



from **MARVIN**  
Windows and Doors

Built to perform.®

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# ULTREX<sup>®</sup> FIBERGLASS

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QUITE POSSIBLY  
THE PERFECT  
BUILDING MATERIAL<sup>®</sup>

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# BUILD WITH INTEGRITY

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Our values and work ethic are forged by the communities where we're proud to make our quality products. When you choose Integrity® windows and doors, you support a small-town, family-owned and -operated company with deep roots in the community; some Marvin® employees are third- and fourth-generation, following the family tradition. We share profits with our employees; we support our communities; we treat our dealers and customers fairly and with respect.

**At Integrity, we believe it is essential to live up to our name.**

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Third- and fourth-generation Marvin family members active at Marvin Windows and Doors.

**From Susan Marvin:**

*“At Integrity from Marvin Windows and Doors, we didn’t join the fiberglass windows and doors industry – we pioneered it. In 1994, Integrity was born from The Marvin Companies’ century-long heritage of service, craftsmanship and quality with a focus on all-out performance.”*

## TABLE OF CONTENTS

Ultrex® fiberglass is Built to Perform® in every challenge that a window or door can face, and we can prove it. In this overview, we break down the performance properties of Ultrex fiberglass and prove why Integrity® windows and doors are the best choice for your next project.

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# BUILT TO PERFORM®

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Integrity® windows and doors are made with Ultrex® pultruded fiberglass, which outperforms and outlasts vinyl, roll-form aluminum and vinyl/wood composites. We use Ultrex and our proprietary pultrusion process to manufacture windows and doors that stand the test of time.

We are dedicated to leading the way in innovation and we never forget the cornerstones of our business. We are highly selective in choosing our business partners – including independently owned dealers and distributors – to ensure our customers have the best experience possible. We use a fast and efficient manufacturing and delivery system so our products are received quickly and when expected. We create products to be easily installed and operable with virtually no maintenance required.

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## THREE POWERFUL PRODUCT LINES



**WOOD-ULTREX:** Wood-Ultrex windows and doors feature exteriors of Ultrex fiberglass and beautiful, real-wood interiors made with finely milled pine.

**ALL ULTREX:** Windows and doors made with Ultrex fiberglass construction inside and out to provide exceptional strength and durability.

**IMPACT:** Window and door products made specifically for coastal conditions that can magnify the effects of weather on a home. Impact Zone 3 (IZ3) hurricane rated.



**THE MATERIAL  
YOU CHOOSE FOR YOUR  
WINDOWS AND DOORS  
MATTERS**

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## **WHAT IS ULTREX PULTRUDED FIBERGLASS?**

Integrity windows and doors are built with Ultrex®, a highly durable, state-of-the-art, pultruded fiberglass that significantly outlasts and outperforms vinyl and vinyl/wood composites in virtually every way. This pioneering technology benefits from over 20 years of proven performance in the field.

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**“FIBERGLASS WINDOWS HAVE A 38% LONGER USEFUL LIFE EXPECTANCY THAN VINYL.”<sup>(1)</sup>**

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## **VINYL & VINYL/WOOD COMPOSITES (FIBREX®):**

Vinyl is not very strong. It has a high rate of expansion and contraction and can get soft and brittle with changing temperatures. This can lead to sagging headers, seal failures, stress cracks and poor operation. Vinyl/wood composites, like Fibrex®, are 60% vinyl infused with wood fibers and struggle from the same durability and performance issues as their vinyl counterparts.

1. "Life cycle assessment of windows for the North American residential market: Case Study,"  
The University of British Columbia, Scandinavian Journal of Forest Research, 2008

# HOW STRONG?

## MONSTER TRUCK STRONG.

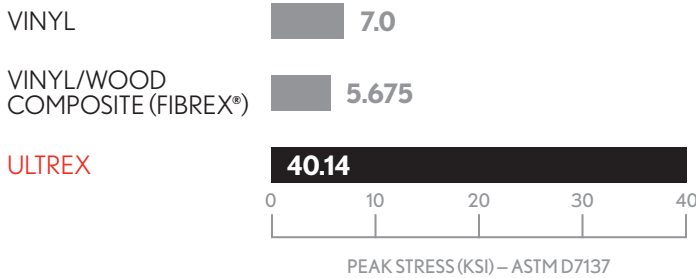
One square inch of our state-of-the-art building material can support

# 34,000 lbs.

That's more than the weight of TWO of these gigantic monster trucks.

