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Non-Permeable, highly flexible, extended lifetime, Nano-engineered cementitious bentonite slurry for slurry walls, waterproofing, roadway stabilization and similar applications.

### Product Description

ceS-9™ is a two phase, low-shrinkage, cementitious bentonite slurry which when mixed with cementitious materials produces a homogenous, easily pumpable slurry with superior early (28days) and final (91 days) water protection abilities without losing its flexibility. ceEntek's advanced Nano engineered cementitious material in combination with a cost effective bentonite solution produces a non-permeable, flexible barrier against water intrusion with 'best-in-class' performance, superior rheological properties, and extended lifetime.

### Application Areas

ceS-9™ has been designed to meet the requirements of both small and large scale applications.

Areas of use include:

- Slurry walls as part of Polder wall projects
- Groundwater Barriers
- Roadway stabilization
- Backfill stabilization

Please contact us for your specific projects and requirements.

### Features and Benefits

- Meets highest non-permeability standards ( $10^{-9}$  m/s)
- Compression strength 100 - 300kPa (28days)
- Excellent pumpability over long distance (Flow <40s)
- Lifetime flexibility
- Non-toxic
- No bleeding or segregation
- Cost effective for both small and large applications

### Application Method

ceS-9 has been formulated for use in virtually all soil conditions. Excellent flow allows pumping over long distances. Installations should be by trained, experienced contractors. ceEntek will ensure this training is provided to qualified parties.

### Consumption

ceS-9 is a two-phase system delivered in jumbo bags or in bulk. The short curing time of the bentonite allows rapid installation process with a minimum of overlap between panels or mixing batches.

## Description

ceS-9™ is an ultra-low permeability, Nano-engineered cementitious bentonite slurry optimized for the most challenging applications.

## Features and Benefits

- Ultra-low permeability ( $10^{-9}$  m/s)
- Easily pumpable (Flow rate <40s)
- Excellent flexibility
- Short bentonite gelling time (4.0h)
- Non-toxic
- Lifetime: 100+ years

## Typical Uses

- Slurry walls, waterproofing of below-grade walls for Polder-walls/dams
- Roadway stabilization
- Backfill stabilization

## Advantages

- Resistant to chemicals
- Self-hardening: no need for other backfill
- Polymer-free
- Non-permeable
- Durable
- Cost effective

## Properties

PROPERTIES		ceS-9™
<b>Permeability (m/s) <sup>1</sup></b>	28 days	$1 \times 10^{-9}$
	91 days	$< 1 \times 10^{-9}$
<b>Compression strength (kPa) <sup>2</sup></b>	28 days	100 - 300
	91 days	100 - 400
<b>Density (kg/m<sup>3</sup>)</b>		~1,100
<b>Flow (s) <sup>3</sup></b>		<40
<b>Shrinkage (%)</b>		minimal

<sup>1</sup> ASTM D5084 | BS 1377: Part 6: 1990

<sup>2</sup> BS 1377: Part 7: 1990

<sup>3</sup> BS EN ISO 10414-1:2008