

The image shows a storefront window system with a white frame. The background behind the glass is a fiery orange and yellow scene with flying debris, suggesting a fire or explosion. The window is divided into several panes. In the center, there is a logo for 'FORCE FRONT BLAST'. The logo is in a stylized, metallic font with a red triangle pointing right in the 'E' of 'FRONT'. Below 'FRONT' is the word 'BLAST' in red. The logo is flanked by six white diamond shapes. A registered trademark symbol (®) is located to the right of the logo.

FORCE FRONT
BLAST®

TUBELITE®
DEPENDABLE

LEADERS IN ECO-EFFICIENT STOREFRONT,
CURTAINWALL AND ENTRANCE SYSTEMS



Blast criteria vary by project and selecting the appropriate product with the right glass and anchorage is challenging even for experienced professionals. Tubelite has simplified this process by creating an online form to collect necessary product design requirements. Customers can send all available information including plans and specs to estimating@tubeliteinc.com for assistance with providing the performance specified at a competitive price.

www.tubeliteinc.com/blast-checklist/



The screenshot shows the Tubelite website's 'Blast Project Design Criteria Checklist' form. The form includes sections for:

- PRODUCTS:** A list of product categories such as Storefront, Entrances, Curtainwall, Interior Finishing, Window Wall, Operable Windows, Sun Controls, Thermal-Block, ForceFront Storm, ForceFront Blast, Architectural Aluminum Finishes, Design Manual, Product Updates, Literature, and Industry Resources.
- Customer Information:** Fields for Customer Name, Customer Account #, Contact Name, and Contact Email.
- Project Information:** Fields for Project Name and Project Address.
- Standoff Distances:** Fields for Standoff Distance for Charge Weight I and II.
- Level of Protection:** Radio buttons for Very Low, Low, Other, and a text field for 'Other'.
- GSA/ISC:** Fields for Pressure, Impulse, and Duration, with a 'Design Method' section for Glass Capacity/Balanced Design or Design to Load.
- VA:** Fields for Governing VA Document, Version, Pressure, Impulse, and Glazing Performance Condition at Lead.
- Attachments:** A section for 'Attached Plans & Specs or other files here' with a 'Drop files here or SELECT FILES' button.
- Submission:** A 'SUBMIT' button at the bottom.

ForceFront Blast Standard Entrance Type	MAXIMUM DOOR SIZES (Width x Height)	MAXIMUM BLAST CAPACITY	
		Charge Weight WI	Charge Weight WII
MEDIUM STILE	Single Door – 3' x 7'	WI @ 76 ft (14.6 psi / 84.6 psi-msec)	WII @ 32 ft (36.4 psi / 84.0 psi-msec)
	Double Door – 6' x 7'	WI @ 121 ft (6.5 psi / 51.0 psi-msec)	WII @ 50 ft (13.4 psi / 50.8 psi-msec)
MEDIUM STILE with removable mullion	Double Door – 6' x 7'	WI @ 76 ft (14.6 psi / 84.6 psi-msec)	WII @ 32 ft (36.4 psi / 84.0 psi-msec)
WIDE STILE	Single Door – 3' x 7'	WI @ 79 ft (13.6 psi / 81.0 psi-msec)	WII @ 32 ft (36.4 psi / 84.0 psi-msec)
	Single Door – 4' x 8'	WI @ 87 ft (11.3 psi / 72.9 psi-msec)	WII @ 36 ft (27.3 psi / 73.4 psi-msec)
	Double Door – 6' x 7'	WI @ 100 ft (8.8 psi / 62.6 psi-msec)	WII @ 45 ft (16.6 psi / 57.1 psi-msec)
	Double Door – 8' x 8'	WI @ 130 ft (5.8 psi / 47.2 psi-msec)	WII @ 55 ft (11.2 psi / 45.7 psi-msec)
WIDE STILE with removable mullion	Double Door – 6' x 7'	WI @ 79 ft (13.6 psi / 81.0 psi-msec)	WII @ 32 ft (36.4 psi / 84.0 psi-msec)
	Double Door – 8' x 8'	WI @ 87 ft (11.3 psi / 72.9 psi-msec)	WII @ 36 ft (27.3 psi / 73.4 psi-msec)

