary

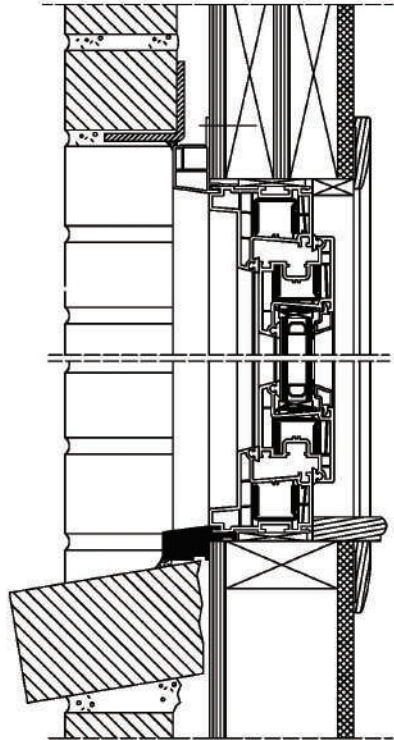
NAFS: up to Class CW-PG70
STC: up to 41 dB
U-factor: down to 0.20

based on simulation

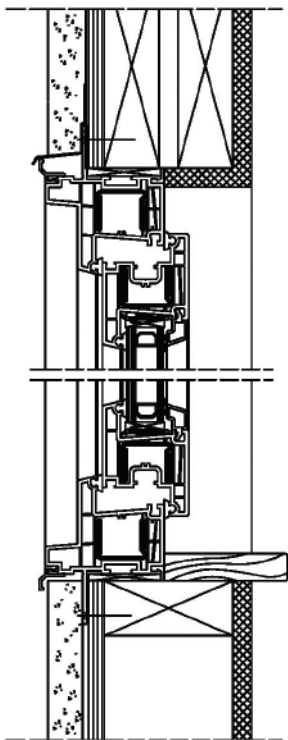
TILT-TURN WINDOWS

INSTALLATION DRAWINGS

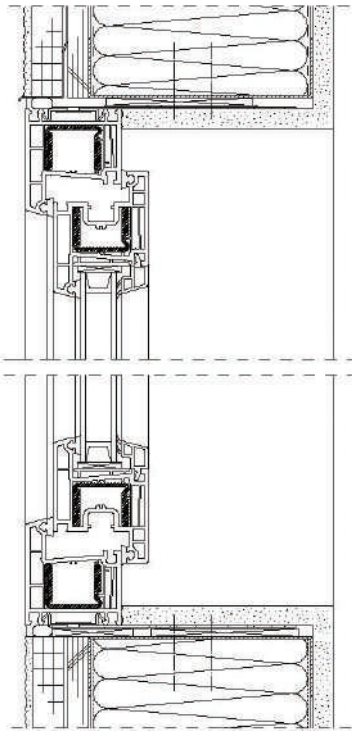
2 x 4" Wall with Brick New Construction (NA Frame)



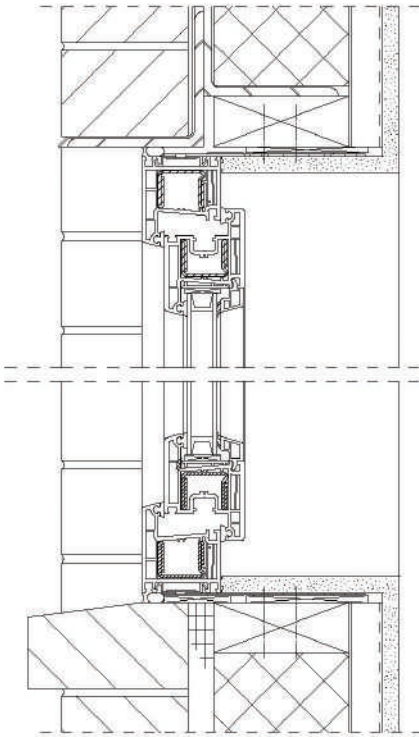
2 x 4" New Construction (NA Frame)



2 x 6" Wall with Stucco New Construction (Euro Frame)



Brick and Block Construction (Euro Frame)



TILT-SLIDE DOORS

CONTEMPORARY STYLE AND VERSATILE FUNCTIONALITY



Performance Summary

NAFS: up to LC-PG45

STC: up to 40 dB

U-factor: down to 0.20

TILT-SLIDE DOORS

CONTEMPORARY STYLE AND VERSATILE FUNCTIONALITY



based on simulation

Compression-seal Technology

This door utilizes special hardware, which actually compresses rubber seals between the frame and the sash, when the operating panel is being closed. As locking points all around the sash perimeter are engaged, an exceptional barrier to air, water and sound is created.

Tilt Sash Function for Ventilation in a Secured Position

High-quality tilt-slide hardware allows a vent position, where the top of the sash tilts toward the inside of the room, but cannot be opened from the outside, providing security on the inside.

The MAGNUS System 4500 tilt-slide door provides secure ventilation with space-saving functionality – a perfect solution in spaces where traditional in-swing doors are less than ideal or not desired.

