SHAPE TEST

A. FLAKINESS INDEX

AIM:

This method of test lays down the procedure for determining the flakiness index of the coarse aggregate.

THEORY:

The flakiness index of aggregate is the percentage by weight of particles in it whose least dimension (thickness) is less than three-fifths of their mean dimension. The test is not applicable to sizes smaller than 6.3mm.

APPARATUS:

The apparatus shall consist of the following: 1) A balance – The balance shall be of sufficient capacity and sensitivity and shall have an accuracy of 0.1 percent of the weight of the test sample

2) Metal Gauge – The metal gauge shall be of the pattern as shown in Fig.

3) Sieves – The sieves of sizes as shown in Table

PROCEDURE:

1) A quantity of aggregate shall be taken sufficient to provide the minimum number of 200 pieces of any fraction to be tested.

2) The sample shall be sieved with sieves specified in Table

3) Then each fraction shall be gauged in turn for thickness on a metal gauge of the pattern shown in Fig or in bulk on sieves having elongated slots. The width of the slot used in the

gauge or sieve shall be of the dimensions specified in column 3 of Table for the appropriate size of material.

4) The total amount of aggregate passing the gauge shall be weighed to an accuracy of at least 0.1 percent of the weight of the test sample.

Table:- Dimensions of Thickness and Length gauge

SIZE OF AGGREGATE (mm)		THICKNESS GAUGE(mm) *	LENGTH GAUGE(mm) #
Passing through IS sieve	Retained on IS sieve		
63	50	33.90	-
50	40	27.00	81.0
40	31.5	19.50	58.5
31.5	25	16.95	-
25	20	13.50	40.5
20	16	10.80	32.4
16	12.5	8.55	25.6
12.5	10	6.75	20.2
10	6.3	4.89	14.7

*This dimension is equal to 0.6 times the mean sieve size.

#This dimension is equal to 1.8 times the mean sieve size.

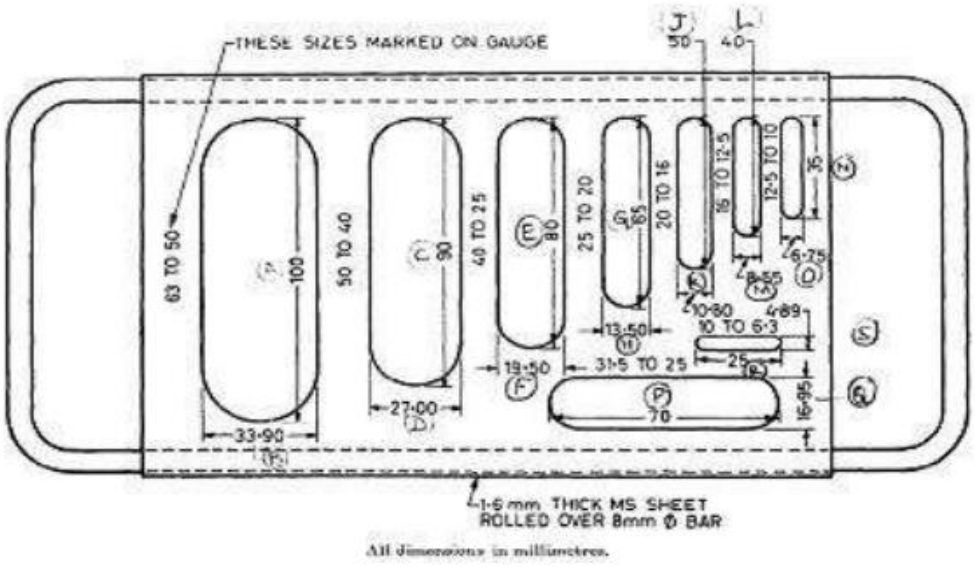


Fig . THICKNESS GAUGE

OBSERVATION TABLE:

SIZE OF AGGREGATE (mm)		THICKNESS GAUGE(mm)	Wt. of fraction containing at least 200 pieces W (gm)	Wt. of fraction passing the thickness gauge (w) (gm)
Passing through IS sieve	Retained on IS sieve			
63	50	33.90		
50	40	27.00		
40	31.5	19.50		
31.5	25	16.95		
25	20	13.50		
20	16	10.80		
16	12.5	8.55		
12.5	10	6.75		
10	6.3	4.89		

CALCULATION:

Where, w is the weights of material passing the various thickness gauges and W is the total weights of aggregate containing at least 200 pieces.

RESULTS:

The flakiness index is the total weight of the material passing the various thickness gauges, expressed as the percentage of the total weight of the sample gauged.

RESULT Flakiness index = %

B. ELONGATION INDEX

AIM:

This method of test lays down the procedure for determining the elongation index of the coarse aggregate. **THEORY:**

The elongation index of an aggregate is the percentage by weight of particles in it whose greatest dimension (thickness) is greater than one and four-fifths of their mean dimension. The test is not applicable to sizes smaller than 6.3mm.