ForceFront Blast Monumental Entrance Type	MAXIMUM DOOR SIZES (Width x Height)	MAXIMUM BLAST CAPACITY	
		Charge Weight WI	Charge Weight WII
MEDIUM STILE	Single Door – 3' x 7'	WI @ 76 ft (14.6 psi / 84.6 psi-msec)	WII @ 32 ft (36.4 psi / 84.0 psi-msec)
	Double Door – 6' x 7'	WI @ 121 ft (6.5 psi / 51.0 psi-msec)	WII @ 50 ft (13.4 psi / 50.8 psi-msec)
MEDIUM STILE with removable mullion	Double Door – 6' x 7'	WI @ 76 ft (14.6 psi / 84.6 psi-msec)	WII @ 32 ft (36.4 psi / 84.0 psi-msec)
WIDE STILE	Single Door – 3' x 7'	WI @ 79 ft (13.6 psi / 81.0 psi-msec)	WII @ 32 ft (36.4 psi / 84.0 psi-msec)
	Single Door – 4' x 8'	WI @ 87 ft (11.3 psi / 72.9 psi-msec)	WII @ 36 ft (27.3 psi / 73.4 psi-msec)
	Double Door – 6' x 7'	WI @ 100 ft (8.8 psi / 62.6 psi-msec)	WII @ 45 ft (16.6 psi / 57.1 psi-msec)
	Double Door – 8' x 8'	WI @ 130 ft (5.8 psi / 47.2 psi-msec)	WII @ 55 ft (11.2 psi / 45.7 psi-msec)
WIDE STILE with removable mullion	Double Door – 6' x 7'	WI @ 79 ft (13.6 psi / 81.0 psi-msec)	WII @ 32 ft (36.4 psi / 84.0 psi-msec)
	Double Door – 8' x 8'	WI @ 87 ft (11.3 psi / 72.9 psi-msec)	WII @ 36 ft (27.3 psi / 73.4 psi-msec)

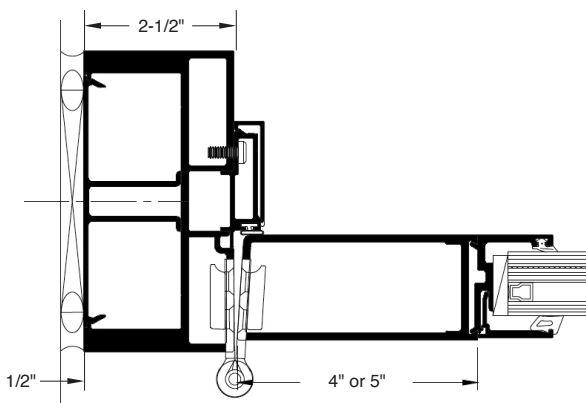


Tubelite ForceFront Blast Standard Medium & Wide Stile Entrances



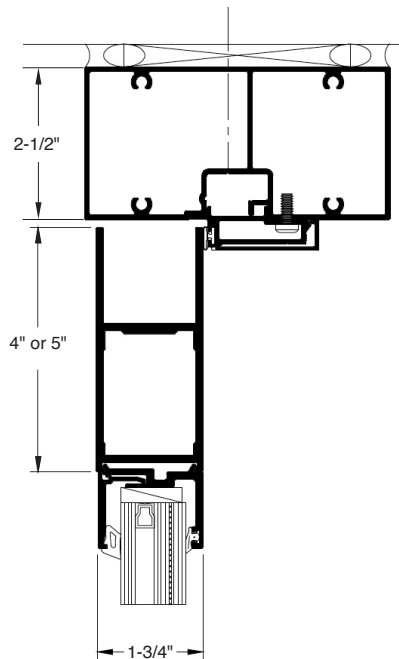
Tubelite ForceFront Blast Standard Stile are designed for compliance requirements. These Blast Hazard Mitigation doors are gasket glazed with 9/16" - 1-3/16" thick laminated glass with an option for wet glazing when desired. Door frames are non-thermal, and are available with options for heavy-wall extrusions and steel reinforcing where required. Thresholds are equipped with bulb weatherseal gaskets and are ADA accessible. Hinging hardware options include heavy duty mortised butts and continuous gear hinges. A wide variety of locking, push/pull hardware, and door closers are allowed.

A complete evaluation performed by a Professional Engineer is required for each project.



Door glass is 9/16" - 1-3/16" thickness.

Storefront glass is 1-5/16" thickness.



