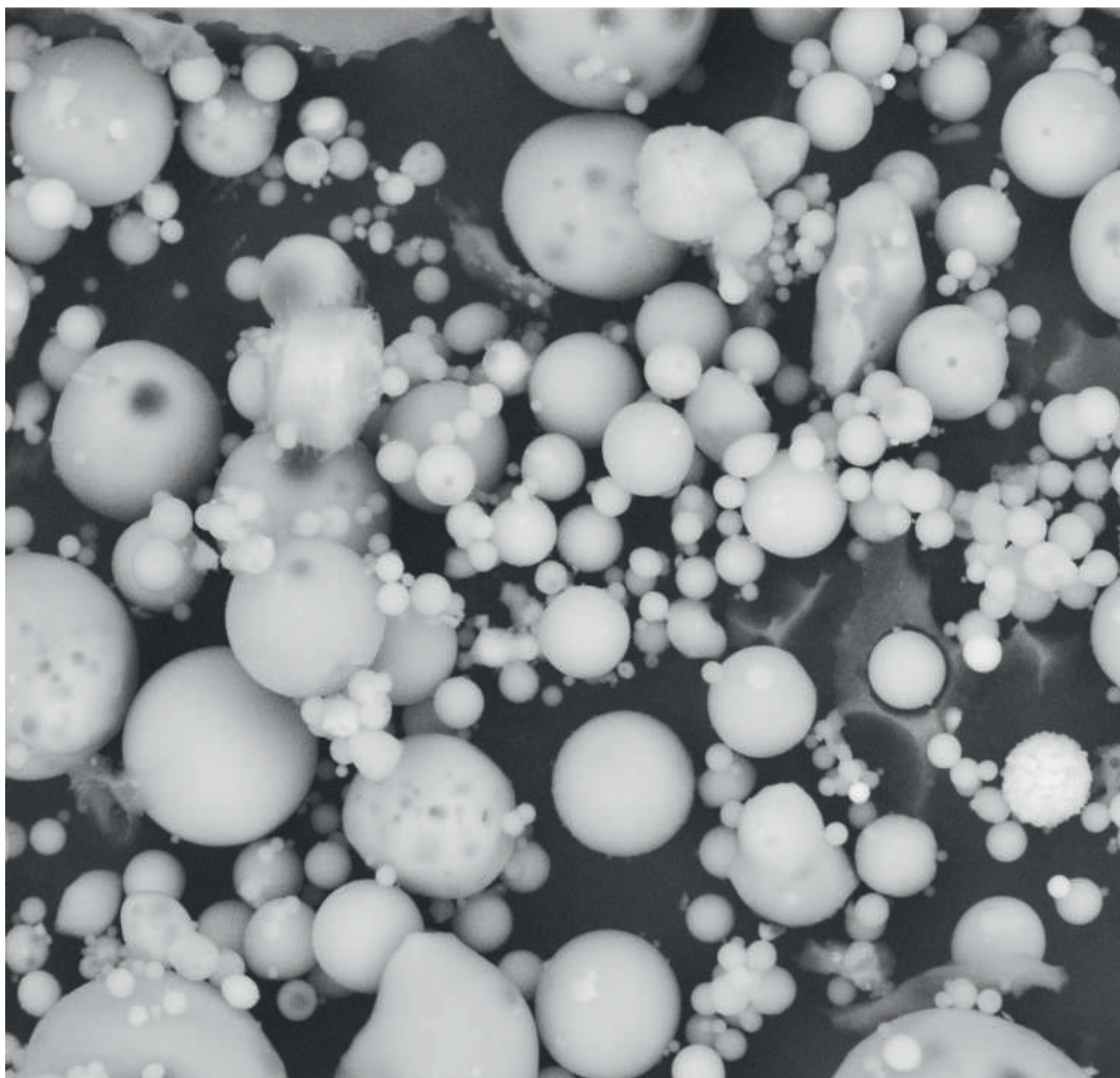
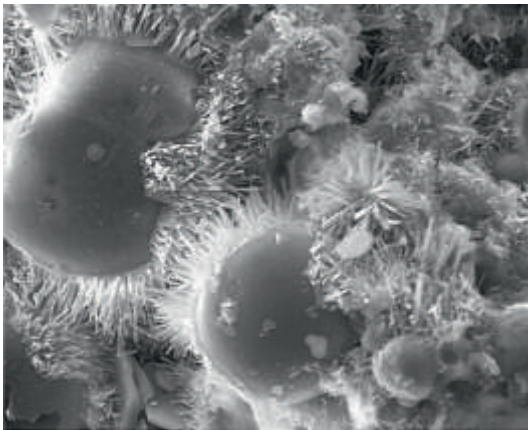


