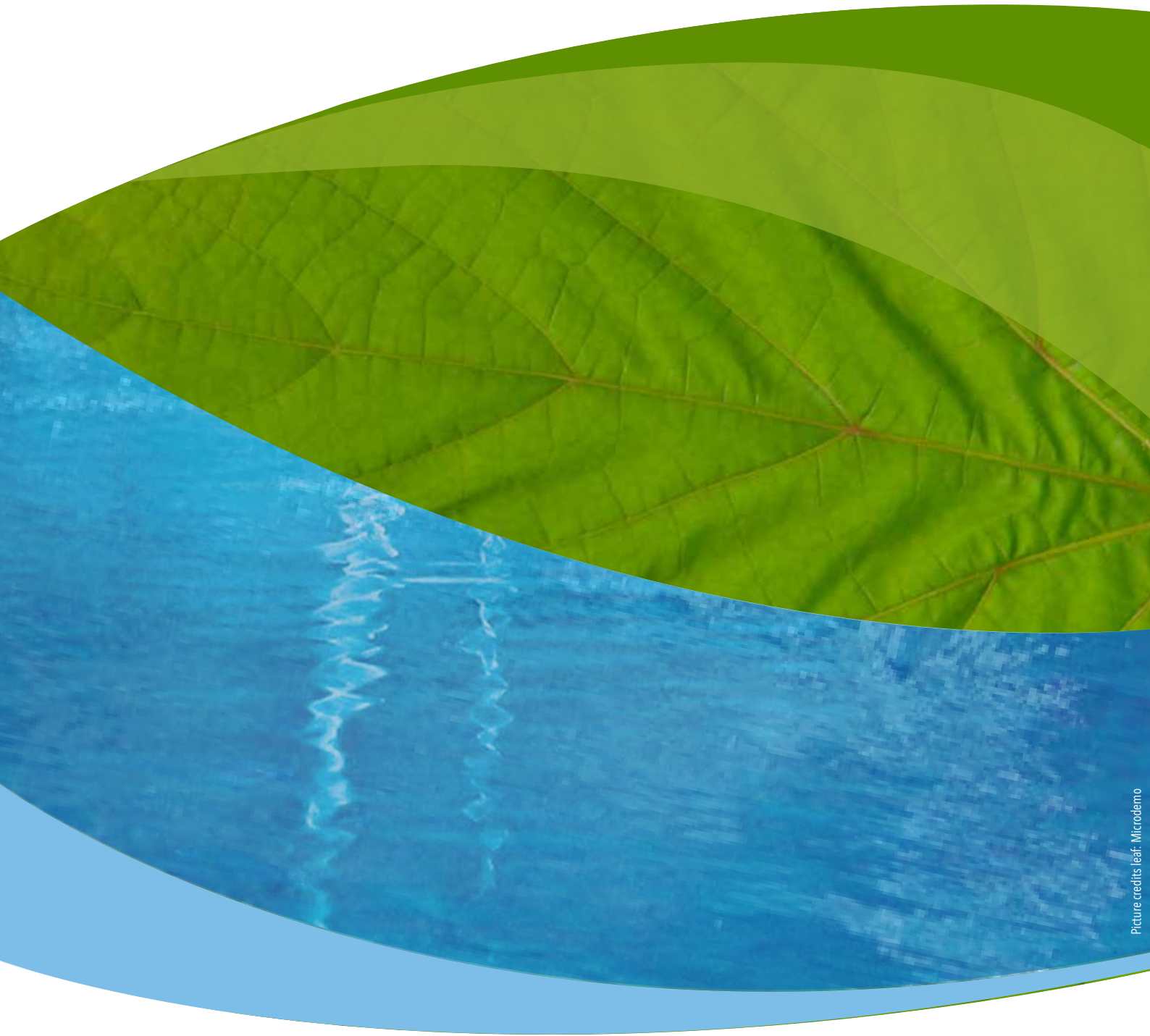




CEMLINE NATURE

CEMLINE NATURE - a greener profile in potable water industry



Picture credits: leaf: Microdemo



CEMLINE NATURE

Vandex has developed a new product for the potable water refurbishment market, Cemline Nature. This development began with a customer request in Germany and in only 100 days was progressed into a tried and tested product that was ready to be sold.



The Vandex R&D department worked on this project hand-in-hand with the customer that raised it, exemplifying how rapidly and effectively an idea can be turned into a product.

