

**RELIEF VENT SIZING FOR DUST APPLICATIONS**

**Chapter 8 - NFPA-68, 2007 Edition**

Client Information

Company Name:

Contact Name :

Telephone # :

Fax # :

Email:

Vent Application:

Notes:



Your Added Value Supplier

Proprietary and Confidential

We have prepared this sizing profile based on data provided by you or published by NFPA, unless otherwise noted. It must be recognized that it is not rational to consider an active process system to be adequately protected by isolating a portion of it only for explosion protection assessment - a HAZOP is strongly recommended (contact HIS for more information). Henderson accepts no liability for the information contained herein and we reserve the right to revise the sizing upon receipt of any additional relevant information.

| RESULTS | INPUT DATA | ATTENTION |
|---------|------------|-----------|
|         |            |           |

**L/D Calculation (per Para 6.4.3)**

Is the enclosure cylindrical (Y/N) ?

N

Square or Rectangular with aspect ratio (W/Depth) of largest cross section 1.0~1.2?

N

N

Multiple Vents Conditions  
No Multiple vents!

| $A_{eff}$<br>(m <sup>2</sup> ) | $D_{ne}$<br>(ft) | L/D   |
|--------------------------------|------------------|-------|
|                                |                  |       |
| Valid                          | Valid            | Valid |

**Required Data (If enclosure is cylindrical, please input W, Depth as "0.00"):**

| $V_{total}$       |                    | L     |       | W     |       | Depth |       | Perimeter |       | $V_{eff}$         |                    | H     |       |
|-------------------|--------------------|-------|-------|-------|-------|-------|-------|-----------|-------|-------------------|--------------------|-------|-------|
| (m <sup>3</sup> ) | (ft <sup>3</sup> ) | (m)   | (ft)  | (m)   | (ft)  | (m)   | (ft)  | (m)       | (ft)  | (m <sup>3</sup> ) | (ft <sup>3</sup> ) | (m)   | (ft)  |
|                   |                    |       |       |       |       |       |       |           |       |                   |                    |       |       |
| Valid             | Valid              | Valid | Valid | Valid | Valid | Valid | Valid | Valid     | Valid | Valid             | Valid              | Valid | Valid |

| $P_{max}$<br>(bar) | $P_{red}$<br>(psi) | $V$<br>(m <sup>3</sup> ) | $K_{st}$<br>(bar*m/s) | $P_{stat}$<br>(bar) | $P_{initial}$<br>(psi) |
|--------------------|--------------------|--------------------------|-----------------------|---------------------|------------------------|
|                    |                    |                          |                       |                     |                        |
| Valid              | Valid              | Valid                    | Valid                 | Valid               | Valid                  |

$$A_{V0} = (1 \times 10^{-4}) (1 + 1.54 P_{stat}^{4/3}) K_{st} V^{0.75} (\sqrt{(P_{max}/P_{red}) - 1}) \quad (\text{per Para 8.2.2})$$

$$A_{V0} = \text{[Blank]} \text{ m}^2 = \text{[Blank]} \text{ ft}^2$$

**Effect of elongated vessel influence (per Para 8.2.2.3 to Para 8.2.3.1)**

$$L/D = \text{[Blank]}$$

L/D <= 2 then the vessel is NOT elongated and  $A_{V0}$  is required.

If L/D is greater than 6, Chapter 8 sizing applies and the following relief area calculations are not applicable.

$$A_{V1} = A_{V0} [1 + 0.6 ((L/D - 2)^{0.75}) \exp(-0.95 (P_{red}^{0.2}))] \quad (\text{per Para 8.2.3})$$

$$A_{V1} = \text{[Blank]} \text{ m}^2 = \text{[Blank]} \text{ ft}^2 = \text{Updated relief area}$$

No Effect

