



RAYNO
WINDOW FILM

ARCHITECTURAL SERIES

CLARITY

INNOVATION. CLARITY.

True innovative window film from RAYNO provides privacy so you are protected and enjoy great visibility.

A new paradigm for window solutions.



TECHNOLOGY



HEAVY METAL DETECTION TRIAL RESULT

Test Item	Unit	Result	Test Method
Cadmium(Cd)	mg/Kg	N.D.	IEC 62321:2008,ICP
Lead(Pd)			IEC 62321:2008,ICP
Mercury(Hg)			IEC 62321:2008,ICP
Hexavalent Chromium(Cr VI)			IEC 62321:2008,UV-VIS

Note 1) N.D. = Not Detected. (<MDL>) 2) mg/Kg=ppm
* Source: SGS KOREA

HARMFUL SUBSTANCE EMISSION TRIAL RESULT

Test Item	Unit	Result	Test Method
TVOC	mg/m ³ h	N.D.	Indoor Air Condition Test (Ministry of Environment notified 2010-24)
Toluene			
Formaldehyde			

Note 1) detective limit is 02, lower amount of detection is evauated as N.D (not detected)
* Source :VCL KOREA

ENERGY SAVINGS

RAYNO's window films help maintain lower inner temperatures, that - coupled with RAYNO's Infrared (IR) rays protection technology increase energy savings.

SAFETY CONSCIOUS

RAYNO's window film are lab-tested for heavy metals and harmful substance emissions to ensure that our products are consistently safe for everyday use.

EXCEPTIONAL CLARITY

- ☑ Clear visibility
- ☑ No haze
- ☑ No diffused reflection

EXCEPTIONAL DURABILITY

- ☑ High color-stability rate
- ☑ Low fading rate
- ☑ Consistent solar control performance over time (less performance decline with age)

LEADING-EDGE TECHNOLOGY

- ☑ 99% protection from harmful UVA/UVB rays
- ☑ Numerous global certifications



PROVEN

RAYNO's architectural window films are lab-tested and certified for clarity, durability, and performance to a level that is unmatched in this industry to ensure the highest quality product using the latest innovations in window film technology.



U.S. NFRC - National Fenestration Ratings Council

- NFRC 100 U-factor
- NFRC 200 Solar Heat Gain Coefficient
- NFRC 200 Visible Light



SKIN CANCER FOUNDATION - Traditional Seal of Recommendation. RAYNO's window films have been tested by the Skin Cancer Foundation and found to prevent 99% or more of the UVA and UVB rays that cause skin cancer.



GERMANY TUV - Rescue 12mil & 18mil for impact test. Tempered glass with 12mil Rescue film and Tempered glass with 18mil Rescue film samples evaluated in this report have been tested in accordance with ANSI Z97.1-2009. The samples met the impact requirement based on a Class A drop height.



- Protect lives and valuable assets with safety and security functions
- Protect skin and sight with 99% UV rejection

- Enhance privacy
- Prevent discoloration of valuables

- Prevent window damage and secondary shattering due to storms or external impact