### TENSILE STRENGTH:

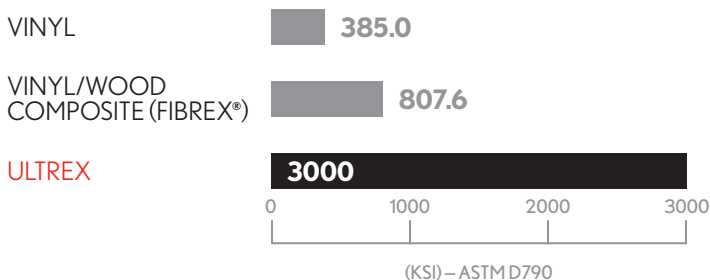
Stress-tested to the point of failure to avoid your stress being tested to anywhere near those levels.



### FLEXURAL MODULUS:

**Ultrex® is 8 times stronger than vinyl.**

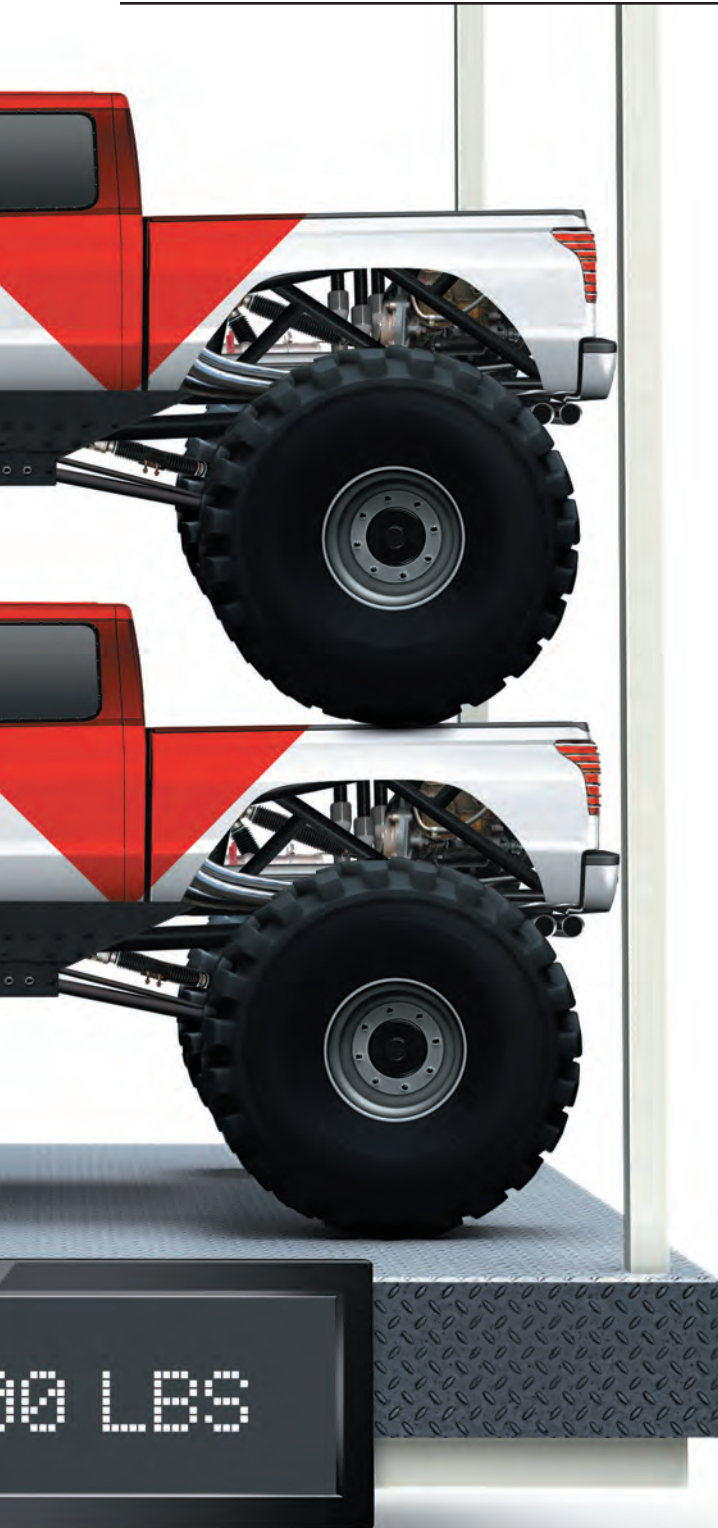
We know how far our material bends and flexes so you don't have to worry. That's confidence that vinyl and vinyl/wood composites, like Fibrex®, can't deliver.



