



Discount

Windows & Doors

Quality * Integrity * Commitment

Engineering the
future of
glass

Makai Range Windows & Doors

Designed and made for Hawaii

The Kama`aina window company you can trust

Discount Windows & Doors

About the company...

- Established on Oahu in 2007
- Our windows and doors are specifically engineered for Hawaii's climate
- Over 75,000 windows and doors sold
- Largest window and door showroom on Oahu
- Only window company in Hawaii with an A+ rating by the Better Business Bureau
- We offer free in-house estimates
- Serving all of Hawaii

Discount Windows & Doors

Our quality products and trusted manufacturers include:

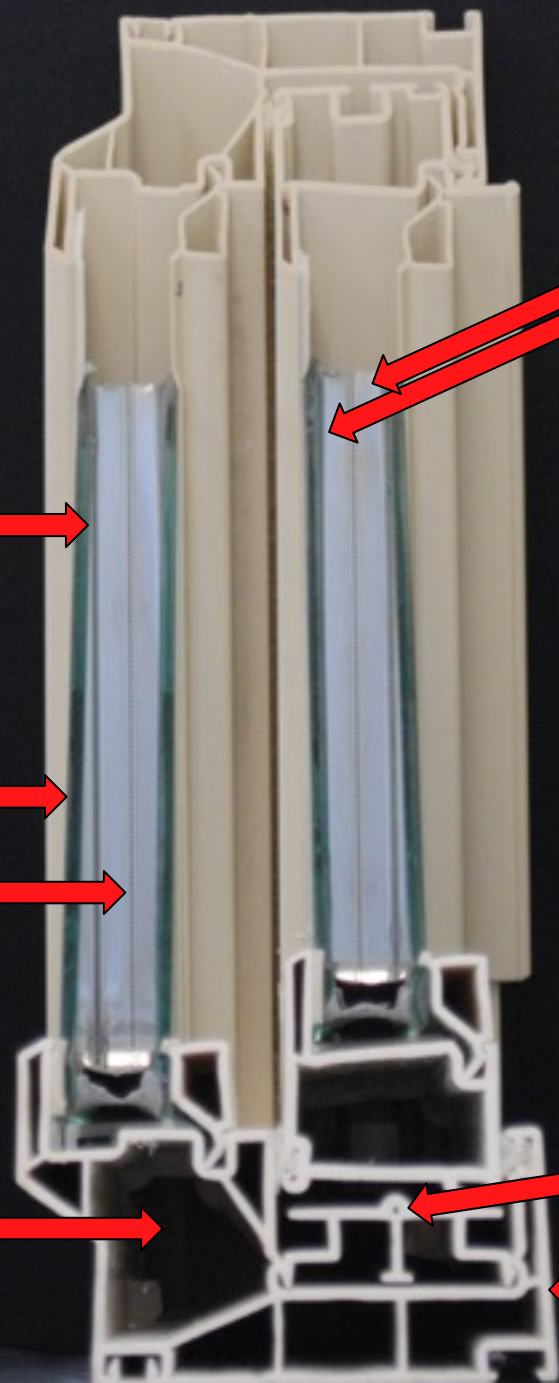
- Makai Range Vinyl Windows and Doors tm
- Makai Elite Aluminum Windows and Doors
- WinDoor Quality Doors and Windows, Inc.
- Thermal Windows, Inc.
- Tradewind Windows - Jalousies and Louvers
- Plastpro Doors - fiberglass doors
- Simpson Door - wood doors
- Crimsafe Storm and Security Screens
- Centurion Security Screens
- Velux Skylights and Sun Tunnels
- Coulissee Shades and Blinds
- Polywood Shutters

Makai Range Windows & Doors

Designed for Hawaii

- The latest in window and glass technology
- High-Impact Virgin Vinyl frames
- Double strength glass
- Tested in hurricane strength winds
- High performance triple layer Low E
- NEAT Self-Cleaning glass
- Marine grade stainless steel hardware
- Lifetime Transferable Warranty

CROSS SECTION
through an
aluminum reinforced
high-impact frame



Double Strength Glass

Multi chambered, aluminum reinforced frame offers superior strength.

Deep drainage gutters allows for excellent drainage through one way drainage slots in the face of the window. Weep holes prevent bugs and water from entering into the frame.

