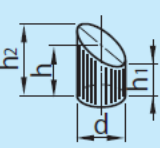
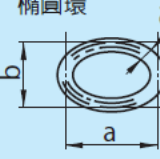
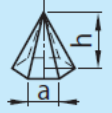
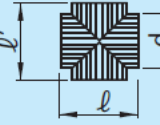
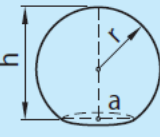
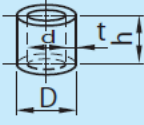
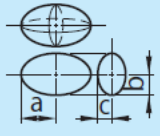

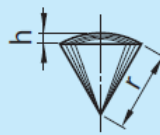
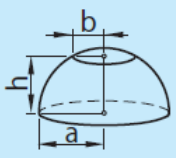
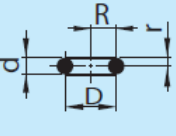
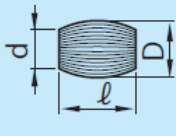
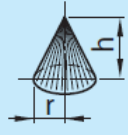
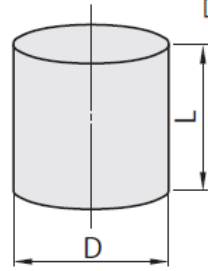



■體積的計算方式

立體	體積V	立體	體積V
截頭圓柱 	$V = \frac{\pi}{4} d^2 h$ $= \frac{\pi}{4} d^2 \left(\frac{h_1 + h_2}{2} \right)$	橢圓環 	$V = \frac{\pi^2}{4} d^2 \frac{\sqrt{a^2 + b^2}}{2}$
角錐 	$V = \frac{h}{3} A = \frac{h}{6} \pi r n$ <p>A = 底面積 r = 內接圓的半徑 a = 正多角形之邊長 n = 正多角形之邊數</p>	交叉圓柱 	$V = \frac{\pi}{4} d^2 \left(\ell + \ell' - \frac{d}{3} \right)$
球冠 	$V = \frac{\pi h^2}{3} (3r - h)$ $= \frac{\pi h}{6} (3a^2 + h^2)$ <p>a為半徑</p>	中空圓柱(管) 	$V = \frac{\pi}{4} h (D^2 - d^2)$ $= \pi t h (D - t)$ $= \pi t h (d + t)$
橢圓體 	$V = \frac{4}{3} \pi abc$ <p>當旋轉橢圓體時 (b=c)</p> $V = \frac{4}{3} \pi ab^2$	截頭角錐 	$V = \frac{h}{3} (A + a + \sqrt{Aa})$ <p>A, a = 兩端面之面積</p>

立體	體積V	立體	體積V
球形弧面 	$V = \frac{2}{3} \pi r^2 h$ $= 2.0944 r^2 h$	球帶 	$V = \frac{\pi h}{6} (3a^2 + 3b^2 + h^2)$
圓環 	$V = 2 \pi^2 R r^2$ $= 19.739 R r^2$ $= \frac{\pi^2}{4} D d^2$ $= 2.4674 D d^2$	桶形 	<p>圓周等於彎曲圓弧時</p> $V = \frac{\pi \ell}{12} (2D^2 + d^2)$ <p>周圍同拋物線彎曲時</p> $V = 0.209 \ell (2D^2 D d + 1/4 d^3)$
圓錐 	$V = \frac{\pi}{3} r^2 h$ $= 1.0472 r^2 h$	<div> <h2>■重量的計算方式</h2> </div> <div> <p>重量W[g] = 體積[cm³] × 比重</p> </div> <div> <p>[例]材質：軟鋼</p> </div> <div>  </div> <div> <p>D = φ16 L = 50mm 的重量為</p> </div> <div> $W = \frac{\pi}{4} D^2 \times L \times \text{比重}$ $= \frac{\pi}{4} \times 1.6^2 \times 5 \times 7.85$ $\approx 79 \text{ [g]}$ </div>	
球 	$V = \frac{4}{3} \pi r^3 = 4.1888 r^3$ $= \frac{\pi}{6} d^3 = 0.5236 d^3$		

■金屬材料的物理性質

材質	比重	熱膨張係數	縱彈性係數
		$\times 10^{-6}/^{\circ}\text{C}$	{Kgf/mm ² }
軟鋼	7.85	11.7	21000
NAK80	7.8	12.5	20500
SKD11	7.85	11.7	21000
SKD61	7.75	10.8	21000
SKH51	8.2	10.1	22300
超硬 V30	14.1	6.0	56000
超硬 V40	13.9	6.0	54000
鑄鐵	7.3	9.2 ~ 11.8	7500 ~ 10500
SUS304	8.0	17.3	19700
SUS440C	7.78	10.2	20400
無氧銅 C1020	8.9	17.6	11700
6/4黃銅 C2801	8.4	20.8	10300
鈹銅合金 C1720	8.3	17.1	13000
鋁合金 A1100	2.7	23.6	6900
硬鋁 A7075	2.8	23.6	7200
鈦	4.5	8.4	10600