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LABORATORY EXERCISE REPORT
BUILDING MATERIALS 2 - LABORATORY

Composition of aggregate for ordinary concrete (iteration method)

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1. TASK AIM

The aim of the task was to

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2. TEST RESULTS

2.1. ITERATION 1: OPTIMAL PROPORTION OF FRACTIONS 4/8 MM AND 8/16 MM

Mix No	1	2	3	4	5	6	7
Fraction 8/16 mm [%]	70	65	60	55	50	45	40
Fraction 4/8 mm [%]	30	35	40	45	50	55	60
Fraction 8/16 mm – mass [kg]	5,00	5,00	5,00	5,00	5,00	5,00	5,00
Fraction 4/8 mm – mass [kg]	2,14	2,69	3,35	4,09	5,00	6,10	7,50
Mass of aggregate mix [kg]							
Volume of aggregate mix [dm ³]							
Bulk density in the compacted state, ρ_{nu} [kg/dm ³]							

Comment:

An optimal aggregate mix contains:% of fraction 4/8 mm and% of fraction 8/16 mm.

2.2. ITERATION 2: OPTIMAL PROPORTION OF FRACTIONS 2/4 MM AND 4/16 MM

Mix No	1	2	3	4	5	6
Fraction 4/16 mm – [%]	90	85	80	75	70	65
Fraction 2/4 mm – [%]	10	15	20	25	30	35
Fraction 4/16 mm – mass [kg]	5,00	5,00	5,00	5,00	5,00	5,00
Fraction 2/4 mm – mass [kg]	0,55	0,88	1,25	1,67	2,14	2,69
Mass of aggregate mix [kg]						
Volume of aggregate mix [dm ³]						
Bulk density in the compacted state, ρ_{nu} [kg/dm ³]						

Comment:

An optimal aggregate mix contains:% of fraction 2/4 mm and% of fraction 4/16 mm.

2.3. ITERATION 3: OPTIMAL PROPORTION OF FRACTIONS 0/2 MM AND 2/16 MM

Mix No	1	2	3	4	5	6	7
Fraction 2/16 mm – [%]	70	67	64	61	58	55	52
Fraction 0/2 mm – [%]	30	33	36	39	42	45	48
Fraction 2/16 mm – mass [kg]	5,00	5,00	5,00	5,00	5,00	5,00	5,00
Fraction 0/2 mm – mass [kg]	2,14	2,46	2,81	3,20	3,62	4,09	4,62
Mass of aggregate mix [kg]							
Volume of aggregate mix [dm ³]							
Bulk density in the compacted state, ρ_{nu} [kg/dm ³]							
Empty voids in the mix, j_k [dm ³ /kg]							

Sand point [%]	30	33	36	39	42	45	48
Water demand ratio of the mix, w_k [dm ³ /kg]							
Sum of j_k and w_k [dm ³ /kg]							

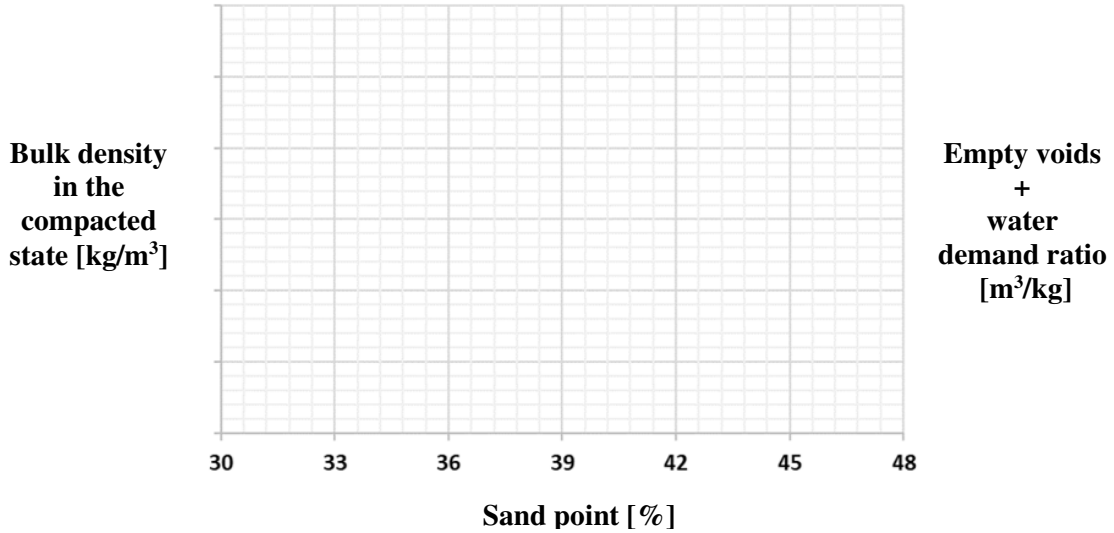
Comment:

An optimal aggregate mix contains:% of fraction 0/2 mm and% of fraction 2/16 mm.

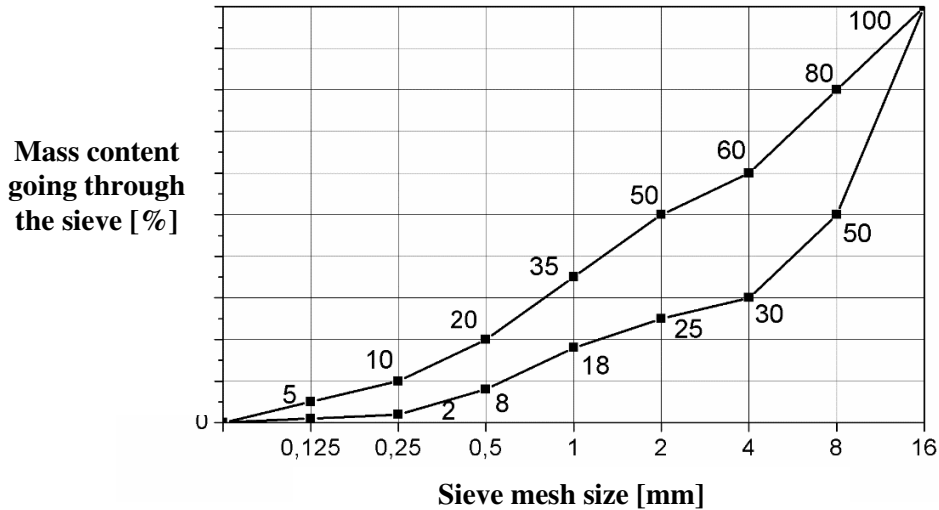
The composition of the optimal aggregate mix is as follows:.....% of fraction 0/2 mm,% of fraction 2/4 mm,% of fraction 4/8 mm and% of fraction 8/16 mm.

2.4. ANALYSIS

2.4.1. CONDITION RELATING TO BULK DENSITY IN A COMPACTED STATE AND THE SUM OF CAVITY AND WATER DEMAND RATIO



2.4.2. EVALUATION OF THE RESULTS OF GRIT SIZE SELECTION BY SUCCESSIVE APPROXIMATION USING GRIT LIMIT CURVES



3. CONCLUSIONS

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