The best coastal protection is one that protects man and nature.

Elastocoast®. Making our coasts safer.
Diagram of an Elastocoast® revetment

- Polyurethane-bonded wearing course
- Dyke body
- Geotextile
- Levelling course
To demonstrate the environmental impact and environmental benefits of new ElastoCoast® technology, an extensive eco-efficiency analysis has been conducted. This involves a life-cycle analysis of various products and processes in terms of their impact on the environment. The ecological assessment is based on DIN EN ISO 14040 and 14044 and has been certified by TÜV (Technical Control Board) Berlin as an overall method. ElastoCoast® was compared to traditional coastal protection methods such as concrete and open stone asphalt (O.S.A) on a surface area of 20,000 m².

The environmental analysis of the new polyurethane system for coastal protection shows that ElastoCoast® is the material with the greatest eco-efficiency (see “Ecological fingerprint” diagram). In the analysed categories – emissions (emissions to air and water, and solid waste), energy consumption, toxicity potential, resource consumption and risk potential (occupational accidents and workplace-related diseases) – ElastoCoast® has the least impact on the environment. Only in terms of the required agricultural acreage is ElastoCoast®’s impact greater than that of the compared materials, as the polyurethane system contains a larger share of renewable raw materials such as vegetable oils.

Its CO₂ emissions, for example, are as much as 50% lower than those of other materials (see “Greenhouse gases” diagram). An independent test report* concerned with the release of chemical substances by ElastoCoast® installed at two different holms demonstrates impressively that the measured emission rates are well below 0.1 µg/cm² (equivalent to 1 mg/cm²) – even when heated to 60°C. According to the criteria of the Committee for the Health Assessment of Construction Products (AgBB, 2010), these emission rates would make ElastoCoast® suitable for use in the home.

The eco-efficiency analysis says it all.
In the assessment of energy consumption and the quantities of resources required for the production of the material, Elasto coast® also performs well compared to the other materials. This can be attributed to the energy consumption in the production of chemical substances and the use of natural oils. The input of resources for Elasto coast® is particularly low, as, apart from the PU system, mainly rock and sand are required for production.

To estimate the possible effects of the polyurethane system on aquatic organisms, BASF Polyurethanes has commissioned an ecotoxicological study from the Fraunhofer Institute for Molecular Biology and Applied Ecology**. The results show that the product is safe in its cured state. To be more precise, given a ratio of at least 2,000 litres of water to 3.6 kg of Elasto coast® (roughly 200 kg of bonded rock), no harm to communities of aquatic life is to be expected. Elasto coast® thus not only makes our coasts safer, but also gives sufficient consideration to marine organisms.

*Eurofins Product Testing A/S, Galten, Denmark
**www.ime.fraunhofer.de

Elastocoast®. Making our coasts safer.
Two good reasons for choosing this intelligent system.

Elastocoast® not only makes our coasts safer...

Revetments of Elastocoast® are a new, extremely effective coastal protection system. These consist of aggregate (crushed rock) mechanically bonded with an environmentally compatible two-component polyurethane plastic. This mixture is applied to previously prepared dykes, slopes, breakwaters and other sea- and freshwater shorelines. The outcome is a highly durable, strong and hence secure bulwark against the waves and flooding.

...Elastocoast® is also an ideal substrate for flora and fauna.

Biological studies by the University of Amsterdam have shown that revetments with Elastocoast® are colonized by the flora and fauna typical of the local region within just a few weeks. After only a few months, researchers also verified a proliferation of green and red algae and seagrass and an abundance of periwinkles and limpets. These findings are clear evidence of the sustainable repopulation of the surface by marine organisms – organisms that are also a vital source of food for the likes of gulls and oyster-catchers. Unlike conventional, impervious coastal defence structures, Elastocoast® revetments with their cavities also provide additional habitats for the animal and plant world.

Thanks to the transparency of the material, the revetment blends noticeably better into the local coastal landscape.

Finally, when it reaches the end of its useful life, this amalgam of materials is classified as completely safe in the European Waste Catalogue and can be re-used, e.g. as a new raw material for road and path construction.
Address:
BASF Polyurethanes GmbH
Elastogranstrasse 60
49448 Lemförde
Germany

Contact:
Johan Rasing
Phone: +31 6 538 656 96
e-mail: johan.rasing@basf.com
www.elastocoast.com

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