

HURRICANE - RESISTANT PRODUCTS

TYPE	FRAME DEPTH (inches)	SERIES	TEST SIZE (inches)	POSITIVE DESIGN PRESSURE (psf)	NEGATIVE DESIGN PRESSURE (psf)	WATER TEST PRESSURE (psf)	FL APPROVAL #	MISSILE		WIND ZONE	TEST STANDARD	
								LARGE	SMALL		ASTM	TAS
HORIZONTAL SLIDING												
HORIZONTAL SLIDING	3/4	HI0300	150 x 60	60	80	11		✓	✓	4	✓	
FIXED WINDOWS												
FIXED	3/4	HI1200	55 x 96	60	80	12		✓	✓	4	✓	✓
FIXED	4	HI1400	48 x 72	60	60	12	10084.6	✓		3	✓	✓
			48 x 72	100	150	12		✓		N/A	✓	
			42 x 42	43	61	6.45		✓		N/A	✓	
			58 x 73½	70	100	12				N/A	✓	
FIXED (High Performance)	4	HIS1400HP	84 x 92	35	60	12		✓	✓	3	✓	
FIXED (Single Plane)	4	HIS1400SP	40 x 99	35	60	12		✓	✓	3	✓	
			24 x 83½	50	80	12	✓	✓	3	✓		
FIXED (Offset)	4	HIS1400 Offset	60 x 106	80	80	12		✓	✓	3	✓	
			78 x 106	35	60	12	✓	✓	3	✓		
			48 x 83½	50	80	12	✓	✓	3	✓		
SINGLE & DOUBLE HUNG												
SINGLE HUNG SIDE LOAD	3/4	HI2000	50 x 80	60	80	10		✓		3	✓	
SINGLE HUNG SIDE LOAD	3/4	HI2000 Twin	98 x 80	56	70	10		✓		3	✓	
SINGLE HUNG SIDE LOAD	4	HI2200	35 x 121	80	90	12		✓	✓	3	✓	
DOUBLE HUNG SIDE LOAD	4	HI2200	48 x 102	45	65	9.75	10083.2	✓		4	✓	✓
CASEMENT / PROJECTED / FIXED												
PROJECTED-HOPPER	3 3/8	HI6200	60 x 108	60	60	12		✓		4	✓	
FIXED	3 3/8	HI6200	59 x 78	60	60	12		✓		4	✓	
FIXED	3½	HIS6300	48 x 80	80	120	12		✓	✓	3	✓	✓
FIXED-OVER-HOPPER	2¼	HI6500	48 x 96	50	50	12		✓		3	✓	
CASEMENT	3½	HI6800	48 x 48	60	60	9	10082.2	✓		N/A		✓
			48 x 48	70	70	9	✓		3	✓	✓	
			42 x 72	90	120	12	10082.1	✓		N/A		✓
FIXED-OVER-AWNING (Twin)	3½	HI6800	120⅞ x 96	55	65	8.25		✓		N/A		✓
FIXED-OVER-AWNING (Single)	3½	HI6800	60 x 96	55	65	8.25		✓	✓	N/A		✓
FIXED	3½	HI6800	48 x 80	80	80	12		✓		3	✓	✓
			48 x 72	90	120	12	10084.8	✓		N/A		✓
SLIDING GLASS DOORS												
SLIDING GLASS DOOR	4	HI0900	84 x 82	60	60	12		✓		4	✓	
			72 x 84	70	100	11	10080.3	✓		N/A		✓
SWINGING DOORS & ENTRANCES												
TERRACE DOOR (SINGLE)	3/4	HIS7400	42 x 96	70	70	12	8890.1	✓		N/A		✓
			39½ x 96½	80	110	12	11656.1	✓		4	✓	✓
TERRACE DOOR (DOUBLE)	3/4	HIS7400	60 x 98	50	80	12		✓	✓	3	✓	

Table 1 - Missile Types & Velocity

Missile Level	Missile Description	Impact Speed	
		ft/sec	mph
A	Steel ball, Weight: 2g ± 5%	130	89
B	2x4 lumber, Weight: 2.0 lb. ± 0.25 lb. Length: 1 ft - 9 in. ± 4 in.	50	34
C	2x4 lumber, Weight: 4.5 lb. ± 0.25 lb. Length: 4 ft - 4 in. ± 4 in.	40	27
D	2x4 lumber, Weight: 9.0 lb. ± 0.25 lb. Length: 8 ft. ± 4 in.	50	34
E	2x4 lumber, Weight: 9.0 lb. ± 0.25 lb.	80	55

Table 2 - Missile Req'd by Elevation & Wind Zone

Wind Zone	Wind Speed (mph)	Enhanced Protection (Essential Facilities)		Basic Protection	
		≤30 ft	>30 ft	≤30 ft	>30 ft
1	110	D	D	C	A
2	120	D	D	C	A
3	130	E	D	D	A
4	>140	E	D	D	A

Table 3 - Cycle Test Load Requirements

Seq	Applied Load Direction	Load Range (% of Rated Design Pressure)		# of Cycles
		Low Limit	High Limit	
1	Positive	20%	50%	3,500
2	Positive	0%	60%	300
3	Positive	50%	80%	600
4	Positive	30%	100%	100
5	Negative	30%	100%	50
6	Negative	50%	80%	105
7	Negative	0%	50%	50
8	Negative	20%	50%	3,350

TEST METHODS & SPECIFICATIONS

There are two basic test methods utilized in hurricane testing; HVHZ TAS 201, 202, and 203 (Florida Building Code) and ASTM E 1886. These documents describe the technique used to propel the airborne missile and impact the fenestration system. These test methods also include details for subjecting the test specimens to the required repetitive cyclical loads (see Table 3 below).

The referenced ASTM test method also has a corresponding specification, ASTM E 1996, that indicates what missile size and weight shall be used depending upon application and wind speed (see table 1 and 2), location of impact, pass/fail criteria, and substitution limitations. For example, 30 feet from grade and below is typically the zone for impact by a wood 2 x 4 (large missile), whereas above 30 feet from grade is the zone for impact by 2 gram steel ball bearings (small missile).

HURRICANE PRONE REGIONS

Basic Wind Speed for Risk Category II Buildings