However, several key factors had to fall into place to allow for the product to be developed so quickly, including identifying the driving forces behind Cemline Nature and obtaining the required potable water approvals just before the first project application started.

The customer originally asked whether it was possible to have a new type of product with a greener profile simply by eliminating some of the traditional raw materials. Vandex was up for the challenge by removing or replacing ingredients with greener alternatives.

Technical data:

Property	Unit	Comparable mortar	CEMLINE NATURE
Mixing water	%	14	15
Flow	cm	16.0	16.5
Flow - 45min	cm	15.0	15.5
Early set	min	150	140
Final set	min	240	250
Air pore content	%vol.	5.0	4.4
Density - wet	kg/m ³	2.224	2.188
Adhesive strength	MPa	2.05	2.34
Porosity 28/90d	%vol.	11.2/10.3	7.3/6.8

This development is very much a sign of the times, as in recent years Vandex has seen a highly increased threshold to get a potable water product certified in Europe. Basically, each raw material has to be tested, approved and given the appropriate documentation before it can be used. This makes for a very time-consuming process, in which all suppliers have to prove the material's compliance.

The Vandex lab has kept a strong eye on the changes in regulations and which alternative technologies could be utilized to overcome the ever-increasing demand for documentation. As part of this diligence, a binder technology was identified and had been under investigation for some time.

Most products for refurbishment of potable water reservoirs are typically based on cement, aggregates and some additives and fillers. It is a fact of life that, when analyzed according to the increased demand from regulators for documentation, more and more of these raw materials are shown to have been polluted by some other substance.

Also, additives are more and more traded products that are sourced from changing locations and manufacturers around the world. A stable supply from only one producer in one location is difficult to guarantee and makes it desirable to substitute out an additive to reduce the number of required additives.

Additionally, fly ash is often used in formulations and poses an important issue to deal with, as the fly ash is a by-product from coal-burning or even waste-burning processes in power plants. So even though the ingredient is recycled, it has still come from unsustainable industrial raw materials.

CEMLINE NATURE meets the requirements of the DVGW W300-5 (P): 10- 2014, type I.



It also provides:

- Controlled slow strength-building process
- A product free from CA-Cement
- Efflorescence free once cured
- Very low porosity and low shrinkage

Vandex has completed 12 projects with the new Cemline Nature and Vandex is now looking to acquire projects in Europe as the talk in the business is spreading that Vandex has something “New and Green”.

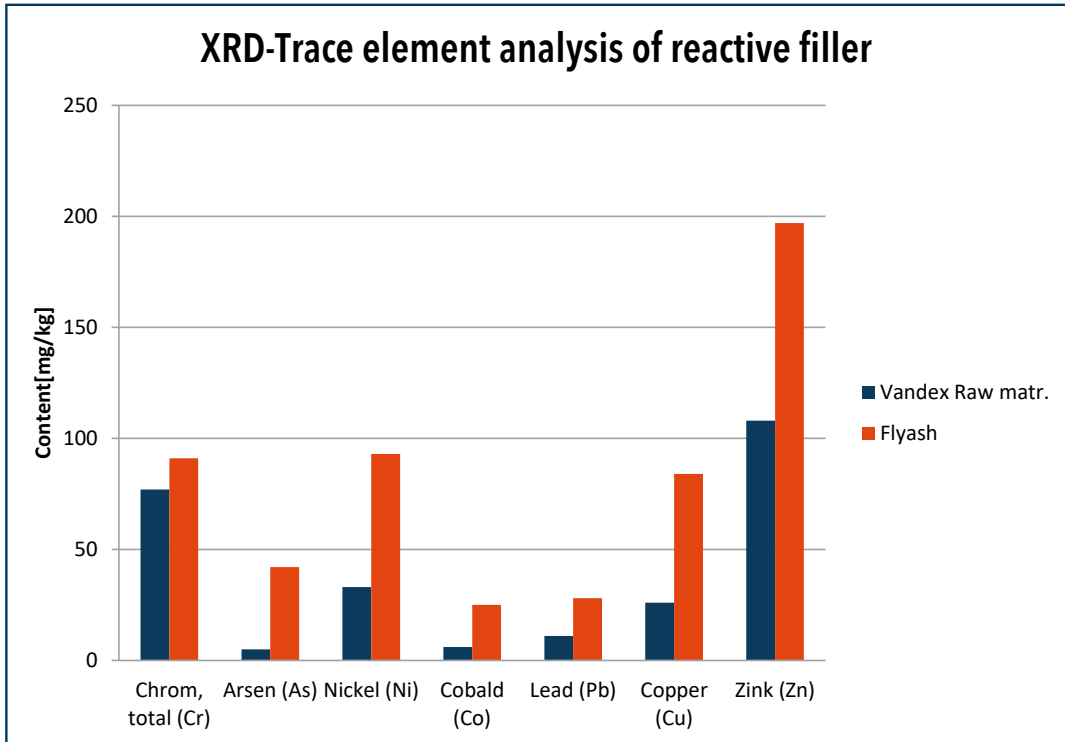
The process of removing environmentally damaging ingredients and replacing them with more natural materials led to the creation of Cemline Nature. While this new approach would lead to changed product properties and workability it has led to a purely refined mineral spray and repair mortar technology with a much greener profile.