—  
**STRONG  
AS  
STEEL**  
—

—  
**8x  
STRONGER  
THAN VINYL**  
—

—  
**3x  
STRONGER  
THAN FIBREX®**  
—



## IMPACT RESISTANCE:

Ultrtex fiberglass can take a lot of hits – like wind, branches, rain, hail and even a direct hit from a baseball.

VINYL/WOOD  
COMPOSITE (FIBREX®)

14

ULTREX

44



MFE (in \*LBF) – ASTM D5628

## WHY DOES STRENGTH MATTER?

Stronger material is highly impact resistant and able to handle whatever life throws at it.

Stronger windows bend and flex less. This helps maintain the seals and window operation, year after year.

Stronger material will not crack or separate. It weathers better against everyday wear and stands the test of time.

**BECAUSE GOOD ENOUGH ISN'T  
STRONG ENOUGH.**

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# HOW SUPERIOR IS THE FINISH?

**IT'S THE BEST.**

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Endless rain? Got it. Heavy wind? No problem.

**48,000 hours of sun<sup>(1)</sup>**

can't fade the superior finish of Ultrex<sup>®</sup> fiberglass.

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## WHY AN ACRYLIC FINISH?

The orange light to the right is acrylic, while the rest of the car is painted. The auto industry learned decades ago that acrylic lights outlast a painted finish. Similarly, Ultrex employs an acrylic finish to provide long-term color retention and durability.

## BEAUTY THAT LASTS.

Our patented, high-performance, co-extruded capping process is unlike anything else in the industry and provides a thick, even acrylic finish that is free of pinholes, striations and imperfections and will resist scratches, fading and chalking to retain its original beauty.

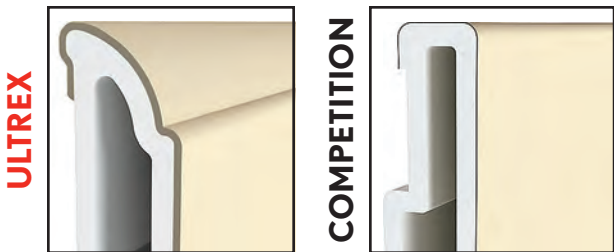




**3X  
THICKER  
FINISH THAN THE  
COMPETITION**

**100%  
PAINTABLE**

**INDUSTRY'S  
BEST  
FIBERGLASS  
FINISH**



With a finish that is 3 times thicker than competitive finishes, Ultrex® was developed to not crack, dent, chip or peel.

It's easy to see the difference between the Ultrex patented, mechanically bonded finish and the competition's painted finish.

## INDUSTRY'S BEST FIBERGLASS FINISH

Ultrex is the *first and only* fiberglass finish to be third-party verified to AAMA 624-10 finish specifications.

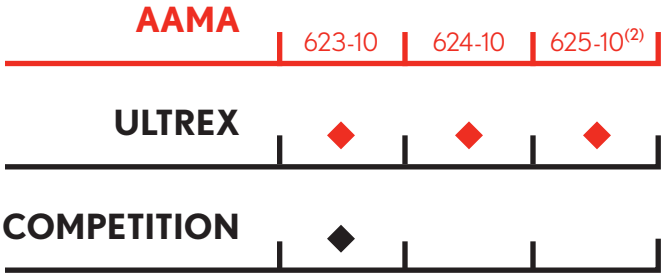
The patented Ultrex finish performs so well that, unlike vinyl, we offer it in dark colors, like Ebony, without fear of increased heat loads, UV degradation or fading.

## WHY DOES A SUPERIOR FINISH MATTER?

The patented finish resists scratches, chalking and fading even in dark colors.

Superior finish that is 100% paintable to match any home without impacting the protective properties of Ultrex.

Virtually maintenance-free – no sanding, scraping or painting.