- Reduce cost of heating and cooling through effective solar control

- Enjoy clear and vivid visibility

Visibility
Protection
Comfort

You can have it all
with RAYNO

**SEE FOR
YOURSELF**



RAYNO offers a full suite of **Architectural Window Film** solutions

▮ **PLATINUM**

Solar Control and UV Protection

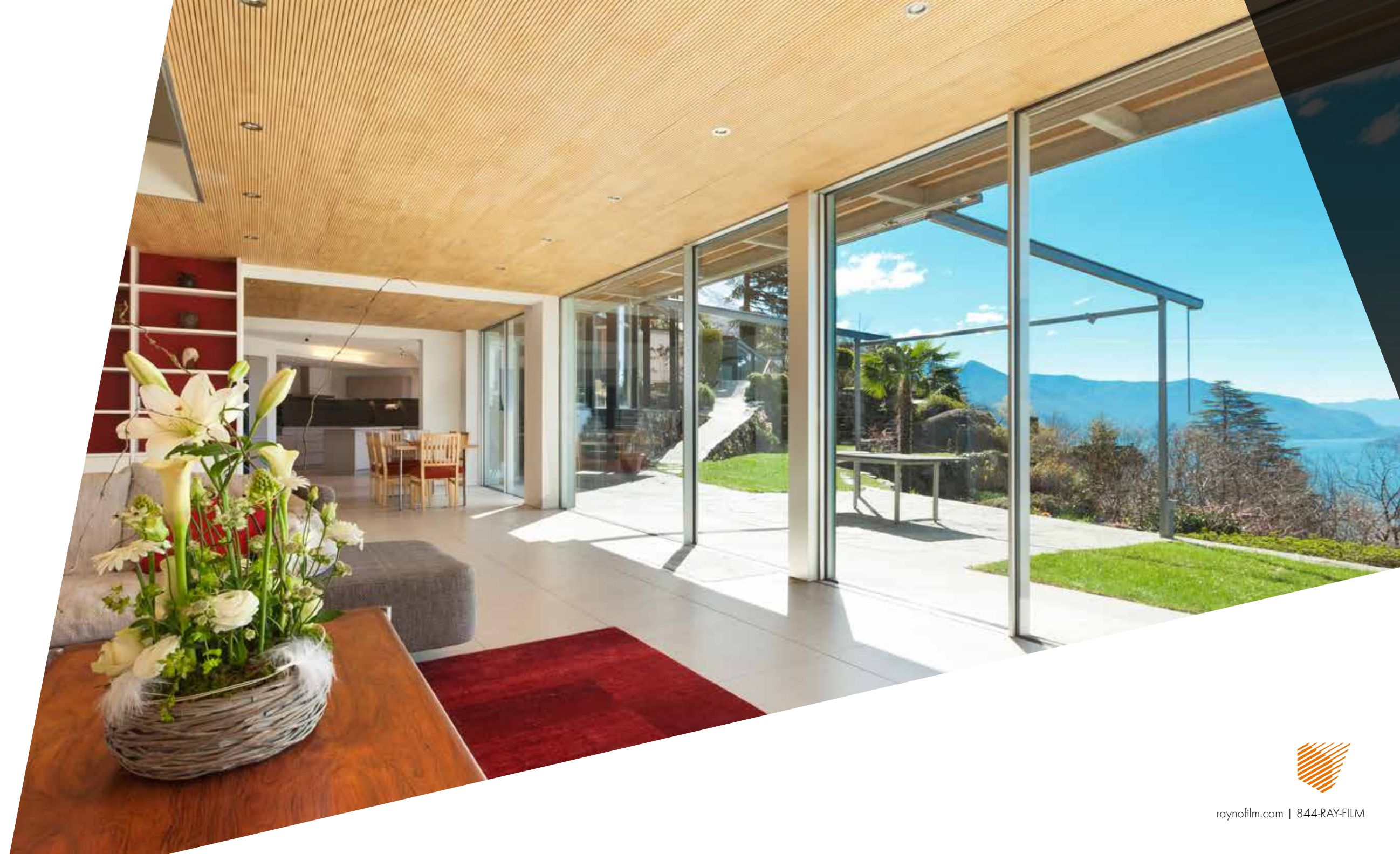
▮ **RESCUE**

Safety and Security Functionality

▮ **TRINITY**

All-in-One premium film combining solar control and UV protection with safety and security functionality

SUITE



PLATINUM



PLATINUM SERIES

Enjoy the benefits of solar control with clear visibility to the outside, and enhanced privacy inside.