In short: ecology, hygiene and technology comes together in CEMLINE NATURE, a future-oriented internal coating for potable water systems.

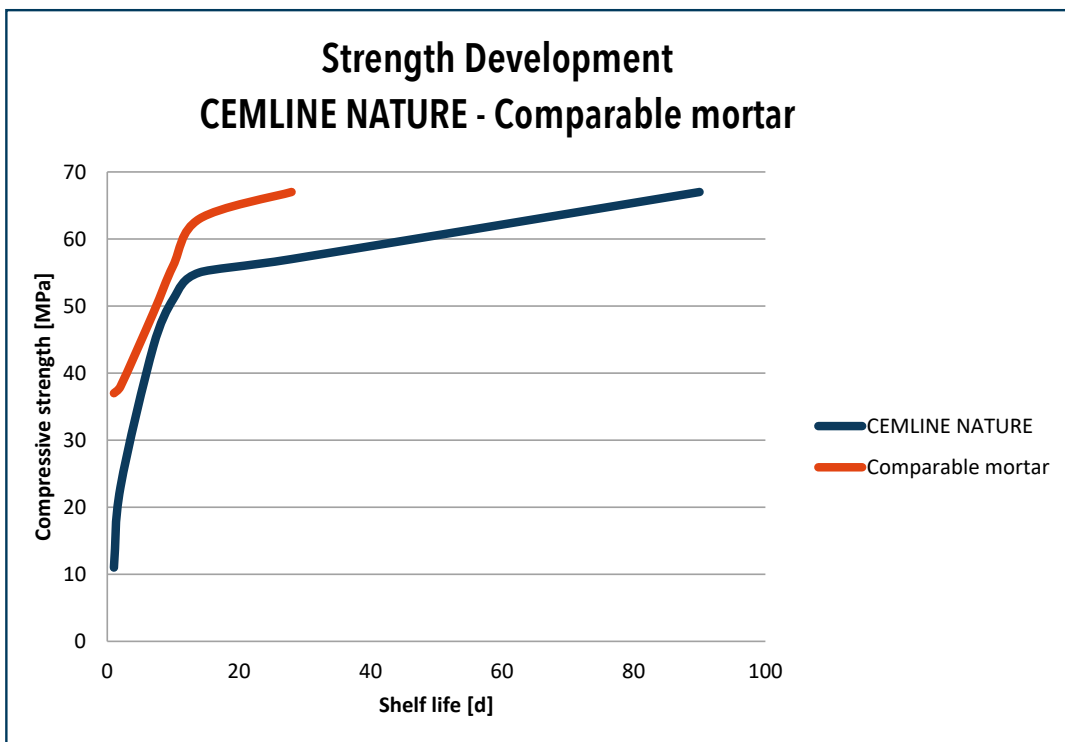
The following graphs show technical parameters of CEMLINE NATURE compared to a conventional, purely mineral coating mortar presented. This material, referred to as the “comparison mortar” is also in line with the requirements of DVGW W 300-5 (P); October 2014 for type 1.



