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### Chemical Composition of Coal Ash of “Progress” Mine (“TOREZANTRATSIT” SHC)

SiO<sub>2</sub>, Fe<sub>2</sub>O<sub>3</sub> and Al<sub>2</sub>O<sub>3</sub> are prevailing oxides within coal ash. Total oxide content (Fe<sub>2</sub>O<sub>3</sub> + Al<sub>2</sub>O<sub>3</sub> + CaO) is 4.11 within h<sub>8</sub> seam coal, and 8.61 within h<sub>7</sub> one. Against aluminosilicate oxides to basic ones SiO<sub>2</sub> + Al<sub>2</sub>O<sub>3</sub>/MgO + Fe<sub>2</sub>O<sub>3</sub> + CaO (it is 1.35 on h<sub>8</sub> seam, and 3.74 on h<sub>7</sub> one) the ash is acidic. Ash calcium is 6.73 on h<sub>8</sub> seam, and 3.27 on h<sub>7</sub> seam.

Chemical Composition of Ash in h<sub>8</sub> Seam

Fe <sub>2</sub> O <sub>3</sub>	Al <sub>2</sub> O <sub>3</sub>	SiO <sub>2</sub>	CaO	MgO	SO <sub>3</sub>	P <sub>2</sub> O <sub>5</sub>	SiO <sub>2</sub> +Al <sub>2</sub> O <sub>3</sub> / MgO+Fe <sub>2</sub> O <sub>3</sub> +CaO	Fe <sub>2</sub> O <sub>3</sub> +CaO+ Al <sub>2</sub> O <sub>3</sub>	
								в золе	в угле
30,5	13,1	35,4	6,7	4,1	6,0	0,4	1,35	50,3	4,1

Chemical Composition of Ash in h<sub>7</sub> Seam

Fe <sub>2</sub> O <sub>3</sub>	Al <sub>2</sub> O <sub>3</sub>	SiO <sub>2</sub>	CaO	MgO	SO <sub>3</sub>	P <sub>2</sub> O <sub>5</sub>	SiO <sub>2</sub> +Al <sub>2</sub> O <sub>3</sub> / MgO+Fe <sub>2</sub> O <sub>3</sub> +CaO	Fe <sub>2</sub> O <sub>3</sub> +CaO+ Al <sub>2</sub> O <sub>3</sub>	
								в золе	в угле
17,2	22,9	45,6	6,7	4,1	6,0	0,4	1,35	50,3	4,1

Ash-fusion temperature depends on its content. If percentage of silicon and aluminium oxides increases, and ferrum oxides decreases, then ash-fusion temperature rises. If percentage of ferrum oxides increases, then it drops.

Ash-fusion temperature on seams is as follows: h<sub>8</sub> – t<sub>1</sub> – 1027<sup>0</sup>C, t<sub>2</sub> – 1129<sup>0</sup>C, t<sub>3</sub> – 1195<sup>0</sup>C. The ash is fusible. For h<sub>7</sub> seam, figures are: t<sub>1</sub> – 1012<sup>0</sup>C, t<sub>2</sub> – 1208<sup>0</sup>C, t<sub>3</sub> – 1307<sup>0</sup>C. The ash is medium-fusible. Coal ashes and slags of h<sub>7</sub> seam may be applied as active agents and inert fillers in cements and cement-based products (SO<sub>3</sub> and CaO are less than 5% and sulphide sulphur is not more than 1%). The ash may be used to manufacture lighted artificial fillers, fly ash aggregate, agloporite, and other fillers (Fe oxide content is more than 10%, CaO is less than 5%, and MgO is less than 5%). Coal ashes and slags of h<sub>7</sub> seam may be applied in the process of brick manufacture as MgO + CaO content is not more than 10%, and SO<sub>3</sub> is not more than 5%.