LAB 2: Testing of aggregates

1. Preparation:

- Types of aggregates and definitions (chapter 14.1 – p. 72)[1]

- Sieving method, distribution curve, fineness modulus, aggregate gradation blending (chapter 14.4.1 – p. 73)

- Clay particles, organic impurities (chap. 14.4. – p.77)

- Particle shape (chap. 14.5. – p. 77)

2. Procedure

Determination of particle size distribution – sieving method:

The student will be divided into 2 - 3 groups

- weight given amount of the aggregate (usually 1 kg)
- check if the sieves are arranged in order of decreasing aperture sizes
- put approximately half of the aggregate into sieving column and fasten the sieves to the sieving machine
- start shaking and let it shake for approx. 10 min
- after finished mechanical sieving remove the sieves one by one, and shake each sieve manually above the paper sheet, ensuring no material is lost
- transfer all the material, which passes each sieve onto the next sieve in the column before continuing the operation with that sieve.
- weigh the retained material for each sieve and record it
- if the sum of the masses retained differs more than 1% from the original mass, the test shall be repeated.

Shape index

- for each group is prepared 50 grains from 1 fraction of the course aggregate A
- weight all the grains together
- using the shape index caliper sort out the grains with the ratio L/E>3 and weight them

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[1] Vimmrová A., Výborný J. : Building materials, ČVUT Prague, 2005.

3. Protocol

Determination of the particle size distribution

- data for the aggregates A, B will be given

- data for the aggregate C will be obtained from your measuring

- count the particle size distribution curve for the aggregates A, B, C (chapter 14.3.2, p.75)

- calculate the particle distribution of the mixture of aggregates A, B, C in given proportions (chapter 14.3.4- p. 76)

- draw all four particle size distribution curves into one diagram

Fineness modulus:

- count the fineness modulus FM according to EN 12620 only for fine aggregate C (chap. 14.3.3 – p. 76)

Shape index

- calculate the shape index SI as a ratio between the weight of particles with L/E > 3 and weight of all measured particles in percents

For protocol you can use the form attached. If you use the hand made form, it has to be similar to this form.

LAB 2 : Aggregates

Name:		PIN:
Signature:	Study group:	
Date:	Number of annexes : (all calculations, given data)	

Cumulative percentage passing			Mixing proportion **a : b : c =**	
Sieve size	Aggregate **A**	Aggregate **B**	Aggregate **C....***	Mixture **A:B:C**
63				
31.5				
16				
8				
4				
2				
1				
0.5				
0.25				
0.125				
0.063				
<0,063				
SI / FM**		/////		/////

* Fill in the number of workplace
** Shape index SI for the aggregate A, fineness modulus FM for the aggregate C.

Particle size distribution curves: