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Aim: To test water absorption of Bricks

Apparatus: A sensitive balance capable of weighing within 0.1% of the mass of the specimen and ventilated oven.

Specimen: five number of whole bricks from samples collected for testing should be taken.

Theory: water absorption test on bricks are conducted to determine durability property of bricks such as degree of burning, quality and behaviour of bricks in weathering. A brick with water absorption of less than 7% provides both better resistance to damage by freezing. the degree of compactness of bricks can be obtained by water absorption test, as water is absorbed by pores in bricks. The water absorption by bricks increase with increase in pores. So, the bricks, which have water absorption less than 3% can be called as vitrified.

Formula Used: water absorption, % by mass, after 24 hours immersion in cold water is given by the formula,

$$W = \frac{M_2 - M_1}{M_1} \times 100\ \%$$

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Procedure :- i) Dry the specimen in a ventilated oven at a temperature of 105°C to 115°C till it attains substantially constant mass.

ii) Cool the specimen do room temperature and obtain its weight (M1) specimen too warm to touch shall not be used for this purpose.

iii) Immerse completely dried specimen in clean water at a temperature of 27 ± 2°C for 24 hours.

iv) Remove the specimen and wipe out any traces of water with damp cloth and weigh that the specimen after it has been removed from water (M2).

v) Calculate water absorption by above mentioned formula.

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Observation Table :-

S.No	Weight of dry brick (m_1)	Weight of fully saturated brick (m_2)	Water Absorption ($m_2 - m_1$)	%age water absorption $\frac{m_2 - m_1}{m_1} \times 100$
1	2.985 kg	3.245 kg	0.260 kg	8.71%
2	2.740 kg	3.185 kg	0.445 kg	16.24%
3	2.725 kg	3.145 kg	0.420 kg	15.14%
4	2.710 kg	3.130 kg	0.420 kg	15.49%
5	2.630 kg	3.010 kg	0.380 kg	14.44%
	Average %age absorption			

$$= \frac{\text{Total absorption of 5 bricks}}{5}$$

$$= \frac{70.02}{5} = 14.004\ \%.$$

Result: The average %age water absorption is 14.004 %.