Standard Entrance Series	Medium Stile	Wide Stile
Traffic	Light to Moderate	
Vertical Stile 1-3/4" x	4"	5"
Top Rail 1-3/4" x	4"	5"
Bottom Rail 1-3/4" x	10"	10"
Maximum Sizes	Single: 4'0" x 8'0" Pair: 8'0" x 8'0"	Single: 4'0" x 8'0" Pair: 8'0" x 8'0"

- Blast loads - up to 36 psi - 84 psi*msec
- Door Opening Sizes from Single 3'0" x 7'0" to Double 8'0" x 8'0"
- 1-3/4" depth enabling a variety of hardware options
- In house technical support to assist with project requirements
- Standard 2 year warranty can be extended to 10 years

Tubelite ForceFront Blast Standard Medium and Wide Stile Entrances

Application: Schools, Universities, Hospitals, Offices, Billeting, Command and Control, Maintenance, and Training Facilities

Description: Medium Stile 4-1/2" and Wide Stile 6" models; top rails in 4-1/2" and 6" heights; and bottom rails in 10" for ADA compliance

Glass:	Air Infiltration:	Structural: Blast Hazard Mitigation	U-Factor** Single Door:	U-Factor** Double Door:
9/16", 11/16" lami 1-1/16", 1-3/16" insulated	1.0 CFM / Ft.2 @ 1.57 PSF	up to 36 psi - 84 psi* msec Charge I - 76' standoff Charge II - 32' standoff	Medium: 0.74 Wide: 0.77	Medium: 0.69 Wide: 0.73

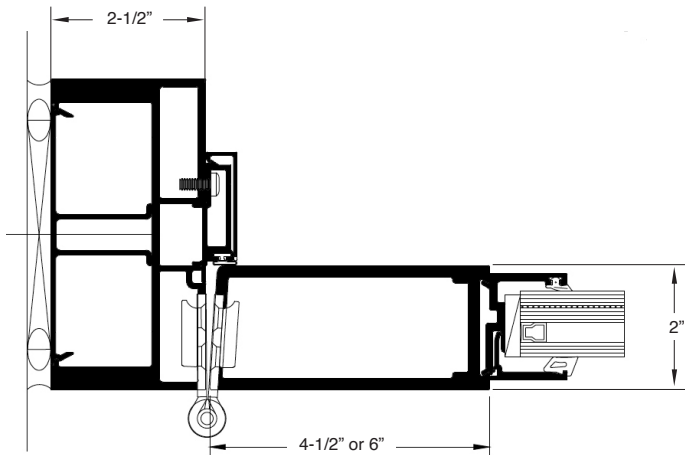
** U-Factor per NFRC 100: COG = 0.24 with warm edge spacer, 1-3/4" x 4-1/2" non-thermal frame.



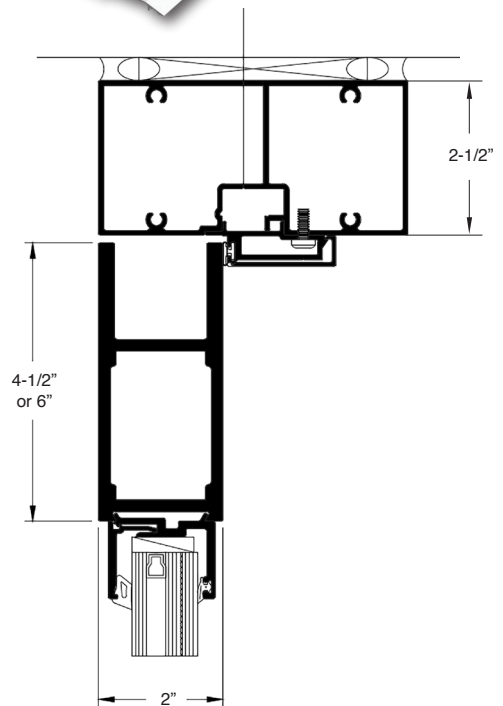
Tubelite ForceFront Blast Monumental Entrances

Tubelite ForceFront Blast Monumental Stile are designed for compliance requirements. These Blast Hazard Mitigation doors are gasket glazed with 9/16" - 1-3/16" thick laminated glass with an option for wet glazing when desired. Door frames are non-thermal, and are available with options for heavy-wall extrusions and steel reinforcing where required. Thresholds are equipped with bulb weatherseal gaskets and are ADA accessible. Hinging hardware options include heavy duty mortised butts and continuous gear hinges. A wide variety of locking, push/pull hardware, and door closers are allowed.