## BECAUSE A GOOD ENOUGH FINISH ISN'T ENOUGH.

1. Average sunlight exposure per 10 years  
 2. The Ultrex patented coating system is listed under the AAMA Verified Components List (VCL) for AAMA 625-10, with the exception of the long-term outdoor weather performance test, which is currently in progress

# HOW ENERGY EFFICIENT?

## SO EFFICIENT, THE LOWER ENERGY BILLS WILL BE AS ATTRACTIVE AS THE WINDOWS AND DOORS.

### ULTREX CAN TAKE THE HEAT. OR COLD.

Constant expansion and contraction can gradually break down windows and doors, causing poor operation, leaky seals and a loss of structural integrity.

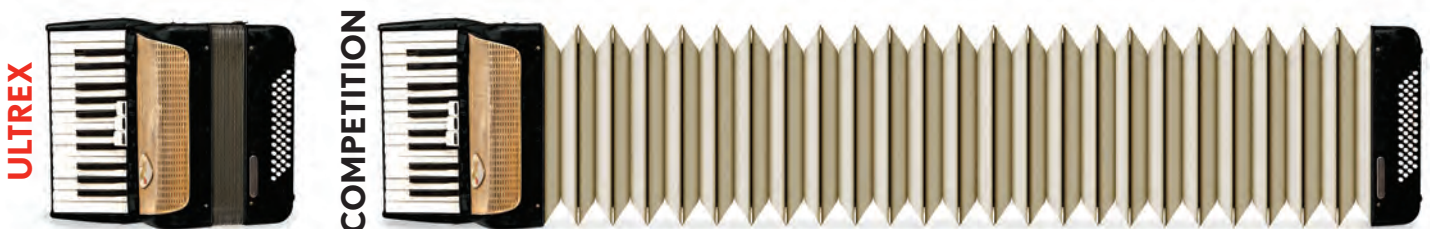
Ultrex® expands at virtually the same rate as glass and maintains a tight seal, so it's resistant to leaks, seal failures and stress cracks that can compromise energy efficiency and long-term performance.



Integrity® from Marvin® windows and doors combine the low conductivity and superior performance attributes of Ultrex with a selection of energy-efficient glazing options to deliver ENERGY STAR® qualified solutions and beyond.<sup>(1)</sup>

### VINYL CAN'T.

Vinyl and vinyl/wood composites are **thermoplast** materials, which means they have the potential to change shape when they are exposed to extreme temperatures. In extreme heat, they could soften, melt, sag and reform. In the cold, they could become brittle and break. Ultrex is a **thermoset** material that is cured and hardened into a shape, like concrete. This curing process is an irreversible chemical reaction, which means doors and windows made of Ultrex will not melt or lose their true shape, even when exposed to extreme temperatures of up to 350° F. It also means they perform in all types of weather.



Heat and cold can take their toll on vinyl and vinyl/wood composites, causing welded corners to fail. Windows and doors constructed of Ultrex maintain tightly mitered corners and joinery throughout changing temperatures.

**8X**  
LESS EXPANSION THAN  
**VINYL**

**34%**  
**LOWER**  
HEATING COSTS<sup>(2)</sup>

**38%**  
**LOWER**  
COOLING COSTS<sup>(2)</sup>

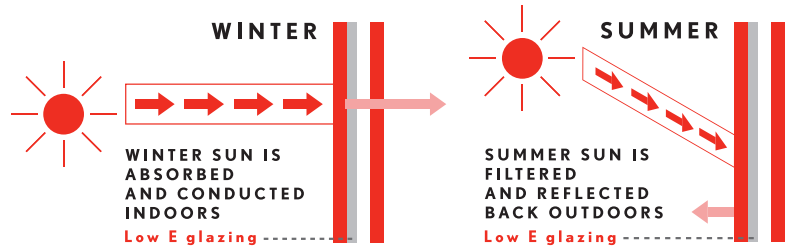
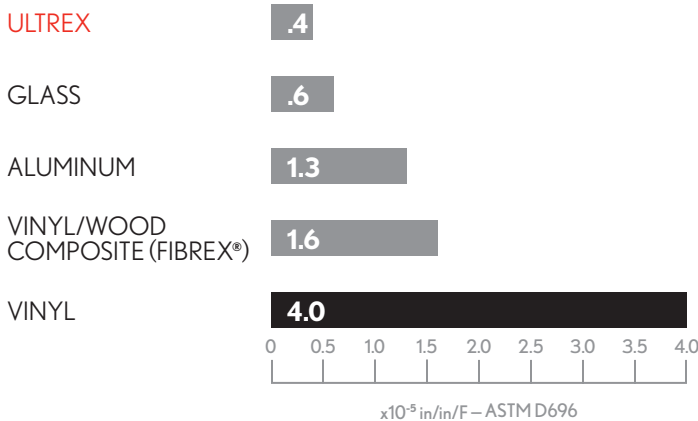
## THERMAL CONDUCTIVITY

