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CERTIFICATE OF ANALYSIS

Product specification & analysis
Ref: ALT-TDS

Shungite — fractionated

Natural crushed shungite rock · Zazhoginskoye deposit · Republic of Karelia

Fractions: 1–3 mm · 3–5 mm
Radiation class: I
Country of origin: Russia

1 · PRODUCT IDENTIFICATION

Product name	Shungite — fractionated (crushed natural shungite)
Material	Natural carbon-containing mineral rock (shungite rock)
Deposit	**Zazhoginskoye deposit**, Medvezhyegorsk district, Republic of Karelia
Country of origin	**Russia**
Fractions tested	1–3 mm · 3–5 mm
Appearance	Black grains of irregular shape, obtained by crushing natural shungite rock
Technical specification	Crushed and milled shungite of the Zazhoginskoye deposit for domestic and industrial use
Intended use	Filter material for drinking water treatment · domestic and industrial use

2 · CHEMICAL COMPOSITION

Average chemical composition of the rock (% by mass)

SiO_2	TiO_2	Al_2O_3	FeO	MgO	CaO	Na_2O	K_2O	S	C	H_2O
57.0	**0.2**	**4.3**	**2.8**	**1.2**	**0.3**	**0.2**	**1.5**	**1.5**	**28.0**	**3.0**

H_2O — crystal water, part of chlorite and mica.

MINERAL COMPOSITION (% BY MASS)

Shungite carbon	28 %
Quartz	50 %
Complex silicates (chlorite, mica)	20 %
Sulphides	2 %

3 · PHYSICAL PROPERTIES

Density (in a slice)	2.3 – 2.4 g/cm³
Bulk density	1100 – 1200 kg/m³
Porosity	up to 0.5 %
Compressive strength	1000 – 1500 kg/cm²
Modulus of elasticity	0.31×10^5 GPa

4 · HYGIENIC CHARACTERISTICS

Odour	max. 2 points
Colour	max. 20 degrees
Turbidity	max. 1.5 mg/l
pH value	6 – 9

Oxidizability	max. 5.0 mg O_2/l
Ammonia	max. 2.0 mg/l
Nitrites	max. 3.0 mg/l
Nitrates	max. 45 mg/l
Mercury (Hg)	max. 0.0005 mg/l
Lead (Pb)	max. 0.03 mg/l
Toxicity index	70 – 120 %
Skin-irritating effect	Absent

5 · RADIOLOGICAL CHARACTERISTICS

Specific effective activity of natural radionuclides	**Class I** — max. 370 Bq/kg
Radiation factor	Use without restrictions

6 · CONFORMITY ASSESSMENT

The tested samples of shungite material (fractions 1–3 mm and 3–5 mm) meet, by their physico-chemical and organoleptic properties, toxicity index, skin-irritating and skin-resorptive effect, the requirements of SanPiN 2.1.4.1074-01 *"Drinking water. Hygienic requirements for the quality of water of centralized drinking water supply systems"*, GN 2.1.5.1315-03 *"Maximum permissible concentrations of chemical substances in water"*, MU 2.1.4.783-99, MU 1.1.037-95 and MU 2102-79, and may be used as a filter material for drinking water treatment.

Assessment basis	Sanitary-epidemiological expert assessment and laboratory test reports of the state centre for hygiene and epidemiology (Russian Federation)

7 · SAFETY, STORAGE AND TRANSPORT

Hazardous effects	None identified
First aid	Not required — no chemical reaction with the human body
Combustibility	Non-combustible
Toxicity	Non-toxic · ecologically safe
Usage and storage	No special requirements
Personnel safety	No special requirements
Disposal	Does not require recycling
Transport	In bulk or in polypropylene bags · no special measures required
Certification status	Not subject to mandatory certification under the unified list of products of the Russian Federation (Government Decree No. 982 of 1 December 2009)

Shungite is a natural mineral. Slight deviations in colour, grain shape and size cannot be fully excluded and are not grounds for complaint.

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