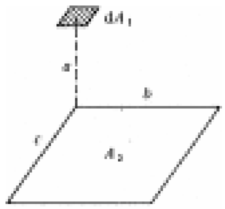
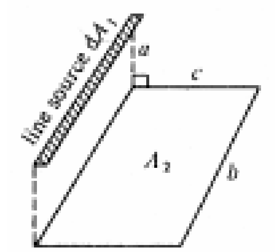
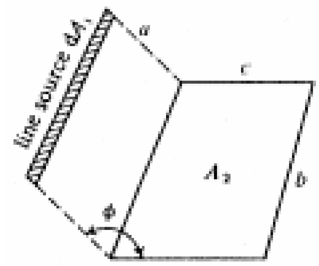
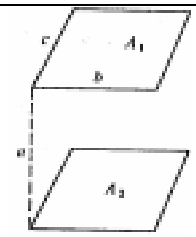
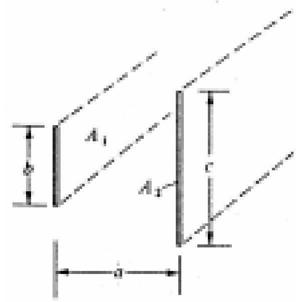
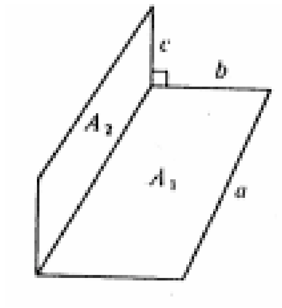
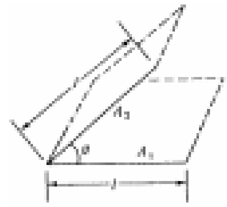
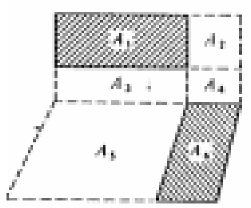
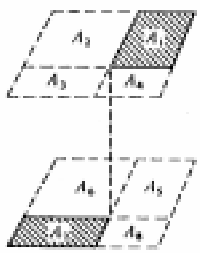
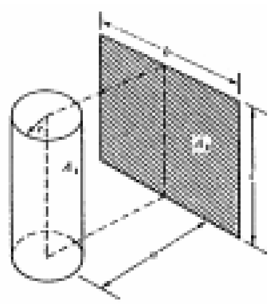
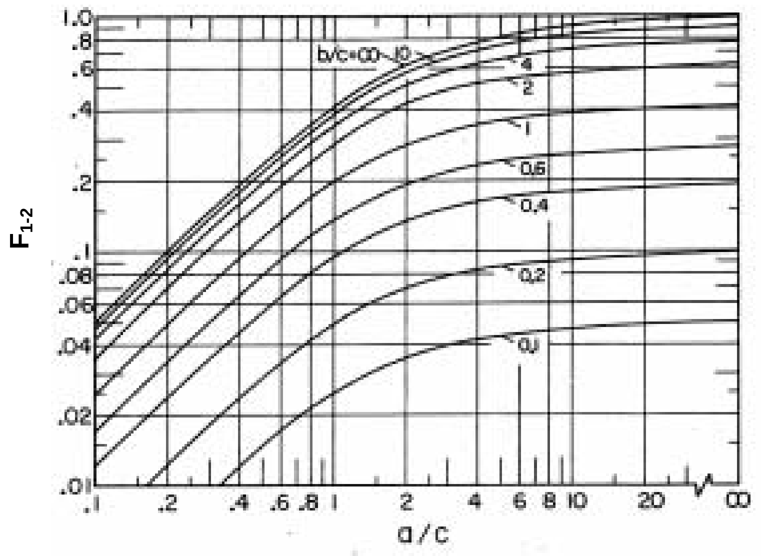
A.3.3 : Facteurs de forme géométrique de rayonnement