Windows with low conductivity reduce heat loss in homes, which translates to lower energy bills. Ultrex is 500 times less conductive than roll-form aluminum, so homes retain more heat in the winter and stay cooler in the summer.

Integrity's dual-pane windows made from Ultrex® with Low E coatings can reduce window heat loss, cut heating costs by 34% in cold climates and cut cooling costs by 38% in warm climates.<sup>(2)</sup>

## EXPANSION AND CONTRACTION

Ultrex expands and contracts at virtually the same rate as glass and 8 times less than vinyl.



## WHY DOES ENERGY EFFICIENCY MATTER?

Integrity's ENERGY STAR® qualified products can save 15% in energy costs and lower energy bills.<sup>(1)</sup>

Ultrex helps keep heat inside during cooler weather and block the sun's rays during warmer weather.

Ultrex expands and contracts at virtually the same rate as glass to resist seal failures that can compromise energy efficiency.

## BECAUSE EFFICIENT ENOUGH ISN'T ENOUGH.

1. ENERGY STAR at [energystar.gov](http://energystar.gov)

2. Sustainable Energy Coalition at [sustainableenergycoalition.org](http://sustainableenergycoalition.org)

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# HOW DURABLE? JOB SITE DURABLE.

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## We pioneered Ultrex fiberglass over 20 years ago.

We created Ultrex® pultruded fiberglass to build windows and doors – strength usually reserved for boats, bridges and hardhats.<sup>(1)</sup>

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### WHAT TOUGH IS MADE OF:

Fiberglass has an amazing strength-to-weight ratio, which is one of the reasons why it's the material of choice for boats, bridges, guardrails, ladders and hardhats.<sup>(1)</sup> It's highly durable, doesn't leak, corrode or rot and resists expanding and contracting in temperature swings. **Ultrex fiberglass is 8 times stronger** than vinyl and far more durable.

### TOUGH. LONG-LASTING. UNBLEMISHED.

Just like the reputations of the contractors, builders and architects who use it. Ultrex has virtually all the characteristics you'd want in a material used to make windows and doors. It's super strong, rigid, heat resistant, non-corrosive and stays true and square for easy, efficient installation.



1. Boats and hardhats are molded fiberglass

HEAT  
RESISTANT

NON-  
CORROSIVE

LOW  
MAINTENANCE

RAW FIBERGLASS STRANDS

PULTRUDED FIBERGLASS

PATENTED CO-EXTRUDED ACRYLIC CAP



THIN WALL CONSTRUCTION

## WHAT ULTREX IS MADE OF:

Ultrex® is made by taking thin strands of strong glass cables and saturating them with specifically compounded resins. This material innovation was pioneered by Marvin®, bringing over 20 years of unmatched experience, tooling and component optimization to every Integrity® product.

## WHY DOES DURABILITY MATTER?

A patented acrylic finish means no worries about gouging, denting, scuffing and marring, keeping projects on time and within budget.

Durable windows stay true and square for easy, efficient installation.

Durable windows perform consistently in all types of weather and require virtually no maintenance, ensuring happy homeowners.

**BECAUSE GOOD ENOUGH ISN'T DURABLE ENOUGH.**

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# HOW DOES ULTREX WITHSTAND COASTAL WEATHER?