# Fly Ash



## FLY ASH FOR CONCRETE

Fly ash for concrete is formed as a result of combustion of the hard coal in power plants and combined heat and power plants in the temperature 1250 - 1400°C, where a large portion of inorganic material contained in coal melts, forming spherical, vitrified grains with diameter of 0,5 to 200 µm. Conventional fly ash is precipitated electrostatically or mechanically from flue gas stream from boilers and retained in ESP. The fraction 5 – 20 µm is dominated. In terms of chemical composition the fly ash corresponds to volcanic ash and rocks, such as trass and pumice, known for more than 2000 years. As a result of thermal treatment in the combustion chamber and at the presence of calcium in room temperature, fly ash comes into pozzolan reactions. This reaction, as for the hydration of Portland cement results in microscopic, crystalline lime – silicate and lime-aluminate hydrates, that merge as a hard rock.



SO<sub>3</sub> content



## QUALITY

PHYSICAL PROPERTIES	REQUIREMENTS
Activity index after 28 days	≥ 75%
Activity index after 90 days	≥ 85%
Volume stability	≤ 10 mm
Specific density, approximately 2100 kg/m <sup>3</sup>	ok. 2100 kg/m <sup>3</sup>

CHEMICAL PROPERTIES	REQUIREMENTS
The content of free lime (CaO) ≤ 1.5% by weight	≤ 1,5 % by weight
The content of calcium oxide CaO reactivated	≤ 10,0 % by weight
The silica content of reactive SiO <sub>2</sub>	≥ 25,0% by weight
The content of the sum of the oxides (SiO <sub>2</sub> , Al <sub>2</sub> O <sub>3</sub> , Fe <sub>2</sub> O <sub>3</sub> )	≥ 70,0% by weight

Fly ash for the concrete, from the point of view of radiological protection, as well as raw materials of mineral origin, may be used for the production of construction materials and products, used in buildings to accommodate people and animals, in such quantities, that the final product meets the criterion  $f_1 \leq 1,2$  i  $f_2 \leq 240$  Bq/kg (in accordance with the Resolution of the Council of the Ministers, f2 January 2007, Journal of Laws, no. 4, item 24.).

Fly ash is environmentally friendly. It is non-toxic, and is not classified as a dangerous substance.

Production Control Department, functioning in the Company controls the quality of fly ash. The compatibility of fly ash with the standard PN-EN 450-1 is confirmed by the CERTIFICATE OF USEFUL PROPERTIES issued by Certification Department of the Building Research Institute in Warsaw.



## APPLICATION

in the cement industry – as a cement component

In the concrete production as:

- o addition to ready mix concrete,
- o addition in the production of concrete products (vibroprocessed concrete pavers),
- o refining addition in the production of precast concrete,
- o autoclaved component of cellular concrete,
- o additive to the production of ceramic building materials (bricks, blocks), and road construction industry,

as an aggregate

- o for ground drying,
- o to improve the substrate structure,

to fill the underground voids in coal mines.

We provide the full technical support by qualified and experienced product managers and concrete technologists, with own laboratory background.



## OFFER

### CERTIFIED FLY ASH TO THE CONCRETE

meets the requirements of the standard PN-EN 450-1, certified by the Certificate of useful properties and Declaration of Useful Properties.

ADDITIONALLY:

### SUB-STANDARD FLY ASH

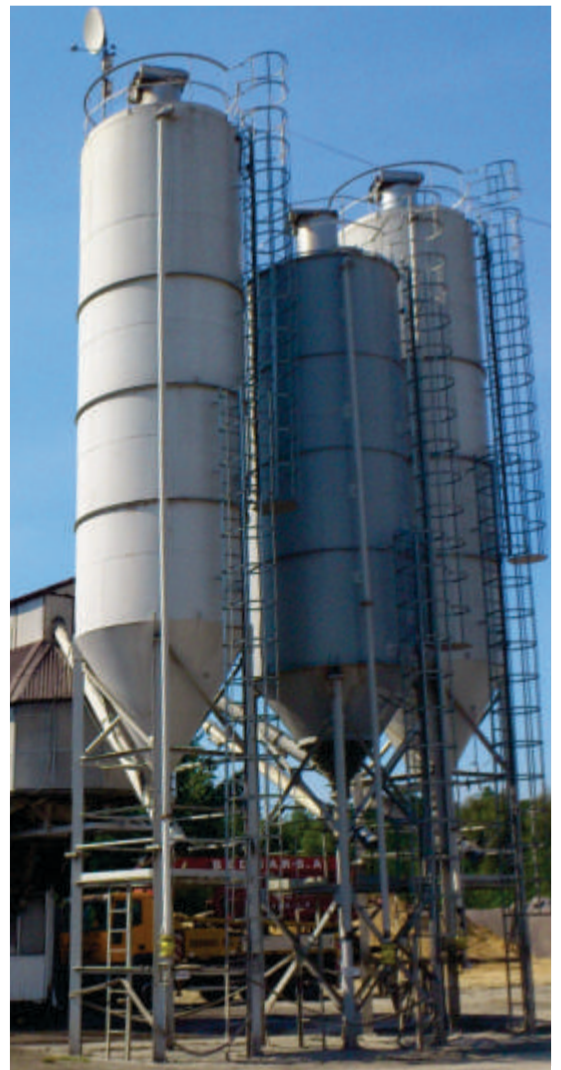
#### **– AGGREGATE FOR SOIL GRADATION IMPROVEMENT**

##### **- DRY FLY ASH**

Oversized dry fly ash – the waste requires the current Buyer's decision for waste recovery with the code 10 01 02 and the decision for transport of the waste with this code, in the case of Client own transport.

##### **- MOIST FLY ASH**

The moist fly ash offered as a by-product requires the current Buyer's decision for waste recovery with the code 10 01 02 and the decision for transport of the waste with this code, in the case of Client own transport. It is transported by cars – trailers, primarily used to transport of aggregates.



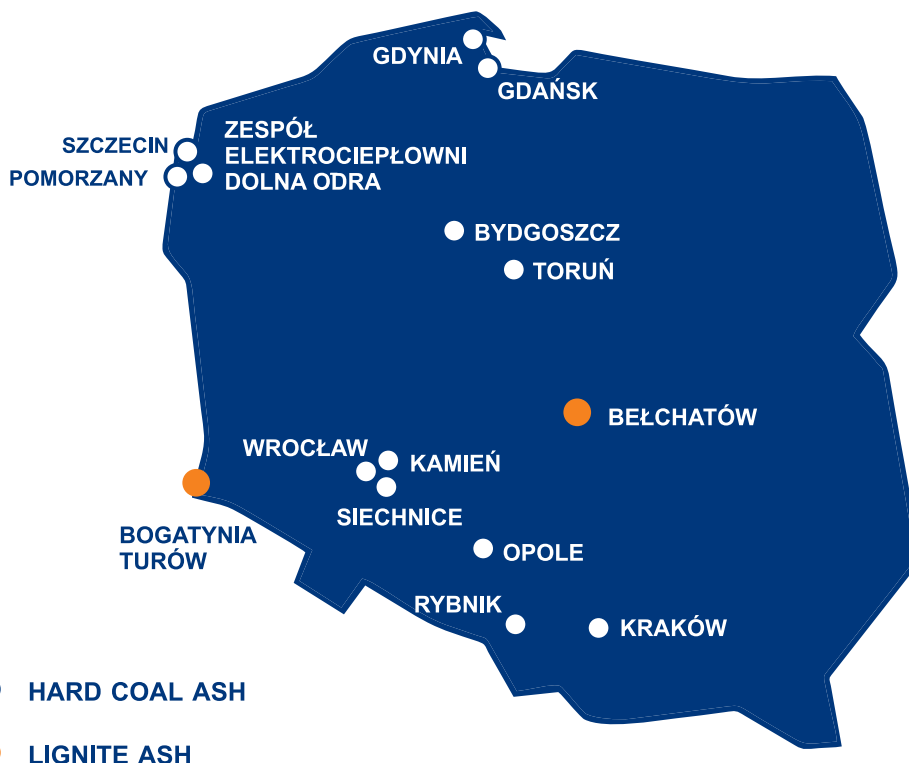
## ADVANTAGES OF THE USE OF ASH

- lowers the costs of concrete mixture production
- improves the workability of the concrete
- improves the tightness of the structure
- reduces the hydration heat
- increases the resistance to chemical attack
- takes part in the cement setting reaction

## TRANSPORT

We provide the transport with the use of the own car and rail fleet. We also cooperate with experienced carriers providing services for us at the highest level. Using our services, customers do not assume any risk in terms of transport, and ordered material is delivered on time at the designated place. Especially important for us it is to preserve the safety of both our manufacturing facilities during loading and during transport and unloading at the destination place.

## SALE



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and load notification)  
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