

HOLLOW CONCRETE BLOCKS

Description of item: Hollow Concrete Blocks Confirms to IS: 2185 (Part 1): 2005.

This hollow Concrete Block have open or closed cavity and can be used in the construction of load-bearing and non-load bearing partition walls.

Note: This item is already covered in Unified SOR 2010 item no. 056010.

Available Size: The nominal dimensions of concrete block with tolerance shall be as follows:

- Length: 400, 500 or 600 mm, variation of the unit shall not more than ± 5 mm
- Height: 200 or 100 mm, variation of the unit shall not more than ± 3 mm
- Width: 50, 75, 100, 150, 200, 250 or 300 mm, variation of the unit shall not more than ± 3 mm.

Classification of Hollow Concrete Blocks: The hollow concrete blocks shall conform to following grade:

- a) *Grade A* — These are used as load bearing units and shall have a minimum block density of 1500 kg/m³. Minimum average compressive strengths of blocks shall be as per table.
- b) *Grade B* — These are also used as load bearing units and shall have a block density between 1100 kg/m³ and 1500 kg/m³. Minimum average compressive strengths of blocks shall be as per table.

Material of Hollow Concrete Blocks:

1. **Cement:** Cement complying with any of the following Indian Standards may be used:

- 33 / 43/53 grade OPC/ Portland slag cement / Portland pozzalana cement / Supersulphated cement/ Rapid hardening Portland cement / White Portland cement or Hydrophobic Portland cement may be used.
- When cement conforming to IS 269 or IS 8112 or IS 12269 is used, replacement of cement by fly ash conforming to IS 3812 (Part 1) may be permitted up to a limit of 25 percent.

2. **Aggregates:** The aggregates used in blocks shall conform to IS 383.

3. **Fly Ash:** Fly ash conforming to IS 3812 (Part 2) may be used for part replacement of fine aggregate up to a limit of 20 percent.

4. **Water:** The water used in made Hollow Concrete Blocks units shall be free from matter harmful to concrete or reinforcement, or matter likely to cause efflorescence in the units and shall conform to the requirements of IS 456.
5. **Additives or Admixtures:** Additives or admixtures may be added either as additives to the cement during manufacture, or as admixtures to the concrete mix. Additives or admixtures used in the manufacture of concrete masonry units may be:
 - a) Where accelerating, water reducing, air-entraining and super plasticizer conforming to IS 9103,
 - b) Waterproofing agents conforming to IS 2645, and
 - c) Colouring pigments.

Where no Indian Standards apply; the additives or admixtures shall be shown by test or experience, to be not detrimental to the durability of the concrete.

Technical Specification: Technical specification of Hollow Concrete Blocks Confirming to IS: 2185 (Part 1): 2005 is as under:

Physical Requirements:-

1. **Blocks Density**
The block density of hollow concrete blocks, being the average of three units shall be as per table.
2. **Compressive Strength**
The minimum compressive strength at 28 days being the average of eight units, and the minimum compressive strength of individual units blocks shall be as per table.
3. **Water Absorption**
The water absorption, being the average of three units, shall not be more than 10 percent by mass.
4. **Drying Shrinkage**
The drying shrinkage of the units when unrestrained being the average of three units, shall not exceed 0.06 percent.
5. **Moisture Movement**
The moisture movement of the dried blocks on immersion in water, being the average of three units, shall not exceed 0.09 percent.

Table 1 Physical Requirements
(Classification of Hollow Concrete Blocks and Compressive Strength)

Type	Grade	Density of Block	Minimum Average Compressive Strength of Units N/mm ²	Minimum Compressive Strength of Individual Units, N/mm ²
(1)	(2)	(3)	(4)	(5)
Hollow (open and closed cavity) load-bearing unit	A(3.5)	Not less than 1500	3.5	2.8
	A(4.5)		4.5	3.6
	A(5.5)		5.5	4.4
	A(7.0)		7.0	5.6
	A(8.5)		8.5	7.0
	A(10.0)		10.0	8.0
	A(12.5)		12.5	10.0
	A(15.0)	15.0	12.0	
	B(3.5)	Less than 1500 but not less than 1100	3.5	2.8
	B(5.0)		5.0	4.0

Use of Hollow Concrete Blocks: Concrete blocks are used in all types of masonry constructions, confirming to IS: 2572. Few examples are:

- Exterior load-bearing walls (both below and above grade)
- Interior load-bearing walls
- Fire walls and curtain walls
- Partitions and panel walls
- Backing for brick, stone, and other facings; Fireproofing over structural members
- Fire safe walls around stairwells, elevators, and enclosures
- Piers and columns; Retaining walls

Advantages of hollow concrete blocks:

1. The good concrete compacted by high pressure and vibration gives substantial strength to the block. Proper curing increase compressive strength of the blocks.
2. Low maintenance, Color and brilliance of masonry withstand outdoor elements.
3. Provide Thermal and sound insulation: The air in hollow of the block, does not allow outside heat or cold in the house. So it keeps house cool in summer and warm in winter.
4. Environment Friendly, fly ash used as one of the raw materials.

5. No additional formwork or any special construction machinery is required for reinforcing the hollow block masonry, if required.
6. It is a faster and easier construction system, when compared to the conventional construction systems.
7. This construction system provides better acoustic and thermal insulation for the building.
8. Reduced Air Conducting Load: Approx. 50% saving.
9. No salt peter or leaching: Reduction in maintenance.

Cost: As per the analysis of SOR item no. 056010 of USSOR 2010, the rate of hollow cement concrete block is Rs. 3500/- per CUM.

