Wind Load Requirements (DS160)

Wind load testing has been performed on the Outsulation® System adhered to various substrates to determine its resistance to pulloff. The typical failure mode during testing is exterior grade gypsum sheathing being pulled off the stud framing. The Outsulation System remains intact as expected, based on bonding tests.

Wall design, therefore, should address the need to secure the exterior grade gypsum sheathing to the stud framing. This is accomplished by varying the screw spacing to meet design criteria. Obviously, the need to satisfy increased wind load requires screws to be spaced closer together. Refer to exterior grade gypsum sheathing manufacturer specification for screw spacing.

Once the distance between screws is such that the exterior grade gypsum sheathing will not be pulled off the studs, failure during testing may occur in the form of stud buckling. This can be addressed by increasing the stud size.

The substrate system must be engineered to withstand all applicable loads, including live, dead, positive and suction wind, seismic, etc. It is the responsibility of the architect and/or engineer to determine acceptable deflection criteria for the substrate and other building components. For proper support of the Dryvit Outsulation System, the maximum deflection of the substrate system shall not exceed L/240.

The equivalent static pressure or design wind pressure is a function of the kinetic energy of the moving air and is affected principally by the shape of the structure. The kinetic energy or velocity pressure is given by the formula $g_o=0.00256\ V^2$ where g_o is pressure in pounds per square foot and V is design wind velocity in miles per hour. Table 1 is included as a quick reference in relating wind pressure to wind velocity. The maximum recorded velocity for which a structure should be designed will depend upon the frequency with which this velocity occurs, the occupancy of the structure and the other factors which the designer must consider.

Dryvit Systems, Inc. has tested various mechanical fasteners; and although they are not necessary for satisfactory performance of the Outsulation System, their use may be permitted to suit design preference when Dryvit Systems' guidelines are strictly followed. Please consult Dryvit Systems, Inc. for specific recommendations regarding mechanical fastening systems.

It should be noted that the maximum distribution of wind load is achieved by adhesive rather than mechanical application of the insulation board to recommended substrates.
This information conforms to the standard detail recommendations and specifications for the installation of Dryvit Systems, Inc. products as of the date of publication of this document and is presented in good faith. Dryvit Systems, Inc. assumes no liability, expressed or implied, as to the architecture, engineering or workmanship of any project. To ensure that you are using the latest, most complete information, contact Dryvit Systems, Inc.

Table 1 - Wind Pressure (psf) vs. Wind Velocity (mph) PSF = .00256 (mph)^2

Psf	5.0	30.0	55.0	80.0	105.0	130.0	155.0	180.0	205.0	230.0
Mph	44.2	108.3	146.6	176.8	202.5	225.3	246.1	265.2	283.0	299.7
Psf	10.0	35.0	60.0	85.0	110.0	135.0	160.0	185.0	210.0	235.0
Mph	62.5	116.9	153.1	182.2	207.3	229.6	250.0	268.8	286.4	303.0
Psf	15.0	40.0	65.0	90.0	115.0	140.0	165.0	190.0	215.0	240.0
Mph	76.5	125.0	159.3	187.5	211.9	233.9	253.9	272.4	289.8	306.2
Psf	20.0	45.0	70.0	95.0	120.0	145.0	170.0	195.0	220.0	245.0
Mph	88.4	132.6	165.4	192.6	216.5	238.0	257.7	276.0	293.2	309.4
Psf	25.0	50.0	75.0	100.0	125.0	150.0	175.0	200.0	225.0	250.0
Mph	98.8	139.8	171.2	197.6	221.0	242.1	261.5	279.5	296.5	312.5

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