

## RECOVERY OF CERAMIC COMPOSITIONS WITH HIGH MERITS ON THE BASIS OF SLAGS AND FLY ASHES BY BURNING ACTIVATED SLUDGE

It is known, that slags and ashes (SA) from burning activated sludge and domestic wastes contain a significant amount of heavy metals, dioxins and polyaromatic hydrocarbons (PAH). The considered fact in some cases brakes opportunities of their use as components for building materials recovery.

Table 1. Properties of fired materials of construction.

Blending ratio, % mass		Properties of samples after roasting										
Clay	Ashes by burning activated sludge	Frost resistance, quantity of cycles of alternate freezing and	St.-Petersburg		Strasbourg		Pskov		Orenburg		Ust-Kamenogorsk	
			Compression MPa	Water absorption, %	Compression MPa	Water absorption, %	Compression MPa	Water absorption, %	Compression MPa	Water absorption, %	Compression MPa	Water absorption, %
1	2	3	4	5	6	7	8	9	10	11	12	13
50	50	25	36.0	10.0	39.0	14.2	39.0	14.0	42.0	15.1	40.4	14.0
35	65	25	72.0	10.8	70.2	10.0	70.0	11.2	70.0	10.2	68.0	10.0
25	75	not defined	59.0	12.0	60.0	12.0	50.0	12.0	50.0	12.0	48.0	15.0

We studied SA from burning activated sludge of St.-Petersburg, Strasbourg (France), Pskov, Orenburg, Ust-Kamenogorsk (Kazakhstan) (see Table 1).

On the basis of these SA are ceramic fired material with temperature of roasting is about 1000<sup>0</sup>C, shale ashes with high content of CaO is added in bland for acceleration of decomposition of dioxins and PAH. Heavy and nonferrous metals immobilize at 1000<sup>0</sup>C by entering in submatrix of anions and cations of rock formation minerals and isn't leached in subacidic and weak-alkalescent solutions. Compounds are obtained at a following blending ratio: clay of 10-90 % (on volume), ashes – 10-90 % (on volume) and 5 % of shale ashes over volume. Prepared blend humidified up to 9 % and pressed at 5 Mpa. Before heat treatment the blend was dried up to humidity of 5 % in natural conditions. It is interesting, that speed of moisture-yielding of the samples containing ashes from burning of activated sludge increases for 25-35 % and drying passes in softer mode – distortion and deficiencies of preparations is not observed (sometimes that took place at control samples consisting of clay on 100 %).

Finding testify, that ceramic materials on the basis of slags and ashes from burning activated sludge can be used in road construction instead of gravel package.