The door allows the operable sash of the door to easily tilt and smoothly slide parallel in front of the fixed side unit, not into the room. Optimal profile design and compression-seal technology contribute to outstanding performance.

MAGNUS 4500 tilt-slide doors are an innovative door solution for spaces that do not allow for traditional in-swing doors.

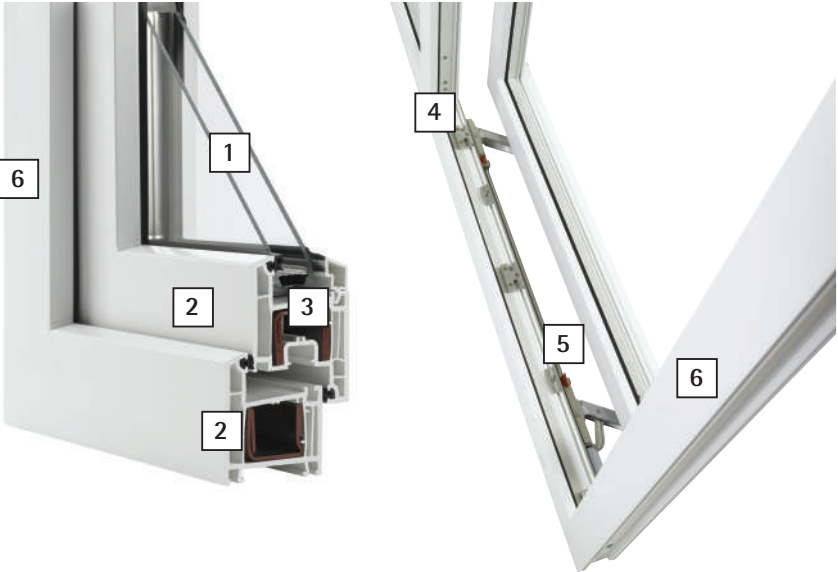
With just a simple turn of a handle, the door sash can be tilted providing secure ventilation. With another turn, the sash slides open parallel to the fixed unit, not into the room, for space-saving functionality. The high-quality European hardware system operates quietly and easily.

Optimal profile design and compression-seal technology contribute to outstanding performance.

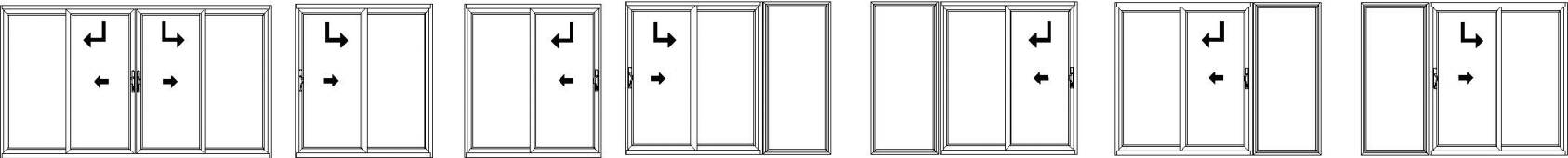
Matching fixed and operable windows can be paired with this door as top and side lites allowing for the greatest design flexibility.

TILT-SLIDE DOORS

CONTEMPORARY STYLE AND VERSATILE FUNCTIONALITY



Large chambers accommodate robust reinforcements required in heavy commercial applications. Innovative runner mechanism provides smooth projection of the sash which easily and precisely slides to any desired position.



AVAILABLE COLORS

- White
- Beige
- Clay

Ask about solid color and wood-grain foil options.

1. Large glazing capacity, including special high-performance glass up to 1 3/8" (35 mm) in thickness
Improves energy efficiency and acoustical properties
2. Four-chambered sashes and frames
Provide high energy efficiency
3. Large reinforcement chambers in the sash
Allow for sash sizes as large as 8 ft (2.4 m) high and 5 ft (1.5 m) wide up to a weight of 260 lbs (120 kg)
4. High quality hardware
Operates effortlessly and quietly
5. Large glazing capacity, including special high-performance glass of 1 3/8" (35 mm) in thickness
Provide high water performance, minimal air infiltration, security and good sound insulation
6. Weldable corner joints in the sash profiles
Provide flexibility for new construction and replacement applications

Performance Summary

NAFS: up to LC-PG45
STC: up to 40 dB
U-factor: down to 0.20

based on simulation

SWING DOORS

TOTAL FLEXIBILITY AND CLASSIC BEAUTY



Performance Summary

NAFS: up to LC-PG80

STC: up to 38 dB

U-factor: down to 0.22

Spec Shown Outward Single Door

SWING DOORS

TOTAL FLEXIBILITY AND CLASSIC BEAUTY



based on simulation

Design flexibility

Hinged doors can be built as single as well as French doors, either inward or outward opening. They can easily be combined with top and side lites or even operable windows, providing the utmost design flexibility.

Few designs are more classic or have as many different uses as swing doors. MAGNUS 4500 swing doors are offered as a single sash creating a beautiful main entrance or as dual sash, also referred to as French doors that elegantly connect the indoors with the outdoors. These versatile doors can be used for patio, deck or balcony access as well as entry doors.