A complete evaluation performed by a Professional Engineer is required for each project.



Door glass is 9/16" - 1-3/16" thickness.
Storefront glass is 1-5/16" thickness.



Standard Entrance Series	Medium Stile	Wide Stile
Traffic	Heavy	Heavy
Vertical Stile 2" x	4-1/2"	6"
Top Rail 2" x	4-1/2"	6"
Bottom Rail 2" x	10"	10"
Maximum Sizes	Single: 4'0" x 8'0" Pair: 8'0" x 8'0"	Single: 4'0" x 8'0" Pair: 8'0" x 8'0"

- Blast loads - up to 36 psi - 84 psi*msec
- Door Opening Sizes from Single 3'0" x 7'0" to Double 8'0" x 8'0"
- 1-3/4" depth enabling a variety of hardware options
- In house technical support to assist with project requirements
- Standard 2 year warranty can be extended to 10 years

Tubelite ForceFront Blast Monumental Stile Entrances

Application: Schools, Universities, Hospitals, Offices, Billeting, Command and Control, Maintenance, and Training Facilities

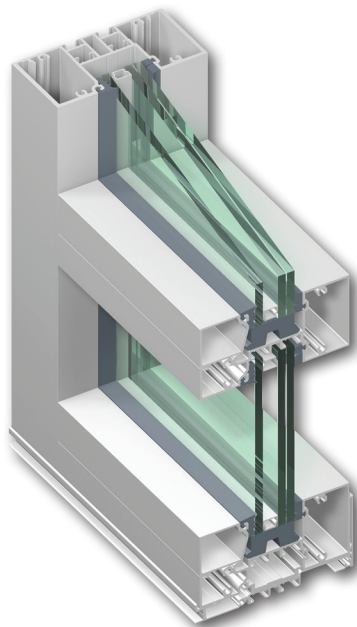
Description: Medium Stile 4-1/2" and Wide Stile 6" models; top rails in 4-1/2" and 6" heights; and bottom rails in 10" for ADA compliance

Glass:	Air Infiltration:	Structural: Blast Hazard Mitigation	U-Factor** Single Door:	U-Factor** Double Door:
9/16", 11/16" lami 1-1/16", 1-3/16" insulated	1.0 CFM / Ft.2 @ 1.57 PSF	up to 36 psi - 84 psi* msec Charge I - 76' standoff Charge II - 32' standoff	Medium: 0.78 Wide: 0.82	Medium: 0.73 Wide: 0.77

** U-Factor per NFRC 100: COG = 0.24 with warm edge spacer, 1-3/4" x 4-1/2" non-thermal frame.



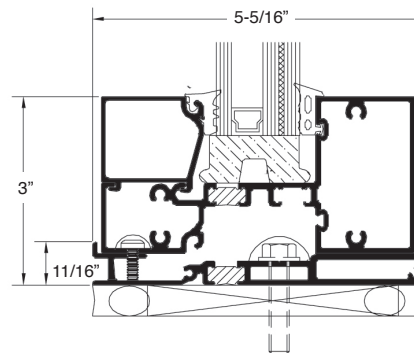
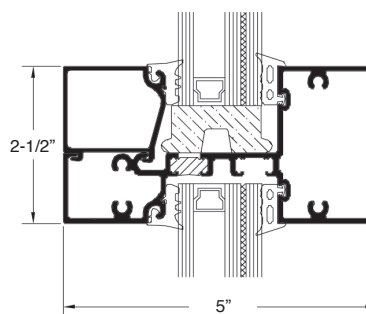
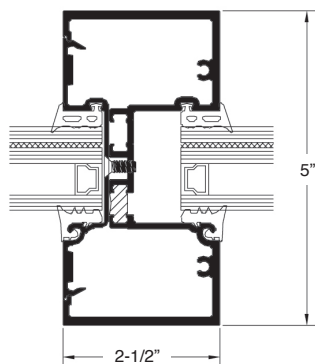
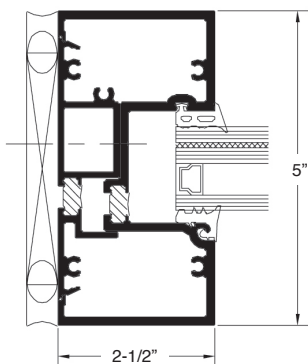
Tubelite ForceFront Blast E/T34000 Storefront



Tubelite ForceFront Blast E/T34000 Storefront is designed for compliance requirements. This blast resistant screw-spline framing is designed to be glazed with 1-5/16" laminated glass positioned in the center of the frame.

