



Fig. 4.1 Characteristic strength of brickwork and solid concrete blockwork, where ratio of height to thickness of unit is between 2.0 and 4.0.

Table 4.2 Flexural and shear characteristic strengths in BS 5628 (1992)

(A) Flexural characteristic strengths for clay brickwork

Mortar designation	Plane of failure parallel to bed joints				Plane of failure perpendicular to bed joints			
	(i)	(ii)	(iii)	(iv)	(i)	(ii)	(iii)	(iv)
Clay bricks having a water absorption								
less than 7%	0.7	0.5		0.4	2.0	1.5		1.2
between 7% and 12%	0.5	0.4		0.35	1.5	1.1		1.0
over 12%	0.4	0.3		0.25	1.1	0.9		0.8
Calcium silicate bricks	0.3			0.2	0.9			0.6
Concrete bricks	0.3			0.2	0.9			0.6
Concrete blocks (solid or hollow) of compressive strength (N/mm ²)								
2.8	} used in walls of thickness up to 100 mm	} 0.25	}	} 0.2	0.40		0.4	
3.5					0.45		0.4	
7.0					0.60		0.5	
2.8	} used in walls of thickness up to 250 mm	} 0.15	}	} 0.1	0.25		0.2	
3.5					0.25		0.2	
7.0					0.35		0.3	
10.5	} used in walls of any thickness and over	} 0.25	}	} 0.2	0.75		0.6	
14.0					0.90		0.7	
and over								

(B) Characteristic shear strengths

Brickwork built in mortar designation (i) or (ii):

$$f_v = 0.35 + 0.6g_A \quad \text{but not exceeding } 1.75 \text{ N/mm}^2$$

Brickwork built in mortar designation (iii) or (iv):

$$f_v = 0.15 + 0.6g_A \quad \text{but not exceeding } 1.4 \text{ N/mm}^2$$

Here g_A is the design vertical load per unit area of wall cross-section due to the vertical loads calculated from the appropriate loading condition.

For shear in the vertical plane between brickwork elements bonded together:

(a) for bricks set in mortar designations (i) and (ii)

$$f_v = 0.7 \text{ N/mm}^2$$

(b) for bricks set in mortar designations (iii) and (iv)

$$f_v = 0.5 \text{ N/mm}^2$$

(c) for dense aggregate solid concrete blocks having a minimum strength of 7 N/mm² set in mortar designations (i), (ii) or (iii)

$$f_v = 0.35 \text{ N/mm}^2$$