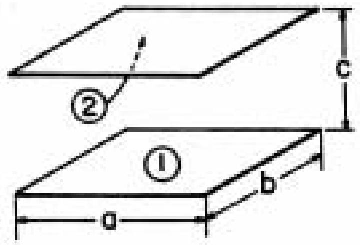
Configuration	Schéma	Valeur du facteur de forme
Surface dS parallèle à un plan rectangulaire		
Source linéaire parallèle à un plan rectangulaire		$F_{dA_1-A_2} = \frac{1}{\pi B}\left[\sqrt{1+B^2}\tan^{-1}\left(\frac{C}{\sqrt{1+B^2}}\right) - \tan^{-1}C + \frac{BC}{\sqrt{1+C^2}}\tan^{-1}\left(\frac{B}{\sqrt{1+C^2}}\right)\right]$ $B = \frac{b}{a}, \quad C = \frac{c}{a}$
Source linéaire parallèle et plan rectangulaire se coupant avec un angle ϕ		$F_{dA_1-A_2} = \frac{1}{\pi}\left\{\tan^{-1}B + \frac{\sin^2\phi}{2B}\ln\left[\frac{B^2+X^2}{(1+B^2)X^2}\right] - \frac{\sin 2\phi}{2B}\left[\frac{\pi}{2} - \phi + \tan^{-1}\left(\frac{C-\cos\phi}{\sin\phi}\right)\right] + \frac{Y}{B}\left[\tan^{-1}\left(\frac{C-\cos\phi}{Y}\right) + \tan^{-1}\left(\frac{\cos\phi}{Y}\right)\right] \times \cos\phi + \frac{C\cos\phi - 1}{X}\tan^{-1}\left(\frac{B}{X}\right)\right\}$ $B = \frac{b}{a}, \quad C = \frac{c}{a}, \quad X = \sqrt{C^2 - 2C\cos\phi + 1},$ $Y = \sqrt{B^2 + \sin^2\phi}$
Deux plans parallèles rectangulaires de même aire		$F_{A_1-A_2} = \frac{1}{\pi}\left[\frac{1}{BC}\ln\left(\frac{XY}{X+Y-1}\right) + \frac{2\sqrt{X}}{B}\tan^{-1}\frac{C}{\sqrt{X}} + \frac{2\sqrt{Y}}{C}\tan^{-1}\frac{B}{\sqrt{Y}} - \frac{2}{C}\tan^{-1}B - \frac{2}{B}\tan^{-1}C\right]$ $B = \frac{b}{a}, \quad C = \frac{c}{a}, \quad X = 1 + B^2, \quad Y = 1 + C^2$
Deux bandes parallèles infinies de largeurs différentes		$F_{A_1-A_2} = \frac{1}{2B}\left[\sqrt{(B+C)^2+4} - \sqrt{(C-B)^2+4}\right]$ $F_{A_2-A_1} = \frac{1}{2C}\left[\sqrt{(B+C)^2+4} - \sqrt{(B-C)^2+4}\right]$ $B = \frac{b}{a}, \quad C = \frac{c}{a}$ $F_{A_1-A_2} = F_{A_2-A_1} = \frac{1}{B}\left[\sqrt{B^2+1} - 1\right]$ for $b = c$

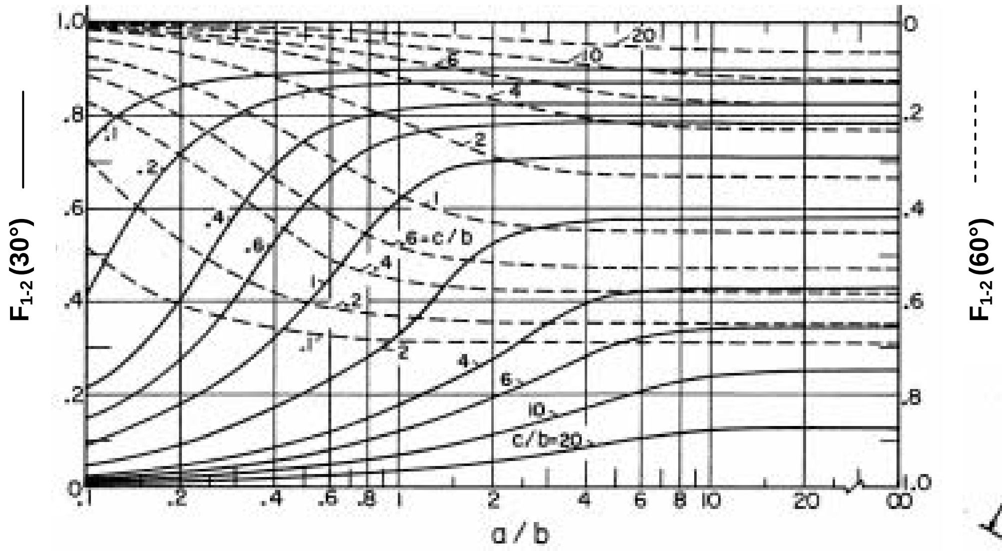
A.3.3 : Facteurs de forme géométrique de rayonnement

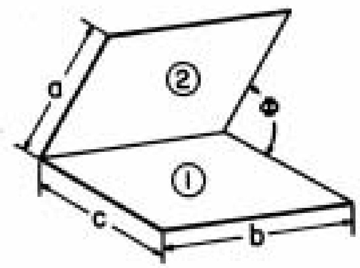
Configuration	Schéma	Valeur du facteur de forme
Deux plans rectangulaires perpendiculaires ayant un côté commun		$F_{A_1-A_2} = \frac{1}{\pi B}\left[\frac{1}{4}\ln\left\{\left[\frac{(1+B^2)(1+C^2)}{1+B^2+C^2}\right]\left[\frac{B^2(1+B^2+C^2)}{(1+B^2)(B^2+C^2)}\right]^{B^2} \times\left[\frac{C^2(1+B^2+C^2)}{(1+C^2)(B^2+C^2)}\right]^{C^2}\right\} + B\tan^{-1}\frac{1}{B} + C\tan^{-1}\frac{1}{C} - \sqrt{B^2+C^2}\tan^{-1}\left(\frac{1}{B^2+C^2}\right)\right]$ $B = \frac{b}{a}, \quad C = \frac{c}{a}$ $F_{A_1-A_2} = \frac{1}{2}\left[1 + \frac{c}{b} - \sqrt{1+(c/b)^2}\right] \quad \text{for} \quad a \to \infty$
Deux plans identiques ayant un côté commun		$F_{A_1-A_2} = F_{A_2-A_1} = 1 - \sin\frac{\theta}{2}$
Deux rectangles perpendiculaires		$F_{1-6} = \frac{A_6}{A_1}\left\{\frac{1}{2A_6}\left[(A_1+A_2+A_3+A_4)F_{1234-56} - A_6F_{6-24} - A_5F_{5-13}\right] - \frac{1}{2A_6}\left[(A_3+A_4)F_{34-56} - A_6F_{6-4} - A_5F_{5-3}\right]\right\}$
Deux rectangles parallèles		$F_{1-7} = \frac{1}{4A_1}\left(A_{1234}F_{1234-5678} + A_1F_{1-5} + A_2F_{2-6} + A_3F_{3-7} + A_4F_{4-8}\right) - \frac{1}{4A_1}\left(A_{12}F_{12-56} + A_{14}F_{14-58} + A_{34}F_{34-78} + A_{23}F_{23-67}\right)$
Un plan rectangulaire et un cylindre à axe situé dans le plan médian au rectangle		$F_{A_1-A_2} = \frac{2}{Y}\int_0^{Y/2}\left[\frac{X}{X^2+\beta^2} - \frac{X}{\pi(X^2+\beta^2)} \times\left(\cos^{-1}\frac{W}{V} - \frac{1}{2Z}\left[\sqrt{V^2+4Z^2} \times\cos^{-1}\left(\frac{W}{V\sqrt{X^2+\beta^2}}\right) + W\sin^{-1} \times\left(\frac{1}{\sqrt{X^2+\beta^2}}\right) - \frac{\pi V}{2}\right]\right)\right]d\beta$ $X = \frac{a}{r}, \quad Y = \frac{b}{r}, \quad Z = \frac{c}{r}, \quad V = X^2 + Z^2 + \beta^2 - 1,$ $W = Z^2 - X^2 - \beta^2 + 1$

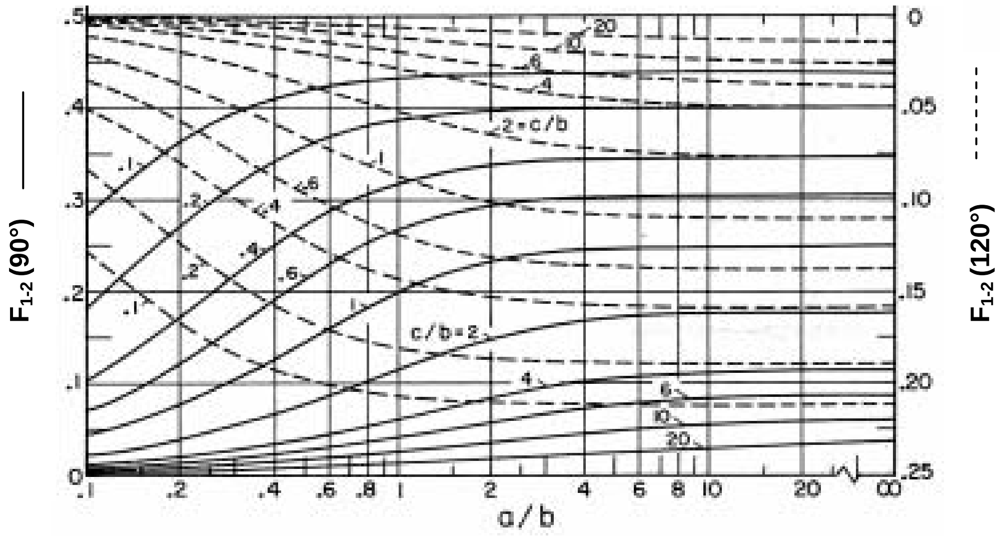
A.3.3 : Facteurs de forme géométrique de rayonnement











A.3.3 : Facteurs de forme géométrique de rayonnement