

Мелкозернистые торкрет-бетоны с комплексными модификаторами

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Fine-grained shotcrete-concrete with complex modifiers

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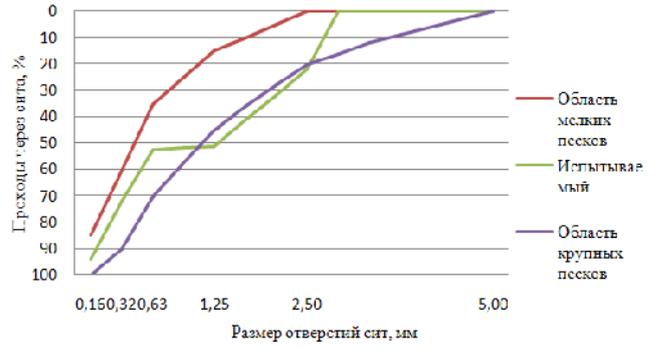
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The article presents a study on the development of dry mortar formulations for fine-grained shotcrete-concrete with high mechanical characteristics on local materials. The quality of local sands has been adjusted to obtain concrete with the optimum structure and the lowest porosity to ensure a more tight binding of the binder to the aggregate and to reduce the capillary porosity of the contact zone. The fine-dispersed filler, stone flour of several local deposits of rocks, namely, igneous and metamorphic limestone, have been studied. The rocks were ground to a dispersion commensurate with the size of the cement grains, which allowed obtaining the maximum packing of particles in the concrete due to a sufficient amount of cement-water-mineral slurry, providing a greater thickness of the coating on the surface of the aggregate grains, a given workability of the mixture in combination with water-reducing additives. Optimum consumption of mineral fillers is chosen. The study of the effect of dry plasticizing additives on the kinetics of the strength set of the developed concrete is presented. It has been established that a certain influence on the kinetics of hardening of concrete is exerted by the form and quantity of both mineral and organic additives. Since during repair work special attention is paid to the connectivity of the concrete structure taking into account its inelastic properties, when selecting the concrete composition, dispersed reinforcement was used and the influence of various types of fibers on the strength of fine-grained concrete was investigated. The introduction of polymer fiber, which differs by a greater uniformity of distribution in the cement system, is justified. All technological methods used in the study will make it possible to obtain high-quality fine-grained concrete that meets modern requirements for the reconstruction and restoration of construction sites in an urban environment.

Keywords: shotcrete-concrete; concrete mixture; repair and restoration works; modified concrete.



. 1.

. 1.

1

, %

	126-90	
2,5	25	22
1,25	26	15,1
0,63	10	15,4
0,315	16	19,5
0,14	10	22
0	5	6
	2	2,77
	0,5	0,9
	0	0

2

	%	28	
		R	R
()	-	7,70	58,0
	7	7,92	58,5
	7	10,7	60,0
	7	11,3	70,4

« »

Muraplast FK-49 (-49);

Centripor QM 35 (35).

-35 — 0,5 %, -35

0,6 0,7 % (. 3).

	%	\	28			
			1		28	
			R	R	R	R
()	-	0,43	14,54	3,71	58,0	7,70
-49	0,65	0,3	31,8	6,99	71,4	8,64
-35	0,5	0,47	20,6	4,95	70,6	7,16

[9–11].

[12].

[13].

[14–16].

[17–19].

. 4.

	%	28	
()	-	7,70	58,0
	0,13	8,35	58,9
	0,15	7,00	54,6
	0,18	6,50	52,9
	0,4	7,88	59,0

[20].

. 5.

	28	
()	7,70	58,0
+ -49 +	11,8	81,0

1. ... , 1988. 336 .

2. ...

// ... 2016. 11. . 48-58.

3. ... // ... 2011. 1 (2). 292-295.

4. ...

// ... 2012. 3. . 96-103.

5. ... // ... 2011. 3(2). .172-175.

6. ...

ALO₃H AL₂O₃ // ... 2015. 2. . 68-71.

7. ...

// ... 2011. . 23-25.

8. ... // ... 2015. 4. . 58-61.

9. ...

// ... 2014. 12. . 121-130.

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