

INCREASING THE LIFETIME OF ENGINEERING STRUCTURES THROUGH THE USE OF COMPOSITE LAGGINGS

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SUMMARY

The use of composite laggings prevents concrete (chemical and biological) corrosion. Columns coated with composite or reinforced composite are more resistant to negative environmental impact on concrete or steel. The mechanical properties of the reinforced casing also cause that these types of columns are more resistant to lateral forces. The applied casing limits carbonization of concrete and cyclical freezing and thawing with penetrating water, and thus increases the lifespan of columns exposed to water. Laboratory tests were carried out regarding the short-time load-carrying capacity of columns in a composite laggings.

Keywords: *Composite laggings, lifetime.*

1. THE USE OF COMPOSITE LAGGINGS

Columns and piles are exposed to aggressive corrosive action of the environment, i.e. a set of external factors capable of causing harmful changes in the structure of the building material from which the given construction is made. The result of this action is corrosion of the material, leading to deterioration of its properties and functional suitability, causing its premature destruction. For example, marine corrosion of piles, i.e. their destruction by sea water is shown in Fig. 1.



Fig. 1. Marine corrosion burns.

One should also remember about biological corrosion caused by bacteria, fungi, cyanobacteria, algae, lichen, etc., whose examples are presented in Fig. 2 and Fig. 3.

Composite materials are also used in construction, as lagging in the form of pipes for columns or piles with a circular cross-section. A composite pipe used to fill it with concrete or reinforced concrete will also be called a coat. The composite used can be reinforced. In this case, glass fibers [1] [2] will be used to strengthen it.