

EFFECT OF COMPLEX ADDITIONAL AND FLYING ASH ON CEMENT PROPERTIES

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ABSTRACT

This article presents the study and improvement of the properties of the chemical complex additive C3 and mineral additive industrial waste by adding ash to the cement composition.

ANNOTATION

His paper presents the study and improvement of the properties of the chemical complex additive C3 and the mineral additive of industrial waste by adding ash to the cement composition.

Keywords: Chemical complex additive, mineral additive, volatile ash, consistency, content, optimal content ,.

INTRODUCTION

At a time when the construction industry in our country is developing rapidly, the demand for construction materials is growing, and with high demand, the role of energy-efficient building materials based on local raw materials is different. This is achieved by saving some cement clinker by adding mineral additives, and by reducing the consumption of cement and water by adding chemical complex additives.

EXPERIMENTAL SECTION

Industrial waste consists of studying the effects of volatile ash and complex additive C3 on the properties of cement and foam concrete. We started by adding the following amounts of industrial waste volatile ash to Portland cement PC400D0:

Initially, the control sample itself was added, followed by 5% to 30% of the cement mass.

Adding these values, we prepared 4x4x16 cm pellets, each of which we made three pellets for each sample. The prepared samples were prepared mainly for testing for 3-14-28 days bending and compressive strength. Once the samples have been tested, they are tested. The experimental processes are carried out initially on the MII-100 bending test device. Tests are

performed to determine the compressive strength of the bending specimens in a hydraulic press. The results obtained above are presented in Table 1.

Table 1 Effect of volatile ash on cement strength

No	The additional amount is relative to the amount of binder	Strength	
		To bend MPa	Compression MPa
3-day			
1	0%	4.4	12.8
2	10%	4.3	12.6
3	20%	3.8	11.8
4	30%	3.0	10.2
14 days			
1	0%	7,13	21,19
2	10%	7.11	21.0
3	20%	6.7	20.6
4	30%	6.0	18.8
28 days			
1	0%	10.81	31.89
2	10%	10.7	31.5
3	20%	10.0	30.2
4	30%	9.0	26

Table 1, Figure 1 is formed

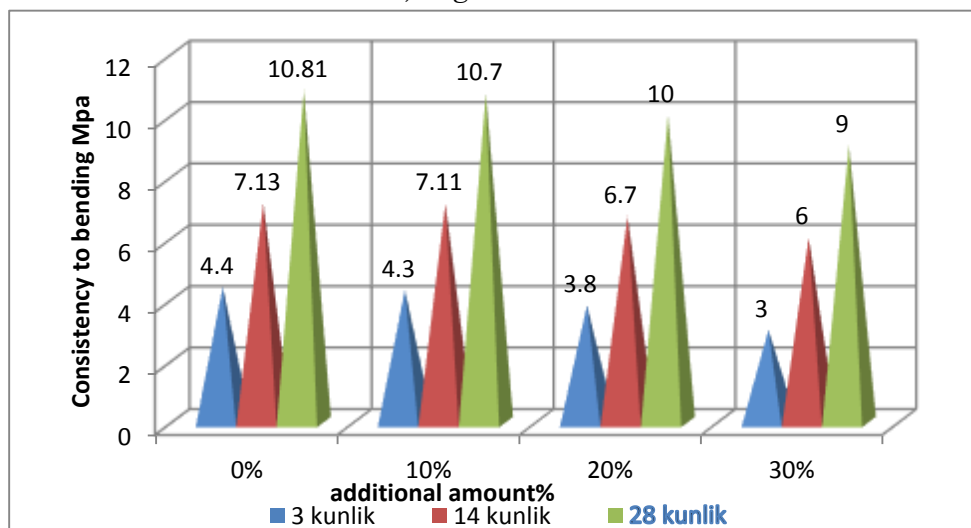


Figure 1 Effect of volatile ash on cement bending strength

This is the picture of industrial emissions of volatile ashes impact on the strength of the cement Compression