ForceFront standard and monumental stile entrances compliment the 34000 storefront system providing a complete blast resistant system that's easy to fabricate and install.

A complete evaluation performed by a Professional Engineer is required for each project.



Door glass is 9/16" - 1-3/16" thickness.

Storefront glass is 1-5/16" thickness.

System Features:

- Improved thermal performance
- Additional glazing options
- Higher load capacity
- Easier installation
- Each project must be analyzed separately for compliance based on its unique factors

ForceFront Blast Standard and Monumental Entrance Doors:

- 4'0" x 8'0" single doors through 8'0" x 8'0" pairs

Tubelite ForceFront Blast E/T34000 Storefront

Application: Low and mid-rise commercial buildings including retail, office, healthcare, schools, etc.

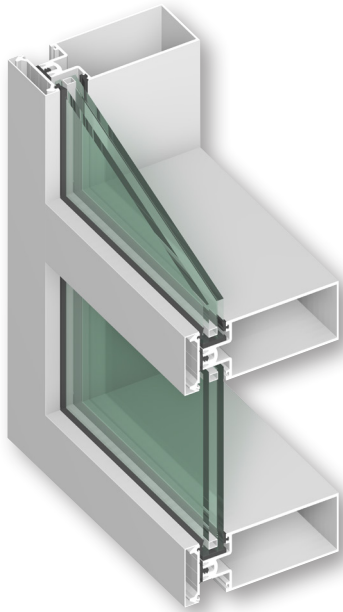
Description: 2-1/2" x 5" field glazed, screw spline construction blast resistant storefront.

Frame Width:	Overall Depth	Glass Thickness	Air Infiltration	Structural: Blast Hazard Mitigation	Water Infiltration	U-Factor:**	CRF:	Sound Transmission
2-1/2"	5"	1-3/16" to 1-5/16"	0.06 CFM/Ft.2@ 6.24 PSF	Charge I - 121' standoff Charge II - 50' standoff	15 PSF - Static 15 PSF - Dynamic	0.37	59 frame 69 glass	36 STC 32 OITC

** U-Factor per NFRC 100: COG = 0.24 with warm edge spacer.



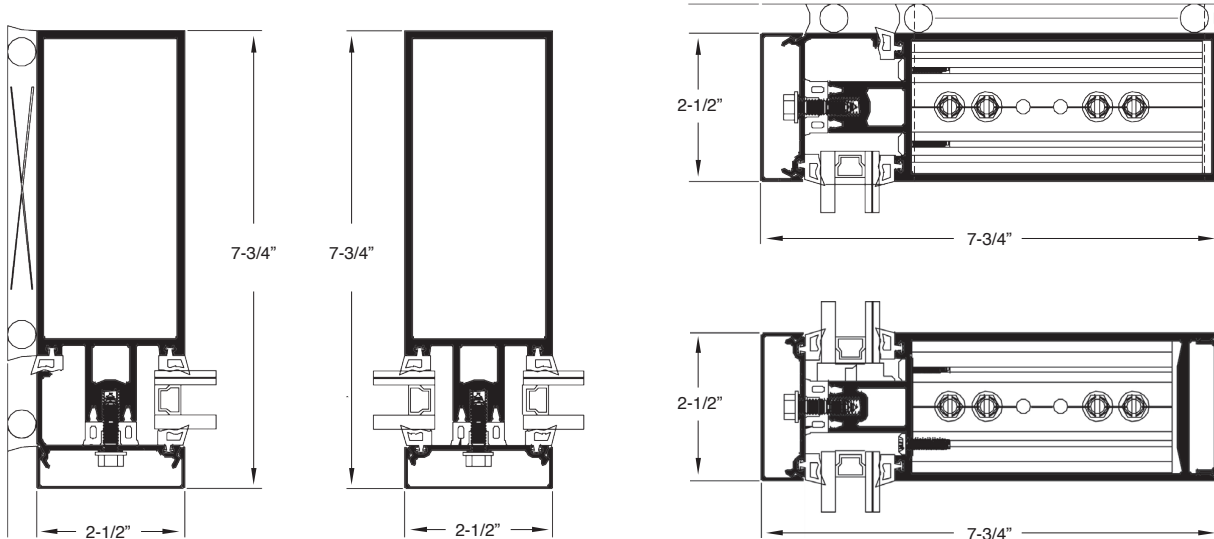
Tubelite ForceFront Blast 400T Curtainwall



Tubelite ForceFront Blast Curtainwall is designed for compliance requirements. This blast resistant shear-clip framing is designed to be glazed with 1" to 1-1/2" laminated glass positioned to the front of the frame.