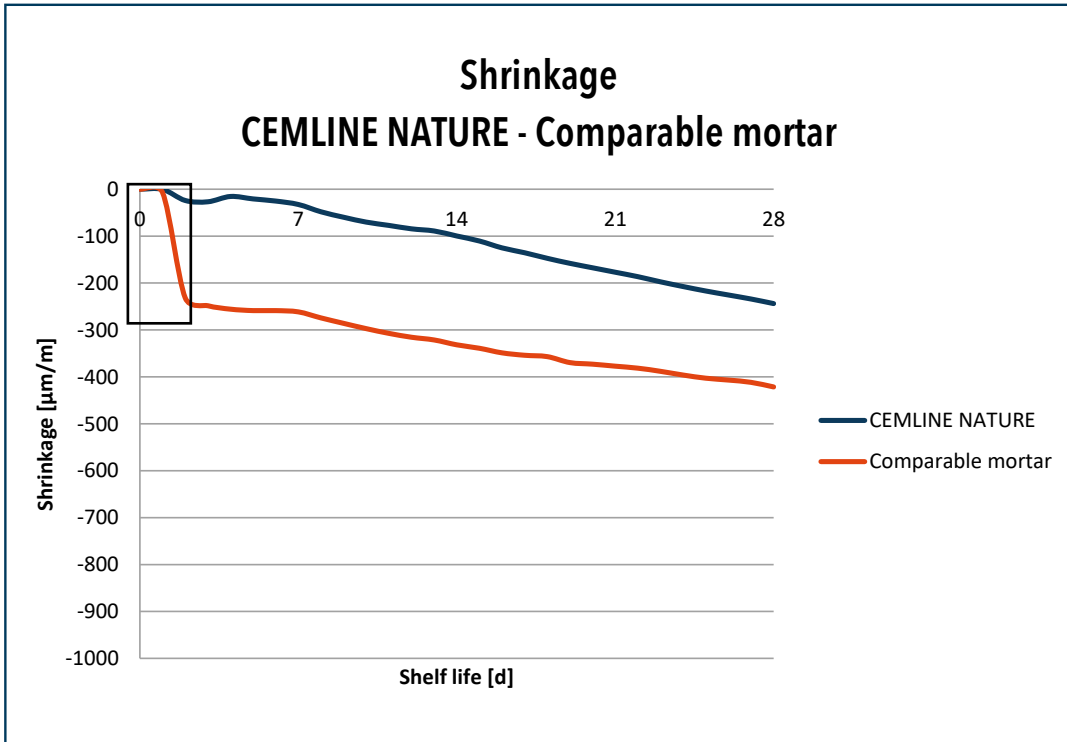
ECOLOGY
HYGIENE
TECHNOLOGY



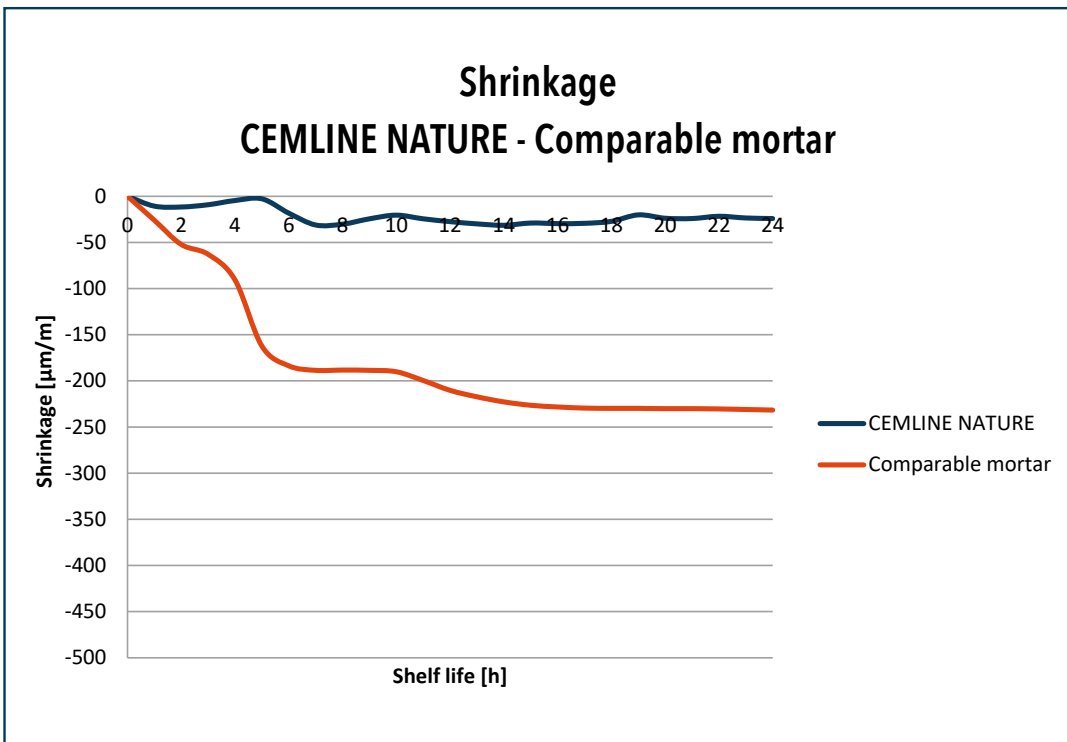
Comparison of the ingredients (trace elements) of a conventional fly ash compared to the Vandex Reactive filler used.



