MODULUS OF ELASTICITY OF CONCRETE

Concrete cylinder 15 cm diameter and 30cm long

(i) Assemble the top and bottom frame by keeping the spacers in position.

(ii) Keep the pivot rod on the screws and lock them in position.

(iii) Keep the tightening screws of the bottom and top frame unscrewed (but not completely).

(iv) Place the specimen on a level surface.

(v) Keep the compressometer centrally on the specimen so that the tightening screw of the

bottom and top frame are at equal distance from the two ends.

(vi) Tighten the screws so that the compressometer is held on the specimen.

(vii)Remove the spacers by unscrewing the spacer screws.

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Testing

(I) Place the specimen with compressometer in the compression testing machine and center it.

(II) Apply load continuously without stock at a rate of 140 kg /cm²/minute until a stress of (c+5)kg/cm² is reached where c is the one third of average compressive strength of cubes calculated to the nearest 5kg /cm²(a load of 12.4T)

(III) Maintain the load at this stress for at least one minute and reduce gradually to an average stress of 1.5 kg/ cm²(a load of 0.3 T)

(IV) Apply the load again at the same rate until an average stress of (c+ 1.5) kg/cm² is reached(a load of 11.8T)

(V) Note the compressometer reading at this load.

(VI) Reduce the load gradually and take readings at an interval of 1T up to 0.3T(11.8T,10.8T,9.8T,8.8T,7.8T,……,1.8T,0.3T)

(VII) Apply load third time and note the compressometer readings at an interval of 1T (0.3T,1.8T,2.8T,……11.8T).

MODULUS OF ELASTICITY OF CONCRETE

NOTE

1. Readings should be taken without delay
2. If the overall strain observed on the second and third readings differ by more than 5%,the loading shall be repeated until the difference in strain between consecutive readings of (c+1.5)kg/sq.cm. (11.8T) does not exceed 5%.
3. To get the actual deformation, divide the observed readings of the dial gauge by 2.

GRAPH

A load – deflection graph is plotted for loading and nu loading conditions. Draw tangents at the initial portion of the loading curve and at the load corresponding to the working stress of the mix. Join the initial point and the point on the loading curve corresponding to working stress.

CALCULATION

Initial tangent modulus = stress/ strain

(Take load & deflection from the initial tangent)

Tangent modulus at working stress= stress/ strain

(Take load and deflection from the tangent drawn at working stress)

Secant modulus = stress/strain

(Take load and deflection from the line joining initial point and the point at working stresses)

- **REPORT**
- The following information shall be included in the report.
- (i) Identification mark
- (ii) Date of test
- (iii) Age of specimen
- (iv) Shape and nominal dimensions of the specimen
- **RESULT.**
- Initial tangent modulus of given concrete = ……N / mm^2
- Tangent modulus at working stress =……N / mm^2
- Secant modulus (Modulus of elasticity of given concrete) = …….. N / mm^2