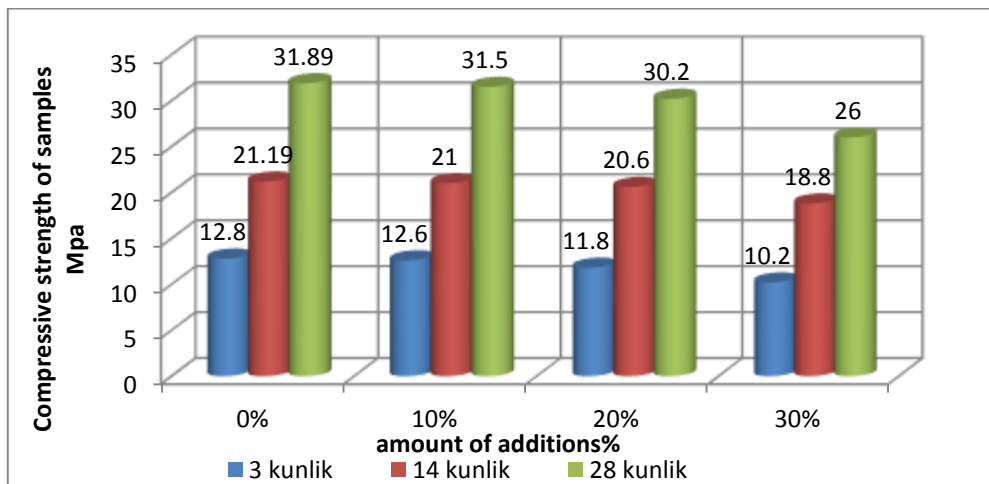


Figure 2 the effect of volatile ashes of cement Compression strength

The second work of our experimental work is to consider the complex addition of C3 to the cement PC40D0 Gaga, in which case we can do the same work as above. In this case, only the complex additive C3 is added in% of the cement mass. The results obtained and the additional quantitative values are given in Tables 2-3.

Table 2. Effect of complex additive C3 on cement strength for 7-day samples

№	Cement type	The additional	Additional amount (%)	The amount of water (%)	7-day consistency (KN)			7 Durability (MPa)			Average mousse (MPa)
					1	2	3	1	2	3	
1.	PTs400D0	C3	0	0.25							25.7
2.			0.5	0.24	16.5	16.4	16.6	30.9	30.8	31.1	31
3.			1	0.23	18.2	17	18.5	34.1	31.9	34.7	34.4
4.			1.5	0.22	21.2	19.7	22.4	39.8	36.9	42.0	40.9
5.			2	0.21	23.8	21.9	22.5	44.6	41.1	42.2	43.4

Table 3. Effect of complex additive C3 on cement strength for 28-day samples

№	Cement type	I add cha type	Additional amount (%)	The amount of water (%)	28-day sustainability (KN)			28 Consistency (MPa)			Average mousse (MPa)
					1	2	3	1	2	3	
1.	PTs400D0	C3	0	0.25							43.7
2.			0.5	0.24	25.4		17.4	47.6	0.0	32.6	40
3.			1	0.23	20.4	25.3	18.1	38.3	47.4	33.9	40.9
4.			1.5	0.22	23	25.7	26.5	43.1	48.2	49.7	48.9
5.			2	0.21	28.3	29	29.5	53.1	54.4	55.3	54.8