ForceFront Blast standard and monumental stile entrances compliment this system providing a complete blast resistant wall system that's easy to fabricate and install.

A complete evaluation performed by a Professional Engineer is required for each project.



System Features:

- Improved thermal performance
- Additional glazing options
- Higher load capacity
- Easier installation
- Each project must be analyzed separately for compliance based on its unique factors

Tubelite ForceFront Blast 400CW Curtainwall

Application: Low-Rise storefront, center set glass, outside glazed

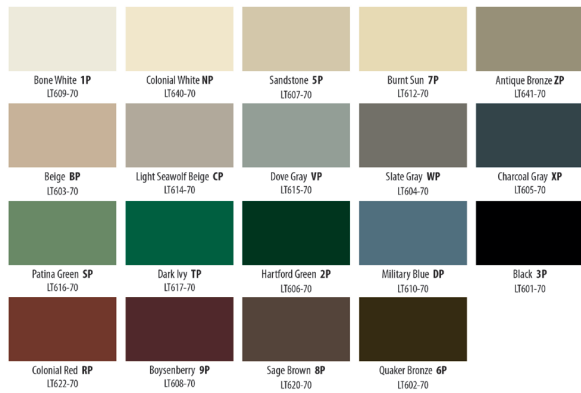
Frame Width:	Overall Depth	Glass Thickness	Air Infiltration	Structural: Blast Hazard Mitigation	Water Infiltration	U-Factor:**	CRF:
2-1/2"	7-3/4"	1" to 1-1/2"	0.06 CFM/Ft.2@ 6.24 PSF	Charge I - 80' standoff Charge II - 30' standoff	15 PSF – Static 15 PSF – Dynamic	0.38	73 frame 70 glass

** U-Factor per NFRC 100: COG = 0.24 with warm edge spacer.

Anodized Finishes



Standard Painted Colors – 70% PVDF



NOTE: Colors shown are not exact and are intended for planning purposes. For actual job, Tubelite® will supply Linetec color chips.

www.tubeliteinc.com • 800-866-2227 • Fax 877-299-2414 • 3056 Walker Ridge Drive NW, Suite G, Walker, Michigan 49544

Painted and Anodized Finishes

In addition to our stocked Clear and Bronze anodized, and White painted finishes, Tubelite offers a wide variety of additional standard anodized and painted colors. Blended custom colors are also available, providing you with an infinite variety of options. More than a palette of pretty colors, our finishes are tough and backed by some of the best warranties in the industry.

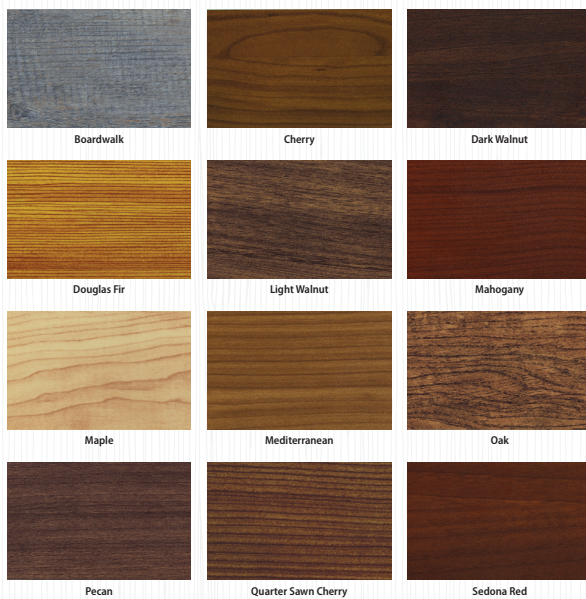
See Tubelite's Standard Finish Color Guide for detailed information on the exceptional performance, integrity and weatherability of our durable anodized finishes. This guide also gives specifications for color retention, erosion resistance and gloss retention of our high-quality, painted finishes.