FEATURES

☛ Clean and clear shield against harmful rays

- Tested and certified to show that it blocks 99% of harmful UV rays
- Effects of ray blocking are dazzling. Offers clean and clear view outside

☛ Reduce heating and cooling costs with outstanding solar control

- Room temperature reduction of up to 7.2 °F when warm outside, leading to an annual energy reduction of up to 15.5%
- Prevent heat loss in cool weather

☛ Protect property

- Helps prevent furniture and floor discoloration from damaging solar rays
- Minimizes damage in event of window shatter

APPLICATIONS

- ☛ Curtain wall building
- ☛ Houses
- ☛ Apartments and condominium buildings
- ☛ Public buildings



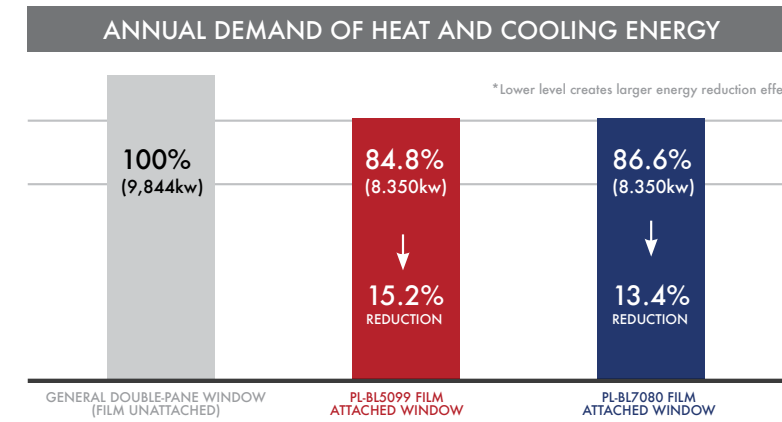
ENERGY SAVINGS:

ENERGY PERFORMANCE OF BUILDING DIRECTIVES (EPBD) TESTING

Using ISO and German Building Standards, RAYNO conducted a series of tests in various heat and cold conditions.

HERE ARE THE RESULTS

- 15.2% energy reduction for the Platinum film PL-BL5099
- 13.4% energy reduction for the Platinum film PL-BL7080

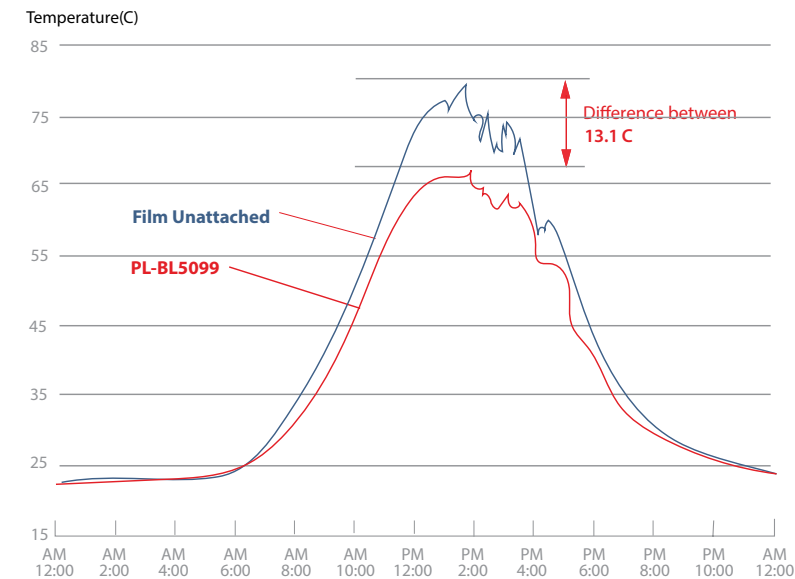


TEMPERATURE REDUCTION

We tested windows installed with RAYNO Platinum vs uninstalled clear windows on the hottest days in the hottest months in Seoul, South Korea.

HERE ARE THE RESULTS

- Up to 24° lower temperature using RAYNO Platinum
- 14% average temperature reduction



RESCUE

RESCUE SERIES

Protect your family and property from window damage or unwanted intrusions.

