UNIVERSAL RESEARCH AND DEVELOPMENT ENTERPRISE (URDE)

PRESENT

Advantages of application of pipes made of basalt composite materials in water supply and drainage (sewage systems):

Hydrosystems made of basalt composite materials have the following operational characteristics:

Composite pipes based on basalt continuous fibers are made from igneous rocks with an unlimited raw material base. Basalt pipes by their nature have a high chemical and thermal resistance, are environmentally friendly material. High strength, resistance to aggressive environments, heat resistance, low hygroscopicity determines the increased performance characteristics of BCF materials: durability, proofness to natural factors and sea water, high temperatures, resistance to vibrations and alternating loads, incombustibility.

1. The specific strength of basalt materials is 2 to 2.5 times higher than those for alloy steel.

2. Full corrosion and chemical resistance of basalt composite pipes to the influence of aggressive environments: solutions of salts, acids, alkalis. This property opens wide prospects for their use for structures that operate for decades under the influence of the environment and sea water.

3. High thermal stability of basalt composites. Basalt materials can work in a wide temperature range from -392^{0}F to + 1112^{0}F, andesite-basalt composites - up to +1472^{0}F.

4. High thermal and sound insulation characteristics.

5. High resistance and durability to alternating loads. Basalt composites under the influence of long term alternating loads almost do not have traces of fatigue fractures - cracks and other signs of destruction.

7. High impact toughness of basalt composites.

8. High compatibility with other materials: metals, polymer materials, plastics. Application of strong adhesive joints instead of rivets and welding.

9. 6-8 times less weight, compared with equally strong steel pipes.

10. Good-looking appearance (without the use of paint and varnish coatings), maintainability.

These and other properties of basalt composite pipes give the following advantages of basalt hydraulic piping:

- The service life of basalt pipes in water supply is 100 years, in the absence of any types of corrosion;
- Absence of water contamination by corrosion products, blurring elements, physical breakage and solutions of structural materials of pipe. Full ecological safety of the supplied water;
- The smoothness of basalt pipes is higher than that of steel, which increases the capacity of the pipeline, reduces energy losses for pumping the hydraulic system;
- Basalt pipeline does not overgrow with biohumus;
- The connection of pipes and pipe components is performed without welding;
- The service life of the shut-off and regulating equipment of the hydraulic line is doubled;
- Full corrosion safety when laying the pipeline along the bottom of the reservoirs with salt water;
- When hot water or heating

medium is supplied through the basaltic pipeline for heating, it takes three times less heat losses than steel pipes;

- 6-7 times less weight of the pipeline compared with steel;

- Possibility to create seamless, "infinite" pipes and large diameter pipes;
- Ability to produce pipes directly on laying-in site.

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