

**PRODUCT**                      **ForceFront Blast Entrance Series**  
 Standard and Monumental – Medium and Wide stile

**TEST RESULTS**

Air Infiltration	ASTM E283	1.0 cfm/ft <sup>2</sup> @ 1.57 psf
Structural – Design Load	ASTM E330	up to +/- 70 psf
Structural – Overload	ASTM E330	up to +/- 105 psf
Forced Entry	AAMA 1304	300 lb point load
Blast Testing – Shock Tube	ASTM F 2927	6 psi - 42 psi*msec Door Response: Cat III Hazard Glazing Response: Minimal Hazard
Blast Analysis	FINITE ELEMENT ANALYSIS	Up to 36 psi - 84psi*msec See TABLE 1, page 2 Maximum Blast Capacities and Door Sizes

**TEST LAB**

**Quast Testing  
 and Consulting (QCT)**  
 Mosinee, WI 54455

**Intertek**  
 York, PA 17406

**Applied Research  
 Associates Inc (ARA)**  
 Vicksburg, MS 39180

Report Number	QCT18-4953.01-R1	K1920.01-119-12-RO	ARA-TR-21-004032-06
Test Date	12/27/2011 – 5/30/2012	10/29/19 – 10/31/19	Finite Element Analysis
Report Date	6/28/2012	4/10/20	4/1/2021

Reference reports in above table for complete test specimen description and approved product applications.  
 Contact a Tubelite representative for more information.

Tubelite Representative:

 (sign) 4/1/2021 (date)  
 Tim Fookes - Vice President of Engineering (title)

**TEST METHODS**

**Air Infiltration:** ASTM E283-04, *Standard Test Method for Determining Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen.* Testing was conducted at 1.57 psf positive static air pressure difference.

**Structural Performance:** ASTM E330-14, *Standard Test Method for Structural Performance of Exterior Windows, Skylights and Curtain Walls by Uniform Static Air Pressure Difference.* Testing was conducted up to +/- 70 psf design loads and +/- 105 psf overloads. Allowable Criteria: Design - L/175 deflection normal to wall plane for clear spans up to 13'-6". Overload – net permanent set shall not exceed 0.2% of the clear span.

**Forced Entry:** AAMA 1304-02, *Voluntary Specification for Forced Entry Resistance of Side-Hinged Door Systems.* Specimens tested using a 300lb point load.

**ASTM F 2927-12:** *Standard Test Method for Door Systems Subject to Airblast Loadings.*

**Product Type:** Double Door Assembly

TITLE	SPECIMEN #1	SPECIMEN #2	SPECIMEN #3
ASTM Door Response Hazard Rating	CAT III	CAT III	CAT III
ASTM Glazing Response Hazard Rating	Minimal Hazard	Minimal Hazard	Minimal Hazard
Average Peak Reflected Pressure	6.86 psi	6.96 psi	7.13 psi
Average Positive Phase Impulse	44 psi-msec	45 psi-msec	47 psi-msec
Average Positive Phase Duration	13.14 msec	13.12 msec	13.36 msec

**FINITE ELEMENT ANALYSIS:                      TABLE 1 – MAXIMUM BLAST CAPACITIES and DOOR SIZES**

ForceFront Blast Monumental Door Type	MAXIMUM DOOR SIZES (Width x Height)	MAXIMUM BLAST CAPACITY	
		Charge Weight <b>WI</b>	Charge weight <b>WII</b>
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 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)