FEATURES

- Strengthens windows up to 20 times normal glass strength
 - Minimize window damage from external shocks such as storms, earthquakes, and explosions
- Makes window glass more shatter-resistant
 - Keeps window glass from shattering
 - Aids in interruption and prevention of robbery or intrusion through protected windows
- Great clarity and clear visibility
- UV protection

APPLICATIONS

- Preschools
- Banks
- Stores
- Jewelry stores
- Museums
- Museum glass showcases
- Glass showers
- Public buildings that require additional security
- Private homes that require additional security



UNIQUELY TESTED

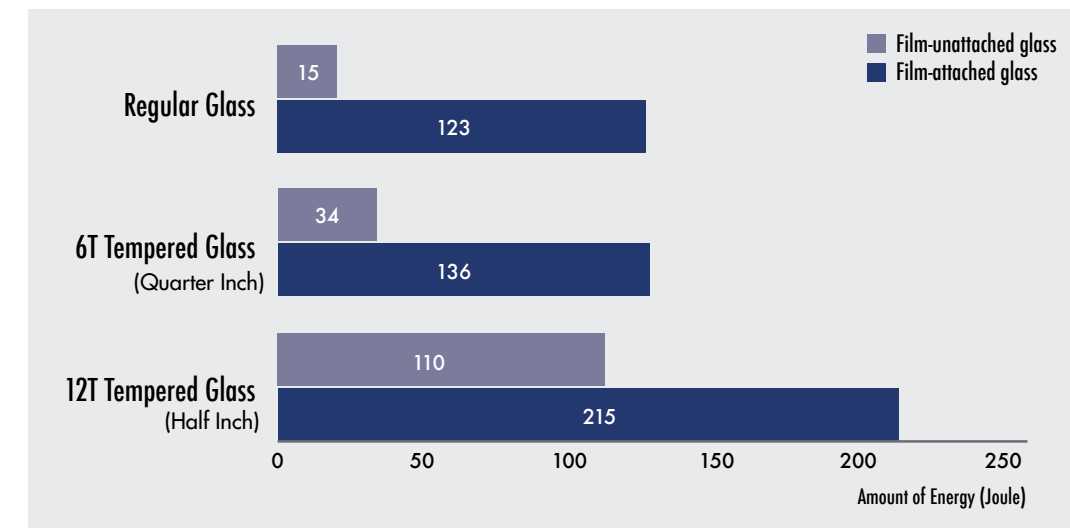
PENETRATION RESISTANT

To test the resistance of a RAYNO Rescue installed window - we experimented on the amount of energy needed for an object, in this case a steel ball, to break through a window installed with 4mil RAYNO Rescue film. We tested on one regular and two tempered glasses 6T (quarter inch thickness) and 12T (half inch thickness).

HERE ARE THE RESULTS

- 8 times more resistance on regular glass after installing 4mil RAYNO Rescue film
- 4mil RAYNO Rescue film installed regular glass is 10% more resistance than clear half inch thickness tempered glass (123 Joule vs 110 Joule)

AMOUNT OF ENERGY REQUIRED DEPENDING ON THE TYPES OF GLASS AND ATTACHMENT



SHATTER RESISTANT

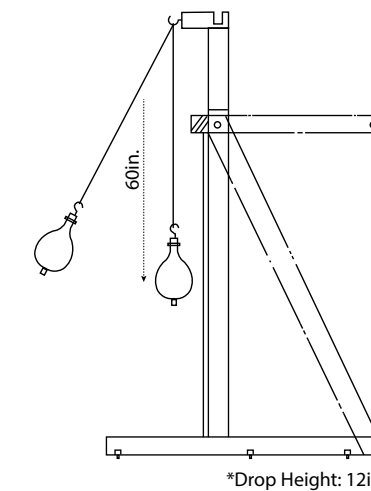
Shatter resistant means secondary damage due to broken glass is minimized.

We tested this using a sack of lead bullets dropped against a window installed with the RAYNO Rescue.