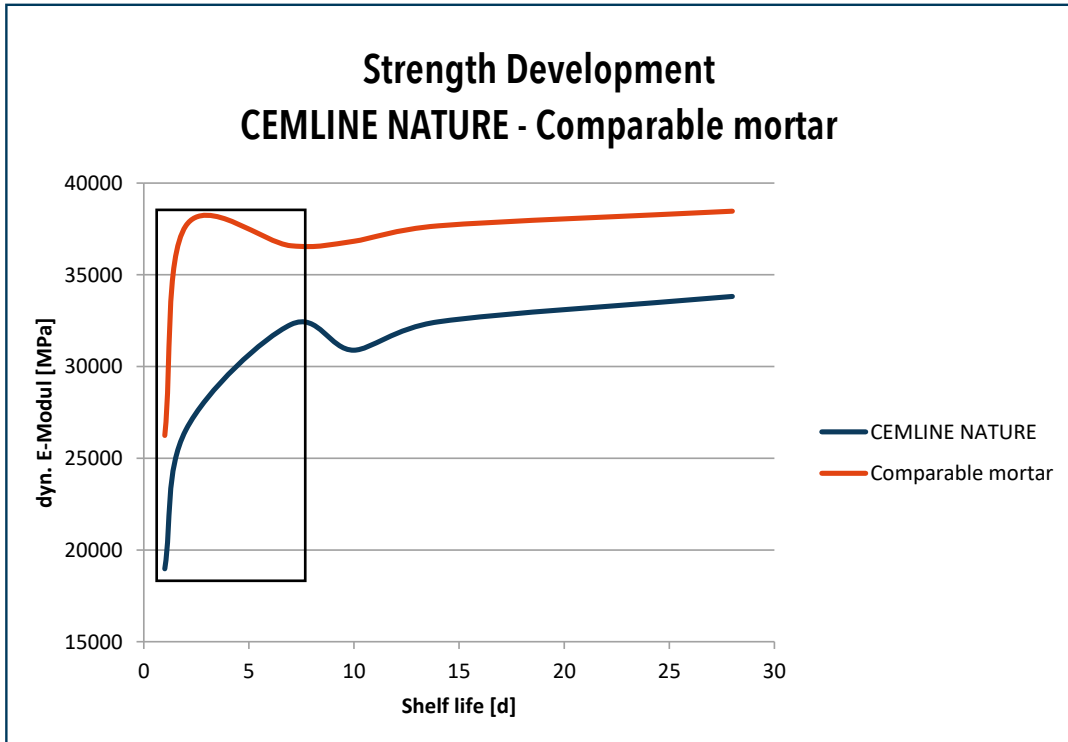
Development of the compressive strength depending on the time. VANDEX CEMLINE Nature shows in the early stages a significantly lower strength, but later achieves a comparable level of strength.