Double strength glass (4 mm thick) provides superior resistance to breakage, either from potential burglars or flying debris in a storm.

**Stainless Steel
Spacer**

**Self Cleaning
Coating**

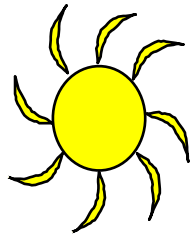
Argon Gas

**Deep Drainage
Gutter**

Raised Vinyl Track

**High Impact
Frame**

Insulating Glass: Basic Components



Outdoor
Light

Triple Layer Low E Coating

Optimal
Space
with
Argon

Striated Stainless
Steel Spacer

Butyl
Primary Seal
(structural barrier)

Silicone
Secondary
Seal
(structural barrier)

NEAT
Coating

Desiccant
(drying agent)

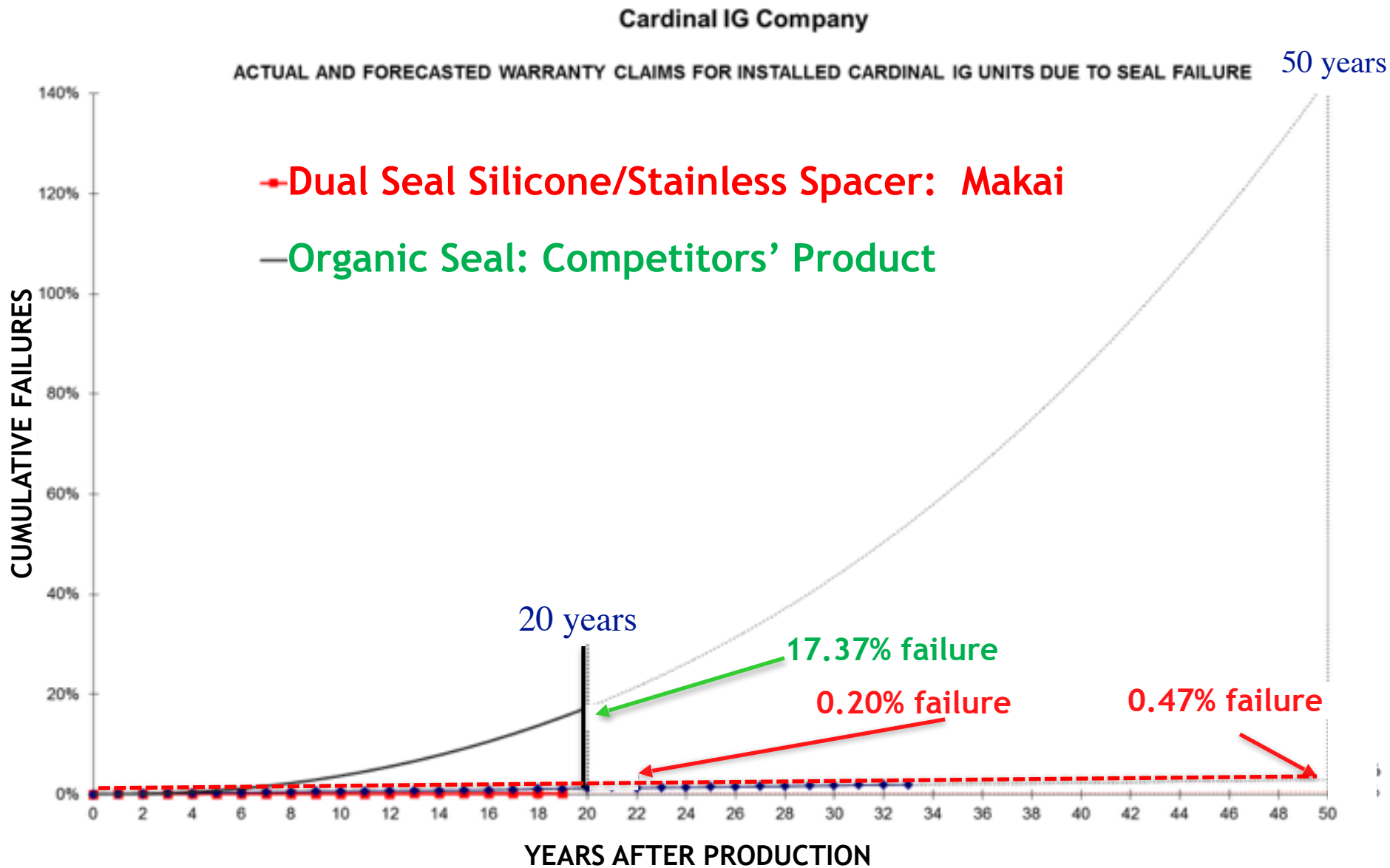
*surface #1
(outside)*

surface #2

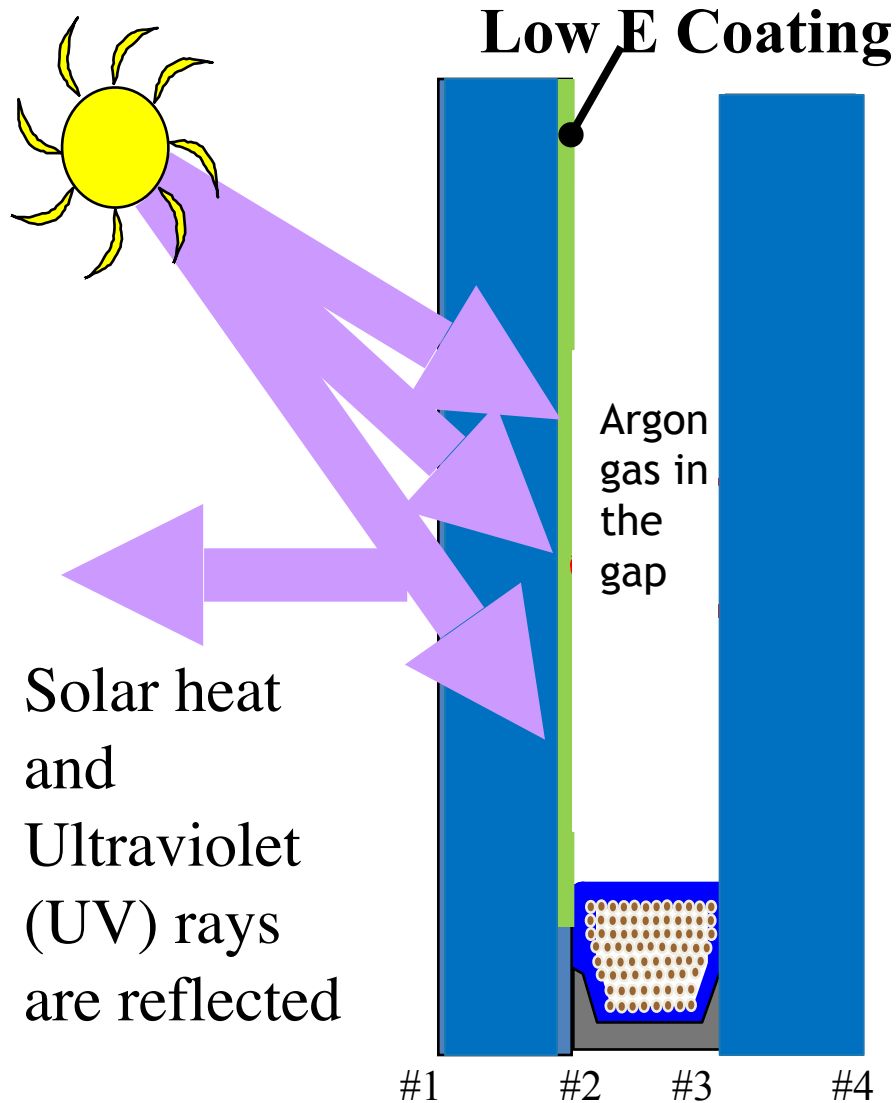
surface #3

*surface #4
(room side)*

Makai Windows Glass Unit Reliability



Triple Layer Low E: How does it work?



