

**Distribution of Houses by Predominant Materials of Roof and Wall  
and Level of Damage Risk**

**Table No. : KL 08**

**State : KERALA**

**ERNAKULAM**

Wall / Roof		Census Houses		Level of Risk under									Flood Prone Area in %
		No. of Houses	%	EQ Zone				Wind Velocity m/s					
				V	IV	III	II	55 & 50	47	44 & 39	33		
				Area in %				Area in %					
						100				100			26.3
<b>WALL</b>													
<b>A1 - Mud &amp; Unburnt Brick Wall</b>	Rural	18,067	1.8										
	Urban	18,086	1.8										
	<b>Total</b>	<b>36,153</b>	<b>3.6</b>				<i>M</i>				<i>M</i>		<i>VH</i>
<b>A2 - Stone Wall not packed with mortar</b>	Rural	49,232	4.8										
	Urban	46,132	4.5										
	<b>Total</b>	<b>95,364</b>	<b>9.3</b>				<i>M</i>				<i>L</i>		<i>VH</i>
<b>Total - Category - A</b>		<b>131,517</b>	<b>12.8</b>										
<b>B - Burnt Bricks Wall &amp; Stone wall packed with mortar</b>	Rural	243,172	23.7										
	Urban	582,193	56.7										
	<b>Total</b>	<b>825,365</b>	<b>80.4</b>				<i>L</i>				<i>L</i>		<i>H/M</i>
<b>Total - Category - B</b>		<b>825,365</b>	<b>80.3</b>										
<b>C1 - Concrete Wall</b>	Rural	10,705	1.0										
	Urban	31,947	3.1										
	<b>Total</b>	<b>42,652</b>	<b>4.1</b>				<i>VL</i>				<i>VL</i>		<i>L/ VL</i>
<b>C2 - Wood wall</b>	Rural	1,663	0.2										
	Urban	3,174	0.3										
	<b>Total</b>	<b>4,837</b>	<b>0.5</b>				<i>VL</i>				<i>M</i>		<i>H</i>
<b>Total - Category - C</b>		<b>47,489</b>	<b>4.6</b>										
<b>X - Other Materials</b>	Rural	9,216	0.9										
	Urban	13,674	1.3										
	<b>Total</b>	<b>22,890</b>	<b>2.2</b>				<i>VL</i>				<i>M</i>		<i>VH</i>
<b>Total - Category - X</b>		<b>22,890</b>	<b>2.2</b>										
<b>TOTAL HOUSES*</b>				<b>1,027,261</b>									

ROOF													
<b>R1 - Light Weight Sloping Roof</b>	Rural	23,661	2.3										
	Urban	39,611	3.9										
	<b>Total</b>	<b>63,272</b>	<b>6.2</b>				<i>L</i>				<i>H</i>		<i>VH</i>
<b>R2 - Heavy Weight Sloping Roof</b>	Rural	124,363	12.1										
	Urban	180,911	17.6										
	<b>Total</b>	<b>305,274</b>	<b>29.7</b>				<i>L</i>				<i>L</i>		<i>H</i>
<b>R3 - Flat Roof</b>	Rural	184,031	17.9										
	Urban	474,684	46.2										
	<b>Total</b>	<b>658,715</b>	<b>64.1</b>				<i>Damage Risk as per that for the Wall supporting it</i>						
<b>TOTAL HOUSES*</b>				<b>1,027,261</b>									

Probable Maximum Precipitation at a Station of the district in one day for arial extent of 1000 sqm. 448 mm

**Housing Category : Wall Types**

**Category - A** : Buildings in field-stone, rural structures,  
unburnt brick houses, clay houses

**Category - B** : Ordinary brick building; buildings of the large block & prefabricated  
type, half-timbered structures, building in natural hewn stone

**Category - C** : Reinforced building, well built wooden structures

**Category - X** : Other materials not covered in A,B,C. These are generally light.

**Notes** : 1. Flood prone area includes that protected area which may have more severe  
damage under failure of protection works. In some other areas the local  
damage may be severe under heavy rains and choked drainage.

2. Damage Risk for wall types is indicated assuming heavy flat roof  
in categories A, B and C (Reinforced Concrete) building

3. Source of Housing Data : Census of Housing, GOI, 2011

**Housing Category : Roof Type**

**Category - R1** - Light Weight (Grass, Thatch,  
Bamboo, Wood, Mud, Plastic, Polythene,  
GI Metal, Asbestos Sheets, Other Materials)

**Category - R2** - Heavy Weight (Tiles, Stone/Slate)

**Category - R3** - Flat Roof (Brick, Concrete)

EQ Zone V : Very High Damage Risk Zone (MSK > IX)

EQ Zone IV : High Damage Risk Zone (MSK VIII)

EQ Zone III : Moderate Damage Risk Zone (MSK VII)

EQ Zone II : Low Damage Risk Zone (MSK < VI)

*Level of Risk : VH = Very High; H = High;*

*M = Moderate; L = Low; VL = Very Low*

\* Total No.of Houses excluding Vacant/Locked Houses