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Adhesion of CAC cement with Portland cement stone

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ABSTRACT

It can be concluded that sulfo-mineral cements have greater heat resistance than Portland cement and alumina-belite, and it can also be used for the preparation of heat-resistant concrete and prefabricated reinforced concrete structures, since sulfo-aluminate-silicate cements have good adhesion to both mortars and concretes.

Keywords:

CAC of cement, expanding cement, CAC cement 3, Portland cement, alumina-belite cements, cement strength, compressive strength, weather resistance of CAC cement, adhesion, adhesion of CAC cement.

For monolithic structures, it is more advantageous to use expanding cement, rather than ordinary shrinkage cement, since the expansion force in the first case causes a thrust that promotes the merging of old concrete with new. The strength and impermeability of the joint on expanding cement must be higher than on ordinary shrinkage.

V.V. Mikhailov carried out monolithic structures with the help of waterproof expanding cement, and I.V. Kravchenko - with the help of gypsum-aluminous expanding cement and expanding Portland cement.

It is known that cements containing sulfoaluminate in their composition calcium, are

prone to significant expansion, and therefore are of interest for use in the monolithic concrete and reinforced concrete structures. In our experiments, we studied CAC cement 3 and Portland cement of the Akhagaran cement plant. Mortar samples were made on the basis of Volsk sand with a composition of 1:3. Concrete on SAS cement had the following composition: - 380 kg, sand - 680 kg, crushed stone - 1130 kg, water - 210 l.

The bending strength of Portland cement samples monolithic with AC solution after 3 days was 3.9 mg; as monolithic (Table 1).

Table 1,
Adhesion strength of mortars and concretes depending on time and
hardening conditions (samples - prisms 40 x40 x160 mm)

Contactable mortars and concretes	Flexural strength (MPa) through			Character destruction
	3 days in water	28 days in water	28 days in air	
Solution for PC with solution for CAS	3,9	-	-	By CAC solution
Concrete on PC with mortar on SAS	1,1	-	-	By contact
Concrete on PC with concrete on SAS	1,0	4,8	1,5	For CAC concrete
CAC solution with CAC solution	3,6	-	6,7	With new solution
Concrete on CAC with mortars on CAC	3,0	5,6	-	By CAC solution

Concrete samples on Portland cement, monolithic with a plastic solution of CAC cement, after 3 days of storage in water during a bending test, had a strength of wound 1, IMPa, while the samples were destroyed by contact. The strength of samples from concrete on Portland cement and from concrete on SAS cement at 3 and 28 days of age with water hardening was 1.0 and 4.8 MPa, respectively, the destruction occurred on new concrete. During air hardening, the samples had a lower bending strength - 1.5 MPa, i.e. the adhesion of concretes on Portland cement with concretes on SAS cement during water hardening was 3 times higher.

Old mortars on SAS cement with new ones on the same cement adhere well both with water (after 3 days - 3.6 MPa) and with air hardening (after 28 days - 6.7 MPa for bending); in this case, the rupture of the sample occurs not along the contact, but along the new CAC solution, The adhesion strength of concretes on SAS cement with mortars on the same cement was - 3.0 MPa after 3 days, 5.6 MPa after 28 days, the destruction occurred along the mortar.

Thus, it can be concluded that the use of sulfoaluminate-silicate cements for monolithic prefabricated concrete and reinforced concrete structures will give effective results, since these cements have good adhesion to both mortars and concretes on Portland and CAC cements.

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