

【技术参数】 面积・重心・截面二阶矩的计算

截 面	A	e	I	Z=I/e
	bh	$\frac{h}{2}$	$\frac{bh^3}{12}$	$\frac{bh^2}{6}$
	h ²	$\frac{h}{2}$	$\frac{h^4}{12}$	$\frac{h^3}{6}$
	h ²	$\frac{\sqrt{2}}{2}h$	$\frac{h^4}{12}$	$0.11793h^3 = \frac{\sqrt{2}}{12}h^3$
	$\frac{bh}{2}$	$\frac{2}{3}h$	$\frac{bh^3}{36}$	$\frac{bh^2}{24}$
	$(2b+b_1)\frac{h}{2}$	$\frac{1}{3} \times \frac{3b+2b_1}{2b+b_1}h$	$\frac{6b^2+6bb_1+b_1^2}{36(2b+b_1)}h^3$	$\frac{6b^2+6bb_1+b_1^2}{12(3b+b_1)}h^2$
	$\frac{3\sqrt{3}}{2}r^2$	$\sqrt{\frac{3}{4}}r = 0.866r$	$\frac{5\sqrt{3}}{16}r^4$	$\frac{5}{8}r^3$
	$\frac{3\sqrt{3}}{2}r^2$	r	$\frac{5\sqrt{3}}{16}r^4$	$\frac{5}{8}r^3$
	$\pi r^2 = \frac{\pi d^2}{4}$	$\frac{d}{2}$	$\frac{\pi d^4}{64} = \frac{\pi r^4}{4}$	$\frac{\pi d^3}{32} = \frac{\pi r^3}{4}$
	$r^2(1-\frac{\pi}{4})$	$e_1 = 0.2234r$ $e_2 = 0.7766r$	$0.0075r^4$	$\frac{0.0075r^4}{e^2} = 0.00966r^3$ $\approx 0.01r^3$

截 面	A	e	I	Z=I/e
	πab	a	$\frac{\pi}{4}ba^3 = 0.7854ba^3$	$\frac{\pi}{4}ba^2 = 0.7854ba^2$
	$\frac{\pi}{2}r^2$	$e_1 = 0.4244r$ $e_2 = 0.5756r$	$(\frac{\pi}{8} - \frac{8}{9\pi})r^4$	$Z_1 = 0.2587r^3$ $Z_2 = 0.1908r^3$
	$\frac{\pi}{4}r^2$	$e_1 = 0.4244r$ $e_2 = 0.5756r$	$0.055r^4$	$Z_1 = 0.1296r^3$ $Z_2 = 0.0956r^3$
	b(H-h)	$\frac{H}{2}$	$\frac{b}{12}(H^3-h^3)$	$\frac{b}{6H}(H^3-h^3)$
	A ² -a ²	$\frac{A}{2}$	$\frac{A^4-a^4}{12}$	$\frac{1}{6} \frac{A^4-a^4}{A}$
	A ² -a ²	$\frac{\sqrt{2}}{2}A$	$\frac{A^4-a^4}{12}$	$\frac{A^4-a^4}{12A} \sqrt{2}$ $= \frac{0.1179A^4-a^4}{A}$
	$\frac{\pi}{4}(d_2^2-d_1^2)$	$\frac{d_2}{2}$	$\frac{\pi}{64}(d_2^4-d_1^4)$	$\frac{\pi}{32} \frac{(d_2^4-d_1^4)}{d_2}$ $= \frac{\pi}{4} \frac{R^4-r^4}{R}$
	$a^2 - \frac{\pi d^2}{4}$	$\frac{a}{2}$	$\frac{1}{12}(a^4 - \frac{3\pi d^4}{16})$	$\frac{1}{6a}(a^4 - \frac{3\pi d^4}{16})$
	$2b(h-d) + \frac{\pi}{4}d^2$	$\frac{h}{2}$	$\frac{1}{12} \left(\frac{3\pi}{16}d^4 - d^4 \right) + b(h^3-d^3) + b^3(h-d)$	$\frac{1}{6h} \left(\frac{3\pi}{16}d^4 - d^4 \right) + b(h^2-d^2) + b^2(h-d)$
	$2b(h-d) + \frac{\pi}{4}(d_1^2-d_2^2)$	$\frac{h}{2}$	$\frac{1}{12} \left(\frac{3\pi}{16}(d_1^4-d_2^4) - d_1^4 + b(h^3-d_1^3) + b^3(h-d_1) \right)$	$\frac{1}{6h} \left(\frac{3\pi}{16}(d_1^4-d_2^4) - d_1^4 \right) + b(h^2-d_1^2) + b^2(h-d_1)$

A: 截面积 e: 重心的距离 I: 截面二次力矩 Z=I/e: 截面系数