Excerpt from the Fraunhofer Institut für Bauphysik (IBP) – Report Nr. FM 003/2022/220

"Concept for determining the environmental impact assessment of an innovative cement additive for traffic route construction"

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Municipal road construction has a non-negligible share of the German road network.
...
For this reason, there is a very high need for maintenance measures, especially for municipalities. However, only affordable maintenance measures are usually used for the municipal road network. The useful live cycle often does not exceed the guarantee.
...
The technology of conventional soil stabilization is applied to the pavement structure with the help of the patented polymer additive NT BASE from corent AG.
...
The aim of using the additive is, among other things, increased weatherability and durability of the consolidation to a laboratory proven, significant extent using standard construction equipment. With this method, the negative consequences of maintenance methods that are often used in municipal road construction, are inexpensive and not very durable, such as e.g. additional costs due to the frequent need for renovation can be avoided.
...
This construction method has already been used successfully in other European countries for municipal road construction for a number of years with the product NT BASE.
When developing the special polymer additive, special emphasis was placed on health and environmental compatibility. Laboratory tests carried out during its development confirm this expectation.
...
The use of NT BASE products shows that essential structural parameters can be significantly improved. The tests carried out confirm that when using NT BASE, there is greater strength, less shrinkage, extremely increased fatigue strength, better frost resistance, increased flexibility and thus a significantly longer useful life of the structure.
...
The aim of the feasibility study and the task of the Fraunhofer IBP was to compile the prerequisites and requirements for a comprehensive environmental impact assessment and to develop a concept from this, which includes all the necessary studies.
...
In order to ensure an appropriate technical assessment of the environmental compatibility, three stages of the product application had to be taken into account for the verification concept:

- Manufacturing
- Service life
- dismantling phase

...
Basic questions were defined such as:

• Is the polymer itself environmentally friendly?
• Is the polymer environmentally friendly in the usual mixing ratio?
• Can the additive leach or wash out over the years while installed?

...
Since 1999, substances and mixtures have had to be classified in water hazard classes in Germany.
...
For the product NT BASE 4.0™ it can be deduced that the polymer (Identification number 766) used as the main component in the recipe is classified as not hazardous to water and that polymer dispersions are classified in WGK 1 according to identification number 662.
...
Based on the detection concept developed, corent AG commissioned an eluate analysis from the chemical and microbiological institute UEG GmbH in order to examine possible leaching from a test specimen solidified with an additive. It was found that the addition of NT BASE 4.0™ does not lead to the release of any substances that would be qualitatively or quantitatively relevant to an environmental hazard.
...
The study ends with the results of a laboratory analysis, which was commissioned by corent AG parallel to the project and which provides clear evidence of the environmental compatibility of the NT BASE additive.
...
At the same time, corent AG applied for an ETA (European Technical Assessment) from EOTA (European Organization for Technical Approvals). The evaluation of the product is carried out by a state, independent, technical evaluation body based in Brussels. The desired assessment document (EAD, European Assessment Document) describes the performance of the product with regard to its essential characteristics, reflects the specifications examined and applies like a harmonized standard. On the one hand, this should ensure security for tenders for builders, and on the other hand, the further goal is the CE marking of the NT-BASE products. The European Construction Products Regulation (Regulation (EU) No. 305/2011) is the legal basis for this procedure.
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Further information on the concept as well as extensive test results from various laboratories are available in full in the IPB final report no. FM 003/2022/220 feasibility study: “Concept for determining the environmental compatibility of an innovative cement additive for traffic route construction.”