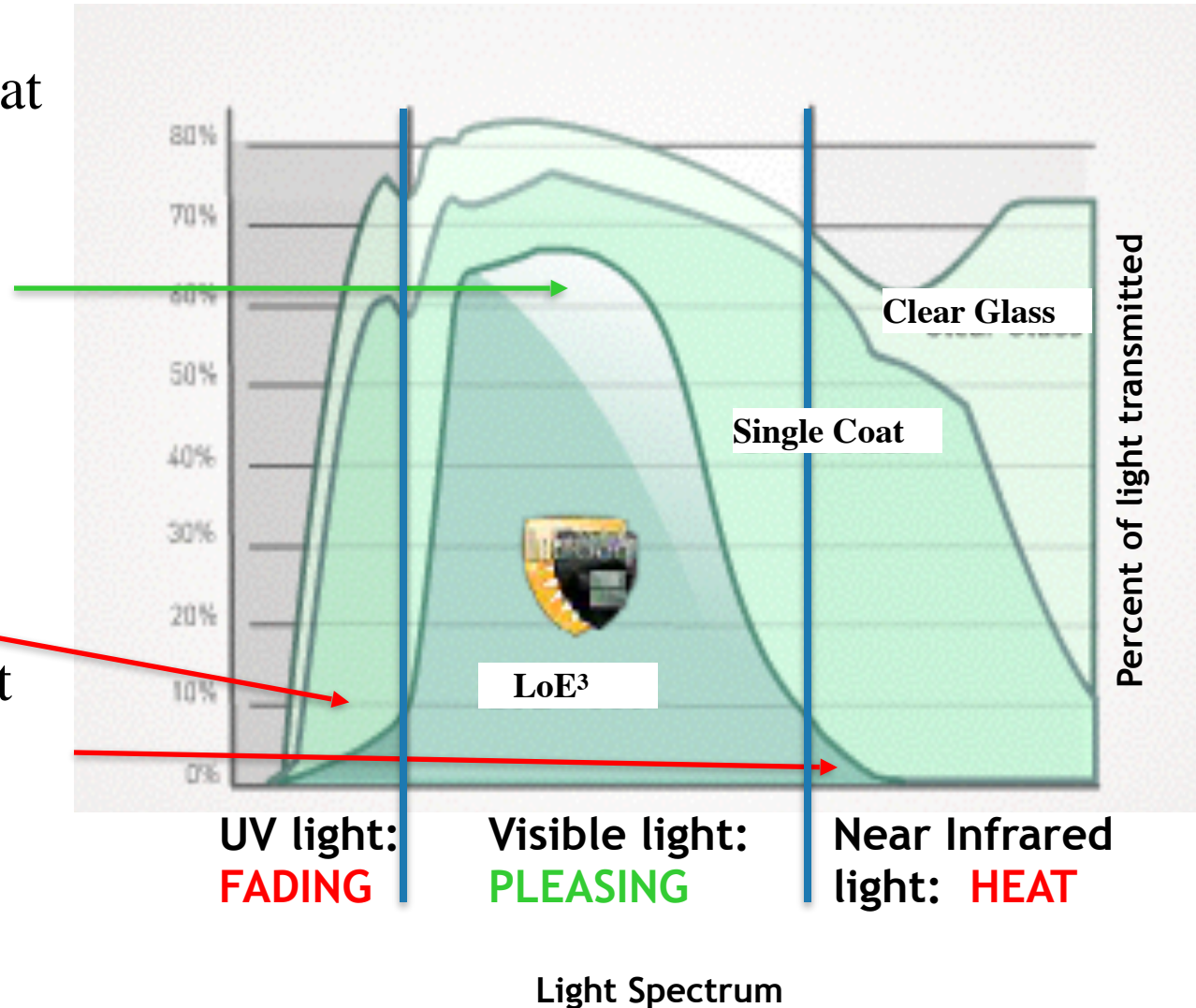
- Low E triple-coat (LoE³) is specially formulated to reflect the sun's heat without affecting the view.
- LoE³ also provides exceptional fading protection by blocking 95% of the sun's damaging UV rays.