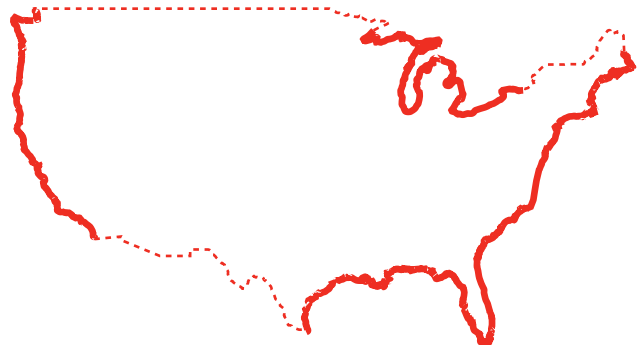
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Seasonal hurricanes. Blasting sand. Salt spray.

**For Ultrex, it's just another day at the beach.**

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The coastal environment is one of the harshest environments windows and doors face, and Ultrex® is more than up to the test. Ultrex is non-corrosive, a must on the coast, but it's the combination of its performance characteristics that really make it stand out under the harshest conditions. Through heat, cold, wind and rain, Ultrex keeps performing beautifully, which means you can trust it to perform for your next project no matter what the weather has in store.



**FOR HOMES AND BUILDINGS ALONG THE COAST, ULTREX IS QUITE POSSIBLY THE PERFECT BUILDING MATERIAL® – HOLDING UP TO THE HARSHTEST CONDITIONS MOTHER NATURE CAN DISH OUT.**



The IZ3 (Impact Zone 3) icon demonstrates that the window has passed every extensive test required to be used in Atlantic and Gulf Coast hurricane zones. IZ3 windows will hold up against winds from 120-140mph, have undergone intense pressure testing, and can withstand a hit from an 8-foot-long 2x4 stud moving 50 feet per second.

# For those who know, Ultrex is not a choice. It's THE CHOICE.

The characteristics that separate Ultrex® from other windows and doors truly make it Quite Possibly the Perfect Building Material®. That's why builders, contractors, architects and homeowners alike think of Integrity® products made with Ultrex as THE CHOICE when choosing windows and doors for their homes.

	VINYL	VINYL/WOOD COMPOSITE (FIBREX®)	ULTREX FIBERGLASS
THERMOPLASTIC/THERMOSET	THERMOPLASTIC	THERMOPLASTIC	THERMOSET
REINFORCEMENT	NONE	WOOD FIBER	GLASS FIBER
HEAT DEFLECTION TEMPERATURE	163° F	173° F	350° F
TENSILE STRENGTH	7.0 ksi	5.675 ksi	40.14 ksi
FLEXURAL MODULUS	385 ksi	807.6 ksi	3000 ksi
CTE (x10 <sup>-5</sup> in/in/F)	4.0	1.6	0.4
SURFACE FINISH	PVC	PVC, POLYESTER URETHANE, ACRYLICS	ACRYLIC (AAMA CERTIFIED)
COATING HARDNESS	NA/SUBSTRATE	B (HARDNESS) 15.00 (BARCOL)	H (HARDNESS) 35.03 (BARCOL)
THERMAL CONDUCTIVITY <sup>(1)</sup>	.10	.13	.12
IMPACT RESISTANCE	NA	14 MFE (in * lb <sub>f</sub> )	44 MFE (in * lb <sub>f</sub> )

**References:** Stork Technimet/Testing Corporation: #0602-15293, #0512-14889, #0704-19702, #TCT006638P. Precision Measurements and Instruments Corporation: #13043-DS. Tecton: # ESPO10521P, "Test Results for Fibrex® and Ultrex". Plastics Engineering Handbook of the Society of Plastics Industry, Inc. Fifth Edition. Andersen Fibrex® Manual: "A High Performance, High Value Biofiber Polymer Composite Technology". Renewal by Andersen: "Fibrex® Material: A Better Alternative, A Better Window".

1. Highest rate of thermal conductivity shown. Test results range from .10-.13 for vinyl/wood composite (Fibrex®) and .09-.12 for Ultrex.

See videos about the durability and incredible performance of Ultrex® at  
**[IntegrityWindows.com/Ultrex](http://IntegrityWindows.com/Ultrex)**



**Visit [IntegrityWindows.com](http://IntegrityWindows.com)**

for the Integrity dealer nearest you and  
to see why Integrity windows and doors  
are the best choice for your next project.



from **MARVIN**  
Windows and Doors

Built to perform.®



Built around you.®

Integrity is backed by The Marvin® Windows and Doors' century-long heritage  
of service, craftsmanship and quality with a focus on all-out performance.