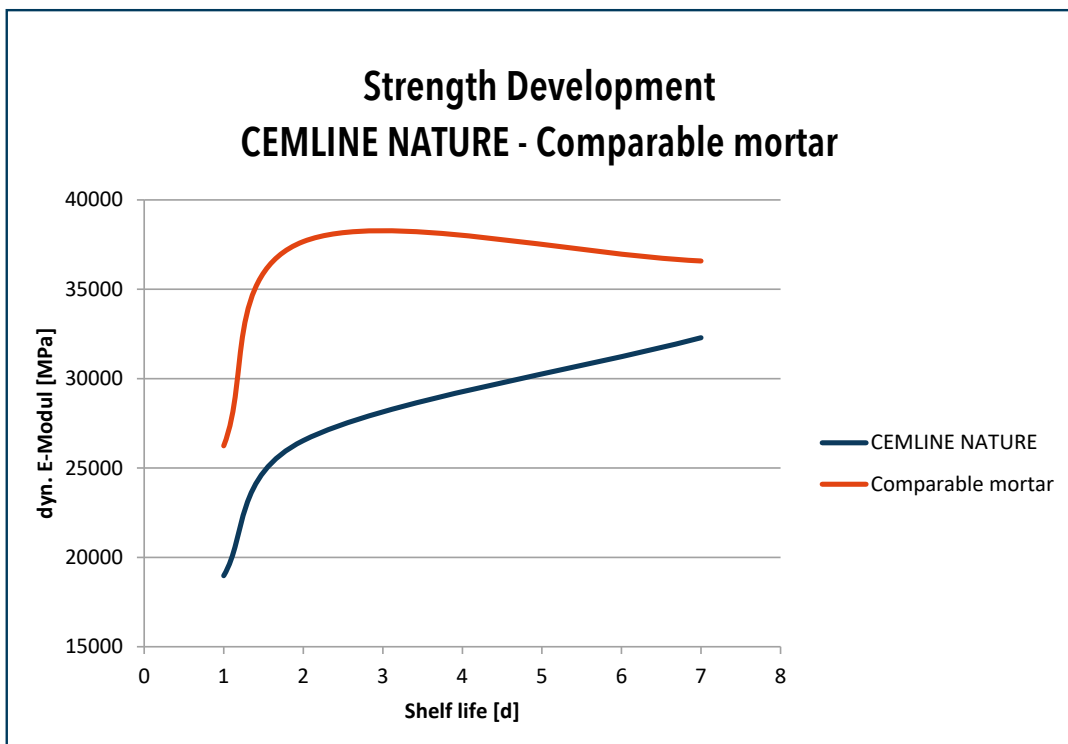
Development of shrinkage. Through the tests in the Shrink-channel, the shrinkage of the fresh mortar as well as the shrinkage of the hardening mortar taken into account.



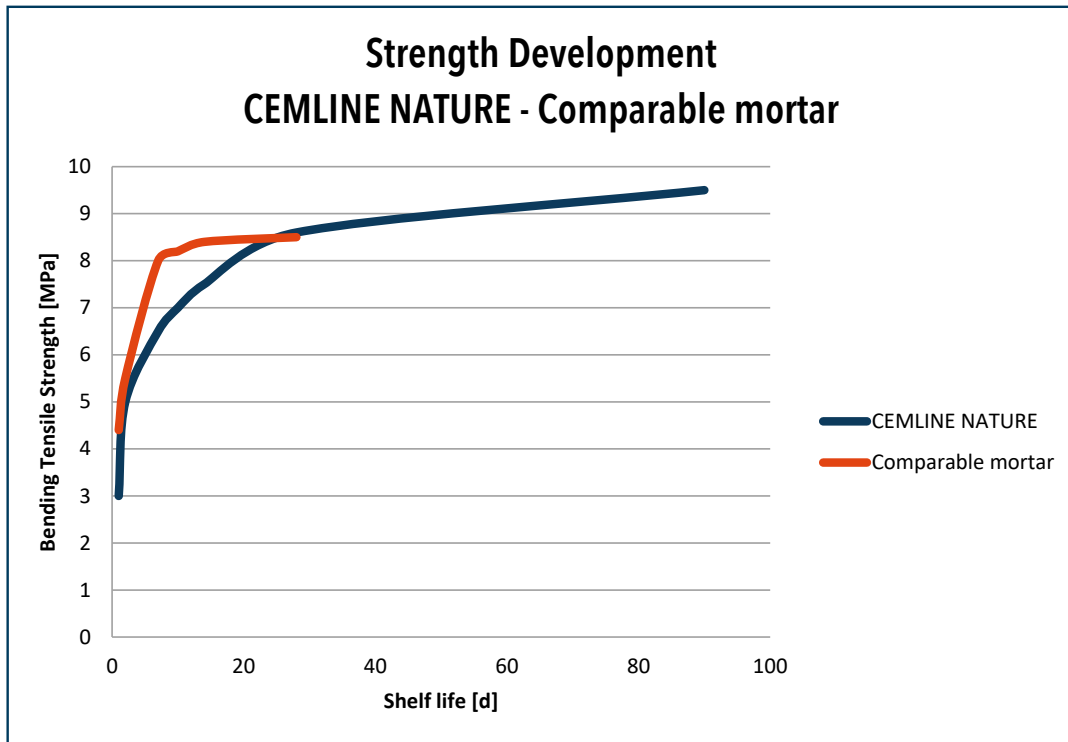
The determination of the shrinkage behaviour in the first few hours clearly confirms an almost Form-Stable behaviour within the first 24 hours for VANDEX CEMLINE NATURE.