Table 2-3. Based on Figure 3.3. formed

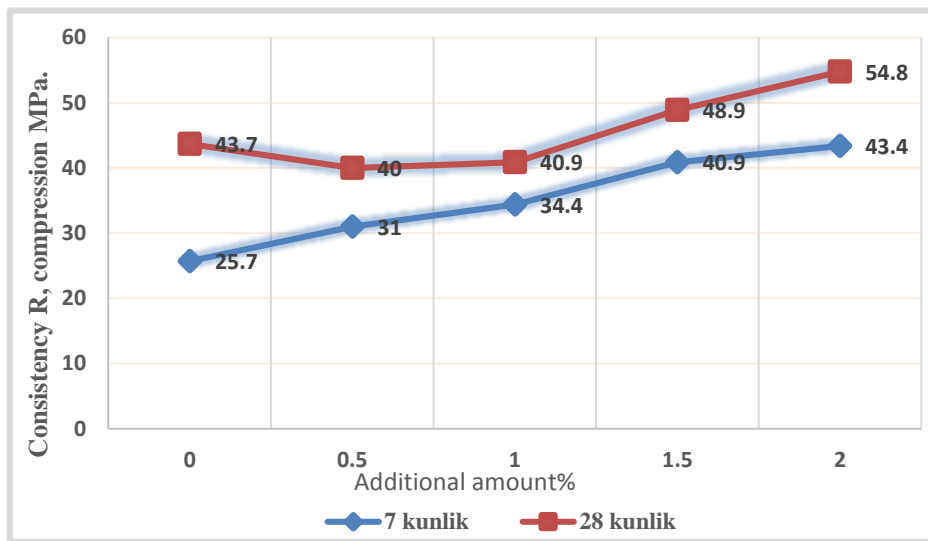


Figure 3. Effect of complex additive C3 on cement strength in the case where cement water demand was examined

Based on Figure 3.3, the effect of 2x2x2 cm samples on the 7- and 28-day strengths of the C3 admixture was calculated by calculating the cement water requirements for Portland cement PC400D0. In doing so, we opted for an additional amount of 1.5%, which basically satisfied us. Our next work will be the preparation of samples based on selected quantities of industrial waste volatile ash and complex additives C3 and the effect on cement properties.

Table 4 Influence of samples on the bending strength of cement in a complex way by adding volatile ash and C3

No	Cement type	Additional name and quantity	Quantity of chemical additive name	The bending strength of the sample at 7 days is MPa	The bending strength of the sample at 14 days is MPa	The bending strength of the sample at 28 days is MPa
1	PC400D0	Volatile ash 20%	Complex C3 1.5%	5.5	7.1	10.7
2				5.7	6.9	11
3				5.63	7	10.5

Table 5 Influence of samples on the compressive strength of cement in a complex way by adding volatile ash and C3

No	Cement type	Additional name and quantity	Quantity of chemical additive name	The bending strength of the sample at 7 days is MPa	The bending strength of the sample at 14 days is MPa	The bending strength of the sample at 28 days is MPa
1	PC400D0	Volatile ash 20%	Complex C3 1.5%	12.6	21.3	31.3
2				13.02	21.8	31.6
3				12.9	21.65	31.9

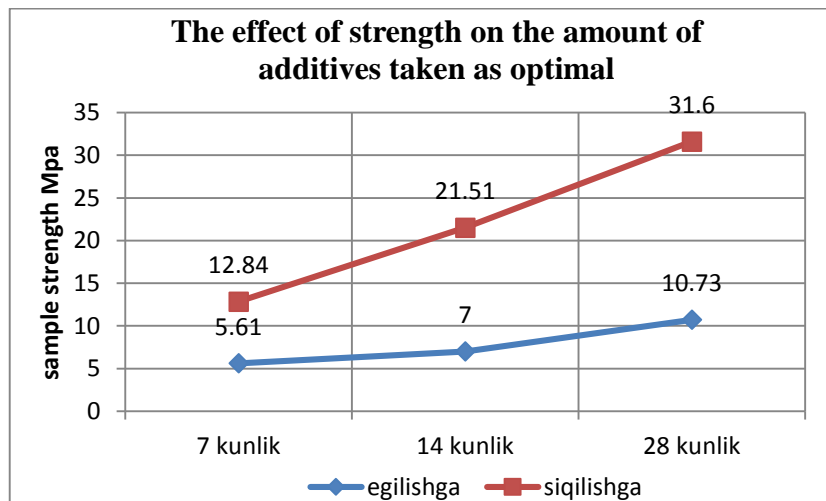


Figure 4 The effect of the number of additives taken on the optimum on the strength

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