Cardinal's LoE³ Coating is Spectrally Sensitive

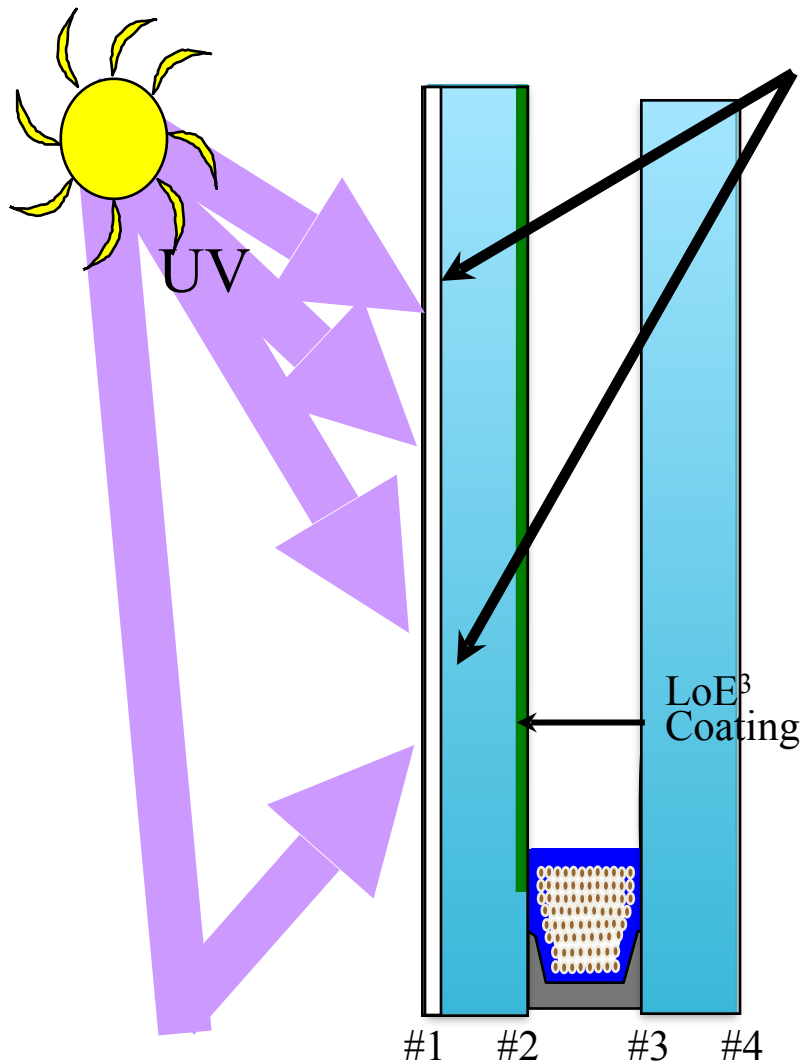
The LoE³ triple coat

ALLOWs light to
enter the home

BLOCKS
UV light and
Near Infrared Heat



NEAT: How does it work?



NEAT Titanium Dioxide Coating

Activated by UV from the sun:

Direct

Reflected or

Diffuse

Creates a ***photo-active surface***

Loosens dirt, dust, and
organic material

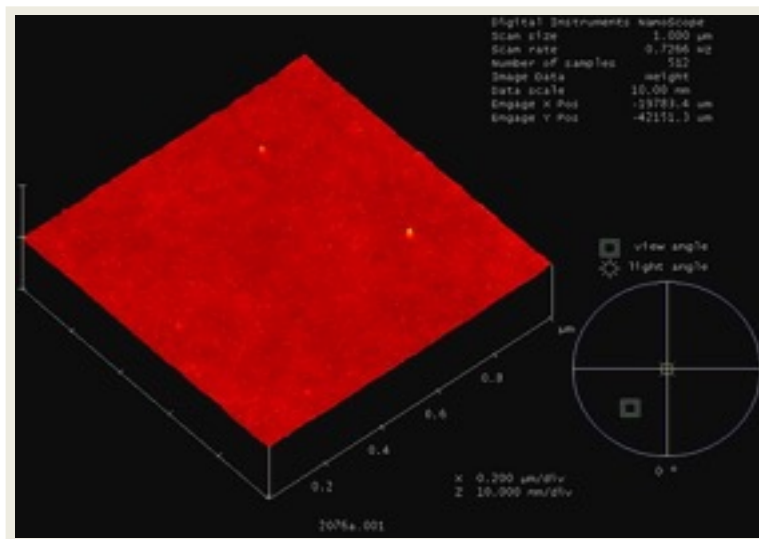
Creates a ***hydrophilic surface***

Washes away dirt, dust, &
organic material

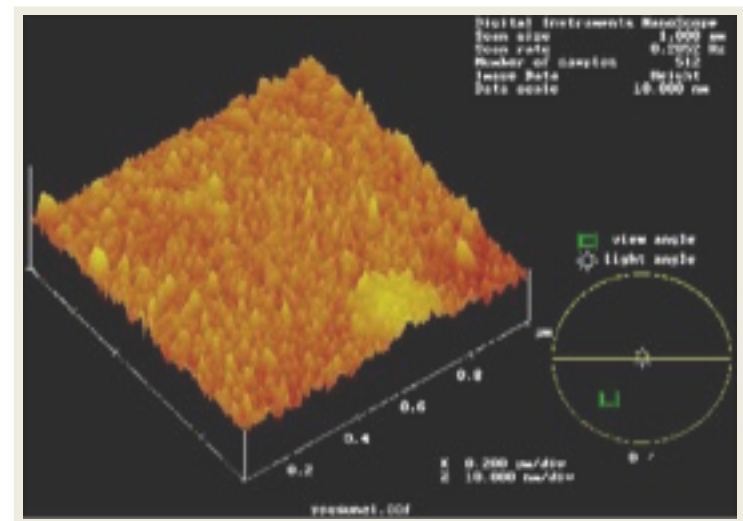
Surface Roughness

Photomicrograph images

NEAT coated glass provides a smoother surface which makes the glass easier to clean.



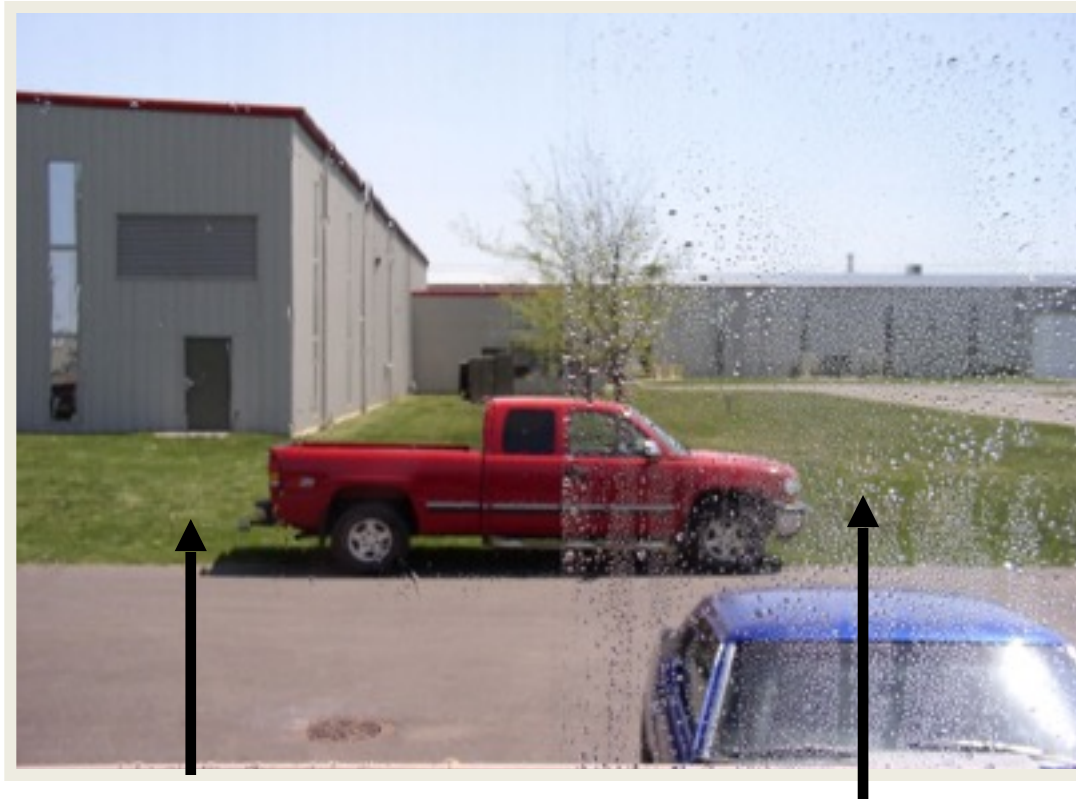
NEAT Photoactive Glass



PPG Photoactive Glass

NEAT Titanium Dioxide Coating

See the difference!

