

How to Calculate Fineness modulus of aggregate| Formula with Numerical

What is fineness modulus of aggregate?

The fineness modulus of aggregate is simply a measurement of the average size of the aggregate. It can be calculated with the help of different sizes of the sieve. Now, let us see some numerical Examples to calculate the fineness modulus of aggregate.



Q.1) Find the fineness modulus of coarse aggregates for which the sieve analysis is given in the table below:

Weight of sample = 10 kg

Solution:-

Coarse aggregate

IS sievi (mm)	Weight retained 9(kg)	Cumulative weight retained(kg)	Cumulative% retained
75 mm	0	0	0
40 mm	0	0	0
20 mm	2.5	2.5	$(2.5/10)*100=25$
10 mm	4.5	7	$(7/10)*100=70$
4.75 mm	2	9	90
2.36 mm	1	10	100
1.18 mm	–	–	100
600 micron	–	–	100
300 micron	–	–	100
150 micron	–	–	100
		Total	685

So,

Fineness modules(F.M.)

$$=685/100$$

$$=6.85$$

Q.2) Find the F.M of coarse aggregate and fine aggregate form the sieve analysis data as given in the table below:

Weight of sample = 15 kg

Solution:-

Coarse aggregate

IS sieve (mm)	Weight retained(kg)	Cumulative weight retained (kg)	Cumulative% retained
75mm	0	0	0
40mm	0	0	0
20mm	7	7	$(7/15)*100=46.67$
10mm	6	13	$(13/15)*100=86.67$
10mm	2	15	100
4.75mm	—	—	100
2.36	—	—	100
1.18	—	—	100
600micron	—	—	100
300micron	—	—	100
150micron	—	—	100
		total	733.34

Fineness modules (F.M.) = $733.34/100 = 7.33$

Total weight of fine aggregate = 500gm

Fine aggregate

IS sieve(mm)	Weight retained (kg)	Cumulative weight retained (kg)	Cumulative% retained
75mm	—	—	—
40mm	—	—	—
20mm	—	—	—
10mm	0	0	0
4.75mm	5	5	$(5/500)*100=1$
2.36	55	60	$(60/500)*100=12$

1.18	55	115	23
600micron	90	205	41
300micron	170	375	75
150micron	90	465	93
Lower than 150 micron	35	500	100(not unit)
		total	245

*NOTE**

Weight lower than 150 micron is not considered in calculation :-

Fineness modules (F.M.) = 2.45

Q.3) A sieve analysis was carried out for 5 kg aggregate in the laboratory with available sieves. The weights retained in sieve of 40,32,20,16,10,4.75, are 0,1.2,1.8,0.5,1.5 and 0 kg respectively. Obtain fineness modules for the sample.

Solution:

IS sieve(mm)	Weight retained(kg)	Cumulative weight retained (kg)	Cumulative% retained
40mm	0	0	0
32mm	1.2	1.2	24
20mm	1.8	3	60
16mm	0.5	3.5	70
10mm	1.5	5	100
4.75	0	5	100
		total	354

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COMULATIVE % weight retained = (commutative weight retained/total weight)*100%

Fineness modules (F.M.) = (total cumulative % weight retained)/100

=354/100

= 3.54

I hope this article on “Fineness modulus of aggregate” remains helpful to you.

Happy Learning – Civil Concept

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