Sort	Standard	Total weight of 10 large pieces	Weight of the largest one piece dropped
2mil	Total weight of a largest piece from shattered glass is below 80 g	0 g	0 g
4mil		0 g	0 g
8mil	The weight of one dropped piece is below 55 g	0 g	0 g

TEST CONDUCTED IN ACORDANCE WITH KSL 2016 : 2014 STANDARD

*0 g = signification of no shattering



HERE ARE THE RESULTS

- Effectively prevented secondary damage due to minimization of broken glass pieces
- RAYNO Rescue installed glass: no shards and no broken glass pieces as shattered glass pieces will be held together vs Regular clear glass (without Rescue film installed): shattered and scattered shard or glass pieces



HAZEMETER

We used a Hazemeter (Yes, it's a real thing) to measure haze - the level of opaque/cloudy appearance as light passes through a transparent object.

HERE'S WHAT WE FOUND

The RAYNO Rescue Series consistently tests clearer than other window films at every similar level of thickness – 2mil, 4mil, 12mil.

RAYNO is un-matched at the 8mil and 18mil film thicknesses.

HAZE MEASUREMENT

Film Thickness	Product	Haze
2 mil	RAYNO Rescue 2 mil	2.02
	Brand A: 2 mil	3.06
	Brand B: 2 mil	2.93
4 mil	RAYNO Rescue 4 mil	2.56
	Brand A: 4 mil	3.91
	Brand B: 4 mil	3.03
8 mil	RAYNO Rescue 8 mil	3.26
	Brand A: 8 mil	4.13
	Brand B: 8 mil	6.06
12 mil	RAYNO Rescue 12 mil	4.61
	Brand A: 12 mil	6.04
	Brand B: 12 mil	5.69
18 mil	RAYNO Rescue 18 mil	6.52
	Brand A: 18 mil	4.55

*Haze represents the scattering light that passes through transparent objects and opaque cloudy appearance.



TRINITY

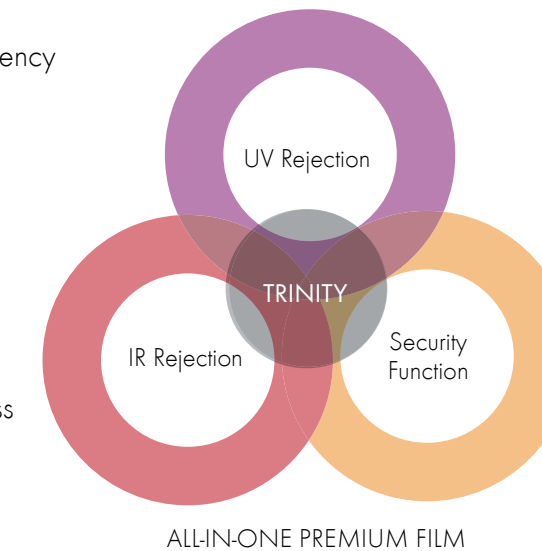


TRINITY SERIES

RAYNO Trinity Series is an all-in-one premium film that combines the insulation and security functions of our other products.

FEATURES

- Reduces energy costs and increases energy efficiency
 - Aids in cooling spaces in warm weather
 - Blocks heat loss in cool weather
- Blocks 99% of harmful UV rays
 - Protects eyesight and skin
- 20 times stronger than untreated glass
 - Protects against damage from shattered glass due to high-wind gusts, storms, earthquakes, explosions and other external shocks
- Provides extra security
 - Against unwanted gazing
 - Against unwanted intrusions
- Offers exceptional clarity and visibility



APPLICATIONS

- High-rise and mid-rise buildings
- Apartments
- Condominiums
- Luxury residences
- Office buildings requiring extra security





MISSION

Our mission is true innovation for the window industry. RAYNO strives to lead in product innovation, as well as in quality and service, providing our customers with the best value and best protection compared to any other window film on the market.

THE GUARANTEE

RAYNO Architectural Series are backed by a reliable warranty program and guaranteed to meet higher standards than any other window film. We offer extensive coverage for both customers and dealers. Specific terms may vary by region and application.

SEE AN AUTHORIZED DEALER OR GO TO RAYNOFILM.COM FOR MORE INFORMATION.

Eco-Friendly. Independently tested and certified to be free of heavy metals and toxic substances.



RAYNOFILM.COM
844-RAY-FILM | CONTACT@RAYNOFILM.COM