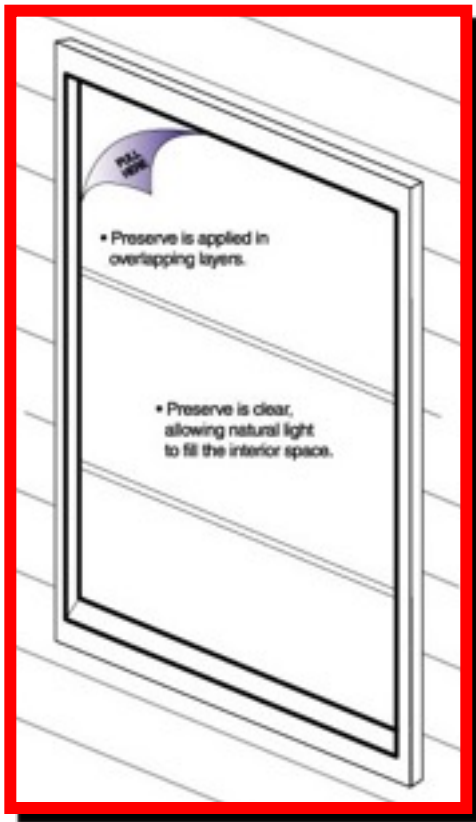


With TiO₂

Without TiO₂

- **Hydrophilic Surface**
 - Sheeting action
 - Reduces water spots
 - Dries faster
 - Reduces dirt build-up
- **Photoactive Surface**
 - Loosens dirt and organic material

CHARACTERISTICS of



- Applied to all Makai products
- Clear
- Allows natural light to the room's interior
- Applied to interior and exterior surfaces
- Compatible with NEAT

U-VALUES

The Makai Range

SHGC / VT						Structural
<i>Product Syle</i>	<i>Premium</i>	<i>Supreme</i>	<i>Supreme (SW)</i>	<i>30/30 Standard (California Energy Star)</i>	<i>Energy Star Standard</i>	<i>AAMA/WD/CSA 101/LS.2/A44 0-08</i>
PW	0.27 0.23 / 0.54	0.21 0.31 / 0.53	0.21 0.21 / 0.47	0.29 0.23 / 0.54	0.29 0.35 / 0.60	CW-PG45
XO, OX	0.29 0.22 / 0.51	0.21 0.29 / 0.49	0.23 0.19 / 0.44	0.29 0.22 / 0.51	0.30 0.33 / 0.56	LC-PG35
SH	0.29 0.22 / 0.51	0.24 0.29 / 0.50	0.24 0.19 / 0.45	0.30 0.22 / 0.51	0.30 0.33 / 0.56	LC-PG25
XOX	0.29 0.22 / 0.51	0.23 0.29 / 0.49	0.23 0.19 / 0.44	0.29 0.22 / 0.51	0.30 0.33 / 0.56	LC-PG35
DH	0.29 0.20 / 0.47	0.23 0.23 / 0.46	0.23 0.18 / 0.42	0.29 0.20 / 0.47	0.30 0.31 / 0.53	LC-PG25
	Dual Glaze	Triple Glaze	Triple Glaze	Dual Glaze	Dual Glaze	Latest Test Result
	Triple Silver	Double Silver	Triple Silver	Triple Silver	Double Silver	
	UV Self Clean	Single Silver	Single Silver	Argon	Argon	
	Argon Foam	Argon Foam	Argon Foam			