**AAMA 2605
10 YEAR FINISH
WARRANTY**

70% Kynar premium painted finishes are guaranteed for 10 years against fading, chalking, and gloss reduction.

Textured Wood Grain Finishes



For Samples Email: marketing@tubeliteinc.com

Note: Colors shown are not exact and are intended for planning purposes. Due to the natural characteristics of the finish, minimal variations in color and grain can be expected. Please check with Tubelite Inc. for availability and pricing.

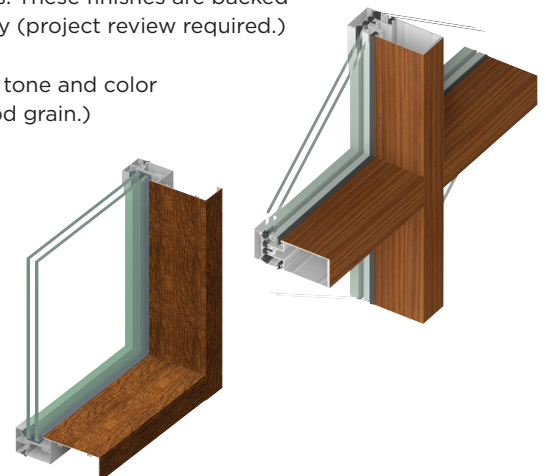
Wood Grain Finishes

When your design requires more than a stock color, our wood grain textures are ready to dazzle. Wood grain finishes by Tubelite have the look and feel of natural wood with the durability and recyclability of aluminum. No more refinishing due to salt, dirt and UV exposure. Our wood grain finishes are designed for the toughest environment and clean easily with mild soap and water.

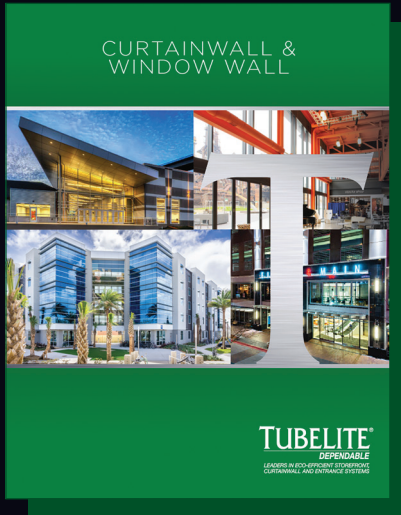
Wood Grain Finishes by Tubelite can be applied to the interior and exterior of Tubelite's storefront, curtainwall, sunshade and light shelf devices.

Tubelite offers the look and feel of natural wood with 12 wood grain finishes. These finishes are backed with a 5 year warranty (project review required.)

(Finishes may vary in tone and color within the same wood grain.)



**WARRANTY Wood Grain finishes by Tubelite® meet AAMA 2604 with a 5 year warranty.



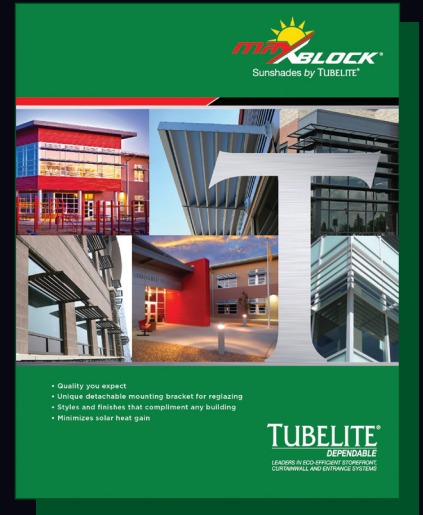
Tubelite Curtainwall Product Brochure

This brochure contains our 400 Series Curtainwall, 200 Series Curtainwall and Finishes.



Tubelite Thermi=Block Product Brochure

This brochure contains our high performance thermally broken doors, storefronts, and curtainwall systems.



Tubelite MaxBlock® Sunshades Product Brochure

MaxBlock brochure includes Tubelite's four sun shade designs, Airfoil, "Z" Blade, Tubular and Single Blade along with Highlighting the benefits of these sun shades.

TUBELITE®

DEPENDABLE

LEADERS IN ECO-EFFICIENT STOREFRONT, CURTAINWALL AND ENTRANCE SYSTEMS

3056 Walker Ridge Dr. NW, Suite G
Walker, Michigan 49544

800-866-2227
www.tubeliteinc.com