APPARATUS:

The apparatus shall consist of the following:

1) A balance – The balance shall be of sufficient capacity and sensitivity and shall have an accuracy of 0.1 percent of the weight of the test sample.

2) Metal Gauge – The metal gauge shall be of the pattern as shown in Fig

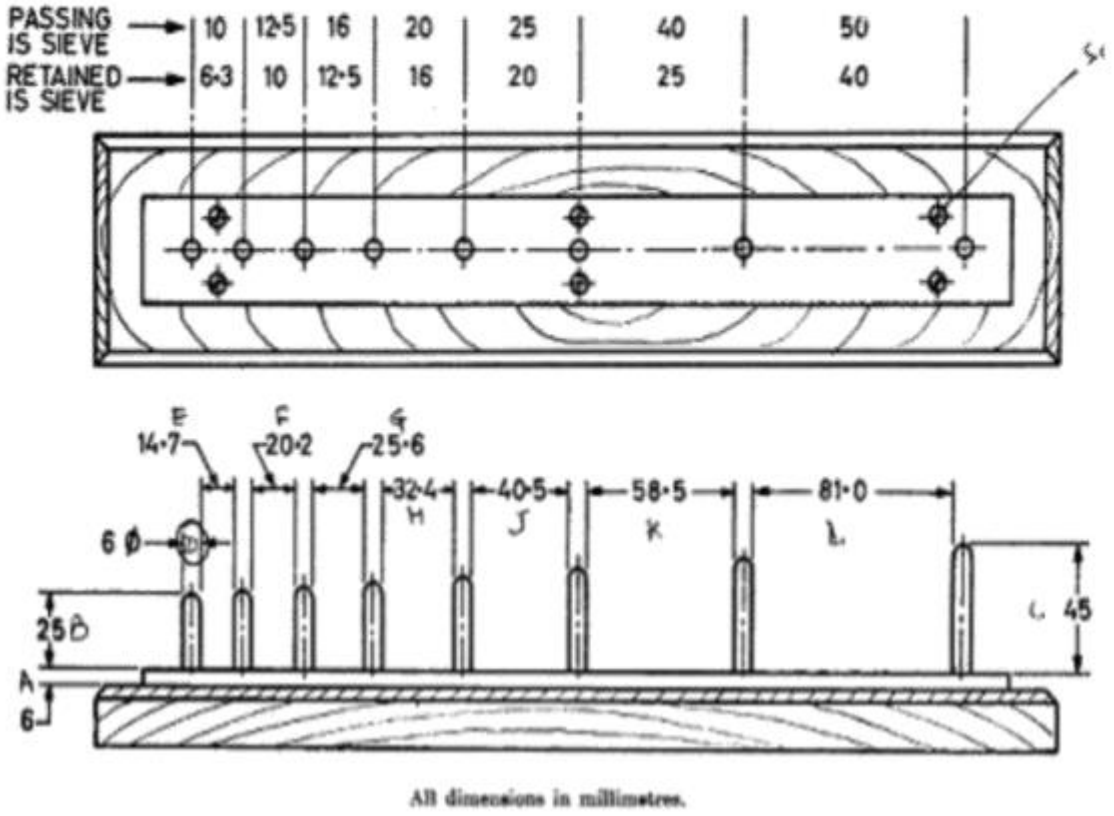
3) Sieves – The sieves of sizes as shown in Table

PROCEDURE:

1) A quantity of aggregate shall be taken sufficient to provide the minimum number of 200 pieces of any fraction to be tested.

2) The sample shall be sieved with sieves specified in Table.

3) Each fraction shall be gauged in turn for length on a metal gauge of the pattern shown in Fig . The gauge length used shall be of the dimensions specified in column 4 of Table 6 for the appropriate size of material. 4) The total amount of aggregate retained by the length gauge shall be weighed to an accuracy of at least 0.1 percent of the weight of the test sample.



All dimensions in millimetres.

Fig . LENGTH GAUGE

OBSERVATION TABLE:

SIZE OF AGGREGATE (mm)		LENGTH GAUGE(mm)	Wt. of fraction containing at least 200 pieces W (gm)	Wt. of pieces retained on the length gauge w (gm)
Passing through IS sieve	Retained on IS sieve			
63	50	-		
50	40	81.0		
40	31.5	58.5		
31.5	25	-		
25	20	40.5		
20	16	32.4		
16	12.5	25.6		
12.5	10	20.2		
10	6.3	14.7		

CALCULATION:

Where, w is the weight of materials retained on length gauge. W is the total weights of aggregate containing at least 200 pieces.

RESULT:

The elongation index is the total weight of the material retained on various length gauges, expressed as the percentage of the total weight of the sample gauged.

RESULT Elongation index = %

CONCLUSION:

Video url:- https://www.youtube.com/watch?v=acfJIG9o8iw