Structural Performance

Window Model	Window Group	Window Type	Size (R0)	Test	Air Infiltration at 25 mph	Water Resistance	Water Resistance Equivalent in MPH	Structural Test	Structural Test Equivalent in MPH	AAMA Rating	Design Pressure (DP)
The Makai Range	Clima	Slider	108 x 60	AAMA/CSA 101/LS.2/A440-05	.09 CFM/FT²	5.25 psf	45.8 mph	52.5 psf	145.00 mph	HS-C35	35
	Clima	Single Hung	44 x 60	AAMA/CSA 101/LS.2/A440-05	.12 CFM/FT²	4.50 psf	42.40 mph	45.00 psf	134.00 mph	H-R30	30
	Clima	Single Hung	44 x 77	AAMA/CSA 101/LS.2/A440-05	.16 CFM/FT²	3.75 psf	38.70 mph	38.00 psf	109.60 mph	H-R20	20
	Clima	Picture Window	80 x 78	AAMA/CSA 101/LS.2/A440-05	.02 CFM/FT²	6.75 psf	52.00 mph	52.50 psf	145.00 mph	FW-C35	35
	Clima	Double Hung	44 x 60	AAMA/CSA 101/LS.2/A440-05	.14 CFM/FT²	4.50 psf	42.40 mph	45.00 psf	134.00 mph	H-R30	30
	Clima	Double Hung	44 x 77	AAMA/CSA 101/LS.2/A440-05	.26 CFM/FT²	4.50 psf	42.40 mph	38.00 psf	109.60 mph	H-R20	20
	Pal	Casement Awning	36 x 72	AAMA/CSA 101/LS.2/A440-05	.19 CFM/FT²	12.00 psf	69.30 mph	82.50 psf	181.80 mph	C-C55	55
	Pal	Casement Awning	108 x 84 (6 panel)	AAMA/CSA 101/LS.2/A440-05	.09 CFM/FT²	12.00 psf	69.30 mph	45.00 psf	134.00 mph	C-C35	35
	Pal	Slider	108 x 66	AAMA/CSA 101/LS.2/A440-05	.10 CFM/FT²	8.25 psf	57.40 mph	45.00 psf	134.00 mph	HS-LC30	30
	Pal	Slider	71 x 56	AAMA/CSA 101/LS.2/A440-05	.10 CFM/FT²	9.00 psf	60.00 mph	68.00 psf	155.00 mph	HC-LC40	40
	Pal	Single Hung	44 x 75	AAMA/CSA 101/LS.2/A440-05	.10 CFM/FT²	8.25 psf	57.40 mph	82.50 psf	181.80 mph	H-LC-55	55
	Pal	Picture Window	72 x 72	AAMA/CSA 101/LS.2/A440-05	.01 CFM/FT²	12.00 psf	69.30 mph	75.00 psf	212.30 mph	FW-HC50	50
	Clima	Sliding Door Narrow Profile	87 x 83	AAMA/CSA 101/LS.2/A440-05	.08 CFM/FT²	6.75 psf	52.00 mph	37.50 psf	122.50 mph	SD-LC25	25
	Clima	Sliding Door Narrow Profile	96 x 96	AAMA/CSA 101/LS.2/A440-05	.11 CFM/FT²	5.25 psf	45.80 mph	38.00 psf	109.60 mph	SD-R20	20
	Clima	Sliding Door Wide Profile	96 x 96	AAMA/CSA 101/LS.2/A440-05	.19 CFM/FT²	3.75 psf	38.70 mph	38.00 psf	109.60 mph	SD-R20	20

AAMA = American Architectural Manufacturers Association

R = Residential
 LG = Light Commercial
 C = Commercial
 HC = Heavy Commercial

The American Architectural Manufacturers Association (AAMA) has become widely recognized for developing voluntary standards to test and validate the performance and quality of windows, doors and skylights. The current AAMA/MAA/WDA 1011.5.2 specification establishes stringent standard for the testing of windows in the following categories:

Design Pressure (DP): Resistance to wind and other dynamic pressures. The higher the DP rating of a window or door, the more resistant it will be to the effects of wind and other pressures.

Air Infiltration: Air infiltration is the amount of air leaking through a window or door. The lower the air infiltration rating, the better. To pass, a window cannot exceed 0.3 CFM/Sq Ft of air infiltration with a 25 mph wind.

Water Resistance: The ability of a window to withstand leakage from a wind driven rain. Windows are rated on a pass/fail basis.

Makai Range Elite Series

Windows & Doors

- Offers the latest in window and glass technology
- Heavy grade aluminum frames
- Ultra slim sight lines
- Glass options:
 - Single and Double Pane Glass
 - High Performance Low E Triple Coat Glass
 - Laminated Glass
- Tested in hurricane strength winds
- Marine grade stainless steel hardware
- Stainless steel locks
- Lifetime Warranty

Makai Range Elite Series

Windows & Doors

- Unlimited Configurations
 - Sliding, stacking, pocketed and corner doors
- Custom and Standard sizes
 - From 5 to 50 feet wide and up to 12 feet high
- Customized Finishes
 - Anodized clear, bronze, and custom matched colors
 - Kynar AAMA 2605 paint finishes in metallic, exotic, and custom matched colors
 - Hundreds of woodgrain finish options Perfectly simulate real wood



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THANK YOU

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