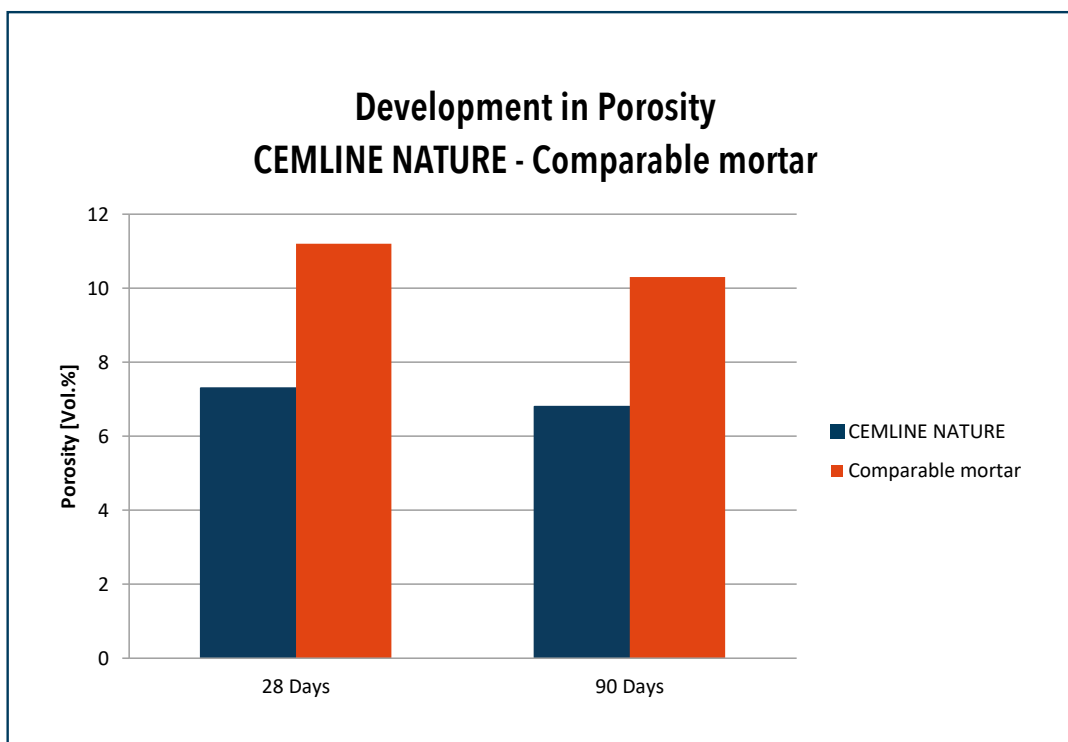
The development of the dynamic e-module, depending on the time, runs at VANDEX CEMLINE Nature at a significantly lower level.



The development of the dynamic e-module within the first 7 days clearly illustrates the generally delayed increase in strength and therefore correlates very well with the previous test results.



Development of bending tensile strength depending on time. VANDEX CEMLINE NATURE show in the early stages a significantly lower strength, but later achieves a comparable level.



The development of Porosity after 28 and 90 days leads to a clearly condensed structure inside CEMLINE NATURE.

CASE STUDY

VANDEX CEMLINE NATURE

NEW PRODUCT LAUNCH IN THE POTABLE WATER RESERVOIRE SIMMERSBACH



The project

The potable water reservoir Simmersbach was constructed in 1968 and consists of 2 square-shaped water chambers. In front of the chamber is an administration building.

The floorplan of each water chamber is 4.92 x 13.37 m with a height in the center of the water chamber of 3.62 meter. The two chambers are connected in one end, which also serves to allow access to the reservoirs. The content of a reservoir is about 200 m³ per chamber. The water reservoir as well as the administration building is covered by green roofs.

