

# EFFECTIVE WIND VELOCITY FORMULA SHEET

ROHN recommends a minimum 75 mph Effective Wind Velocity be used for determining ballast requirements.

<b><math>V_e = C1 C2 V</math></b>
<p><math>V_e</math> = Effective Wind Velocity at centerline of antenna for calculating required ballast.  <math>C1</math> = Importance factor coefficient from Table 1.  <math>C2</math> = Combined exposure and gust effect factor coefficient from Table 2.  <math>V</math> = Design ground wind speed for location.</p>

<b>Table 1: Values of C1</b>		<i>Roof Height</i>	
Class	Description for installing considering height, use or location	≤ 60 ft.	60 ft. =>
I	Low hazard to human life and/or damage to property, optional services provided.	1.29	0.93
II	Significant hazard to human life and/or damage to property, services available by other means.	1.38	1.00
III	Substantial hazard to human life and/or damage to property, essential services provided.	1.48	1.07

Exposure	Description of Surrounding Terrain
B	Urban and suburban areas, wooded areas, or other terrain with numerous closely spaced obstructions having the size of single-family dwellings or larger.
C	Open terrain with scattered obstructions having heights generally less than 30' [9.1 m], including flat, open country and grasslands.
D	Flat, unobstructed shorelines exposed to wind flowing over open water, smooth mud flats, salt flats, and other similar terrain.

<b>Table 2: Values of C2</b>			
Antenna Centerline Elevation Above Ground Level (ft.)	Exposure		
	B Urban or Wooded Areas	C Open Country & Grasslands	D Open Water or Smooth Terrain
0-15	0.82	0.90	0.99
20	0.82	0.92	1.01
25	0.82	0.95	1.04
30	0.82	0.96	1.05
40	0.85	0.99	1.08
50	0.88	1.02	1.10
60	0.90	1.04	1.12
70	0.92	1.05	1.13
80	0.94	1.07	1.14
90	0.95	1.09	1.16
100	0.97	1.10	1.17
120	0.99	1.12	1.19
140	1.02	1.14	1.20
160	1.04	1.15	1.21
180	1.05	1.17	1.23
200	1.07	1.18	1.24
250	1.10	1.21	1.26
300	1.13	1.23	1.28
350	1.16	1.25	1.30
400	1.18	1.27	1.31
450	1.20	1.29	1.33
500	1.22	1.30	1.34

Example: 30' antenna elevation, 90 mph design ground wind speed, Class I, Exposure B  
 **$V_e - (1.29) (0.82) (90) = 95 \text{ mph}$**   
 The minimum Effective Wind Velocity for determining ballast requirements for this example would be 95 mph.

This data sheet is provided to assist consumers in determining the minimum Effective Wind Velocity to be used for determining ballast requirements from a ROHN Non-Penetrating Roof Mount Ballast Chart. Higher velocities may be required for sites located on hills, escarpments or ridges (refer to ANSI/TIA-222-G). Potential increases in wind velocity due to channeling, roof projections and other obstructions must also be considered. The information shown should not be relied upon without competent professional examination and verification of its accuracy and suitability for a specific site or application.