



(a) Plan view

(b) Elevated view

Parameter	Equation
Flame depth	= 2/3 of the width height: $2h_{eq}/3$
Flame height L_L	$L_L = \left(1.366 \left(\frac{1}{u} \right)^{0.43} \frac{Q}{\sqrt{A_v}} \right) - h_{eq}$ (46)
Horizontal projection of flame L_H	$L_H = 0.605 \left(\frac{u^2}{h_{eq}} \right)^{0.22} (L_L + h_{eq})$ (47)
Flame width w_f	$w_f = w_t + 0.4 L_H$ (48)
Flame length along axis L_f	$L_f = \sqrt{L_L^2 + L_H^2}$ (49)
Flame temperature T_w at window and emissivity ϵ_f	$T_w = \frac{520}{1 - 0.3325(L_f \sqrt{w_t}/Q)} + T_0$; and $\epsilon_f = 1.0$ (50)
Flame temperature T_z along the axis and emissivity ϵ_f	$T_z = (T_w - T_0) \cdot [1 - 0.3325(L_x \sqrt{w_t}/Q)] + T_0$; and $\epsilon_f = 1 - e^{-0.3 d_f}$ (51)
Convective heat transfer coefficient α_c	$\alpha_c = 9.8 \left(\frac{1}{d_{eq}} \right)^{0.4} \left(\frac{Q}{17.5 A_v} + \frac{u}{1.6} \right)^{0.6}$ (52)
Special case with $u = 6$ m/sec:	$L_H = 1.33 \frac{L_L + h_{eq}}{h_{eq}^{0.22}}$; $\alpha_c = 9.8 \left(\frac{1}{d_{eq}} \right)^{0.4} \left(\frac{Q}{17.5 A_v} + 3.75 \right)^{0.6}$

with $(L_x \sqrt{w_t}/Q) < 1.0$

where A_v is the total area of vertical openings on all walls [m²];
 d_{eq} is the geometric characteristics of external member (diameter or side) [m];
 d_f is the flame thickness [m];
 h_{eq} is the weighted average of window heights on all walls as given in Eq. (1) [m];
 L_x is the axis length from the window to the point where the calculation is made [m];
 Q is the rate of heat release as given in Eq. (1) [MW];
 u is the wind speed [m/sec].

Figure 1 Window flame properties under forced draught conditions