VANDEX CEMLINE NATURE

Purely refined mineral spray and repair mortar technology

- controlled slow strength-building process
- water impermeable
- free from recycled raw materials
- free from CA-Cement
- efflorescence free once cured
- very low porosity

PROJECT DETAILS

Location:

35713 Simmersbach, Germany

Project Completed:

2017

Vandex Applicator:

GFB Gesellschaft für Bauwerksanierung und -instandsetzung GmbH, Essen

Owner:

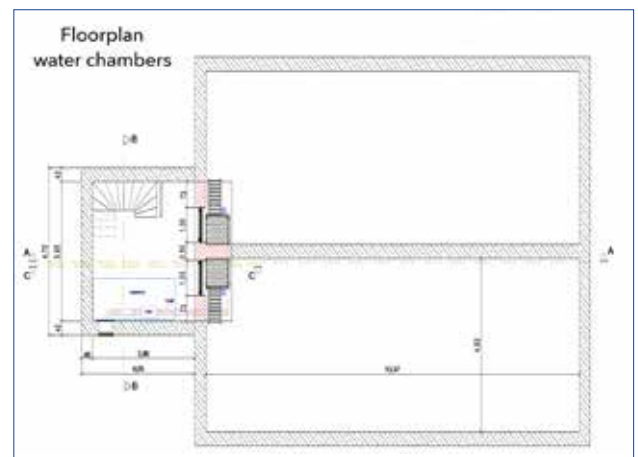
Gemeindewerke Eschenburg

Products Applied:

Vandex Cemline Nature

Engineer:

IGS Ingenieurgesellschaft mbH, Herborn



CASE STUDY

VANDEX CEMLINE NATURE

INTERNAL COATING OF POTABLE WATER RESERVOIRE OSTHAIN, INAUGURATED 1929



Another way to use VANDEX CEMLINE NATURE

The project

The association **Water/Sewage Zeulenroda** supply the area of Triebes, Germany from their reservoir Osthain. This reservoir placed high above the area of supply was built in 1929 and was in need of renovation. Especially the gate house and a constructed dividing wall in the one-chamber reservoir, urgently needed attention to ensure stable water supply to customers in the future.

The Renovation Process

- Installation of a dividing wall made of concrete
- Substrate pre-treatment using water jetting
- Cleaning of the pre-treated surfaces
- Levelling of the ceiling surfaces with VANDEX CEMLINE NATURE (Increase of concrete cover and adaptation to the surface), layer thickness 24 mm
- Coating of the ceiling surface with VANDEX CEMELAST Grey in drop structure
- Levelling of wall surfaces, supports and columns with VANDEX CEMLINE nature (Increase of concrete cover and adaptation to the substrate), layer thickness 12 mm
- Coating of the wall surfaces, supports and columns With VANDEX CEMELAST Grey, layer thickness 3-4 mm in Orange peel Structure
- Coating of the floor surface with VANDEX CEMELAST Grey, layer thickness 3-4 mm, rough texture



PROJECT DETAILS

Location:

Zeulenroda-Triebes, Deutschland

Project Completed:

2018

Vandex Applicator:

Stangl GmbH, Kirchberg

Owner:

Zweckverband Wasser/Abwasser Zeulenroda

Products Applied:

VANDEX CEMLINE NATURE

VANDEX CEMELAST GREY

Engineer:

USS-Consult GmbH, Naila





ECOLOGY
HYGIENE
TECHNOLOGY



RPM / Belgium N.V.

H. Dunantstraat 11B • B-8700 Tielt • T.: +32 (0) 51 40 38 01

Alteco Technik GmbH

Raiffeisenstraße 16 • D-27239 Twistringen • T.: +49 (0) 42 43 92 95 0

Hermeta GmbH

Kanalstraße 11 • D-12357 Berlin • T.: +49 (0) 30 661 70 72

Monile France SARL

10, rue de la Lande • F-35430 St. Jovan des Guerets • T.: +33 (0) 608 86 96 56

Vandex International Ltd

Rötistrasse 6 • CH-4501 Solothurn • T.: +41 (0) 32 626 36 36

Vandex Isoliermittel-Gesellschaft m.b.H.

Industriestraße 21 • D-21493 Schwarzenbek • T.: +49 (0) 41 51 89 15 0

Vandex AG

Rötistrasse 6 • CH-4501 Solothurn • T.: +41 (0) 32 626 36 46

Alteco Polymer Systems

616 Spring Hill Drive, Suite 100 • Spring, Texas 77386 • T.: +1 216 258 8715