MAGNUS 4500 swing door has an attractive solution for both residential and commercial applications. Matching fixed and operable windows can be paired with this door as top and side lites allowing for the greatest design flexibility.

With MAGNUS 4500 swing door, single inswing and outswing as well as double inswing and outswing configurations are possible.

SWING DOORS

TOTAL FLEXIBILITY AND CLASSIC BEAUTY

Unique PVC corner blocks

Connect steel reinforcement keeping hinged door corners in-square for long-term, troublefree operation. Outward opening (left) and inward opening (right) styles meet a variety of design requirements.

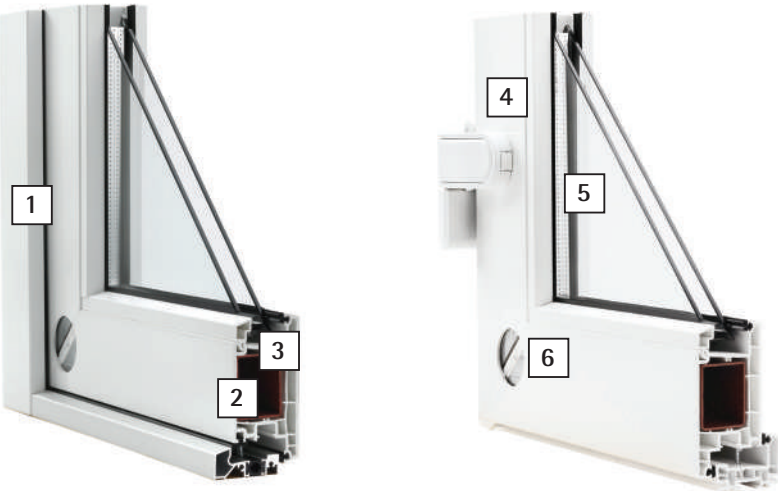
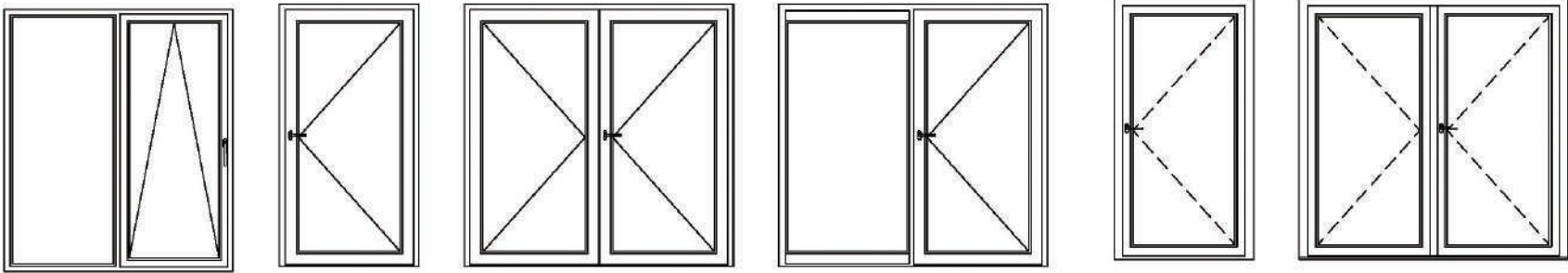
AVAILABLE COLORS

White

Beige

Clay

Ask about solid color and wood-grain foil options.



- 1. Frame profiles with different depths
Provide flexibility for new construction and replacement applications
- 2. Multiple locking points and compression seals all around the sash perimeter
Provide high water performance, minimal air infiltration, security and good sound insulation
- 3. Large reinforcement chambers in the sash
Allow for sash sizes as large as 8 ft (2.4 m) high and 3.5 ft (1.1 m) wide for single doors and 3 ft (0.9 m) wide for French doors
- 4. High quality hardware
Operates quietly and effortlessly
- 5. Large glazing capacity, including special high-performance glass of 1 3/8" (35 mm) in thickness
Improves energy efficiency and acoustical properties
- 6. Weldable corner joints in the sash profiles
Strengthen the door panel against distortion and provide long-term, smooth operation

Performance Summary

Outward Opening –
Single Door
NAFS: up to LC-PG80
STC: up to 38 dB
U-factor: down to 0.22

Outward Opening –
French Door
NAFS: up to LC-PG35
STC: up to 38 dB
U-factor: down to 0.22

Inward Opening –
Single Door
NAFS: up to LC-PG40
STC: up to 40 dB
U-factor: down to 0.22

Inward Opening –
French Door
NAFS: up to LC-PG40
STC: up to 40 dB
U-factor: down to 0.22

based on simulation

INTRODUCING MAGNUS 4500, A HIGH PERFORMING WINDOW WITH TOP PERFORMANCE, INTELLIGENT DESIGN, TIMELESS STYLE.



HEADQUARTERS
CRYSTAL WINDOW & DOOR SYSTEMS, LTD.
31-10 Whitestone Expressway, Flushing, NY 11354
Tel : 800.472.9988 / 718.961.7300 Fax : 718.460.4594