



Cement Bound Sand – XCS®CBS

Executive Summary

Cement Bound Sand (CBS) is a semi-dry mix which has been developed through trials, in conjunction with Contractors projects requirement, to be compliant with the Technical Specifications.

Cement Bounded Sand is a mixture of cement, dune sand, water (very low quantity). CBS is produced by introducing 2% by weight of water in to a dune sand and cement mix. Semi-dry density average is 1660kg/m³ and the target but could vary based on the projects requirement of the thermal resistivity.

What is Thermal Resistivity?

“Thermal resistance is a measure of a material's ability to resist heat transfer”. The more a material is able to block heat transfer through its surface, the greater its thermal resistance. This concept is often applied to the building industry as a measure of insulation effectiveness and energy efficiency. Insulation is added to buildings to improve efficiency levels.

The same concept is also applied for open surface or underground backfilling such as cable trench, transmission line, petrochemical field pipe line, etc in order to minimize the heat transfer through the surface.

Description

Using controlled water mixing to cement-dune sand mixture the thermal resistivity (R) 1.730Km/W is widely achieved. This is at 2% moisture content percent by dry weight. The water amount or percentage increases the thermal resistivity value is

higher until its optimum moisture content is reached. Again it decreases when moisture content becomes above optimum. For instance the measured value of thermal resistivity at 4%, 6% and 8% moisture by dry weight was 3.674Km/W, 3.238Km/W and 2.094Km/W respectively.

The thermal conductivity maximum 2Km/W is a common specified limit almost applied in entire projects in UAE for the cable trench backfilling application

Strict water control is required to create this specialist bound material, which is suitable as a backfilling to improve the thermal resistivity efficiency level, and is re-excavatable. CBS product has no consistency property that allows it to be pumped. It is transported and placed using dump-truck or other means of bulk transport.

Technical Data

- Water content 2% by dry weight materials
- Cement content 125 kg/m³
- Semi-dry density 1650 kg/m³
- Thermal resistivity 1.730Km/W

Method Transportation & Placement

Cement Bounded Sand is placed by using dump-truck. When necessary it can be compacted to the required degree of compaction.



Xtramix Concrete Solutions LLC.

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Xtramix Group of Companies

Technical R&D

XCS - Product Datasheet

Uses

- Backfilling
- Cable trench
- Improve efficiency levels of the thermal resistance of the fill

Benefits

- Easy to transport and place
- Hand re-excavatable fill
- It improves the heat dissipation capacity of the surrounding of undergoing cables
- Cement Bound Sand mix is prepared in the batching plant to maintain the lowest moisture content
- Technical support by XCS all the times
- Cement Bound Sand is locally produced to enhance LEED MR-5 and Estidama SM-9 under 'Stewarding Materials' category to achieve Pearl Building Rating System
- QC Technicians are deployed at site sampling for the thermal resistivity (R) test
- When necessary the moisture content can be regulated to achieve R limit

Moister Control Precautions

During transport and dumping CBS shall be done under the direct supervision of an XCS Technical team. Precaution shall be taken to minimize moisture loss or adding extra water during the transportation and placing time.

Quality & Care

Cement Bounded Sand has been developed by XCS Technical R&D Team to meet the special project requirements, and taking into account the thermal resistivity property. It is produced by XCS Abu Dhabi in our batching plants, and is designed under our Integrated Management System (IMS) independently certified to conform to the requirements of quality ISO 9001, environmental ISO 14001 and occupational health & safety ISO 18001 standards.

Performance Record

This product was using in different projects such as telecommunication, military, petrochemical fields. Some of the prestigious projects name are:

- AJES/PIL ADCO for EPC ASAB Full Filed Development (FFD) 132 KV power cables & cable accessories laying underground
- NCC/PIL EPC for ADCO ASAB Full Filed Development (FFD) 132/33 KV OHL modification works
- Galfar Engineering for ADCO/GASCO at Habshan
- CMW and Etisalat projects