

TECHNICAL DATA SHEET (Feb 2022)

Definition

The Cape Town-based **AFRIMATHEMP block system** is non-load bearing masonry products are designed to produce environmentally friendly infill walls such as insulating envelopes and partition walls. These systems are versatile and could be used in conjunction with an engineer approved structural frame but are not suitable to support any structure. These are used for thermal, hydric and acoustic regulation in new builds or interior and exterior renovations. The main ingredients of these products are raw hemp shiv and hydraulic or hydrated lime binder.

Characteristics and dimensions

The **AFRIMATHEMP blocks** have a colour ranging from grey/beige to off white with a porous surface between the plant strands, which is suitable for easy application of the outer coating. **AFRIMATHEMP plaster** also has a natural grey/beige to off white colour but is finer and smoother after application.

The **AFRIMATHEMP blocks** are moulded by a block press and cured and dried in the open air without heat. The generic blocks have modular dimensions of:

Length 390mm

Height 190mm

Thickness 110mm & 220mm

The **AFRIMATHEMP hempcrete** mix can quickly and easily be prepared on-site by mixing a bag of the hempcrete mix with water to create a non-structural infill wall system that needs to be cast around a timber, concrete, or steel structural frame by using shutter work on both sides that are temporarily fixed to the structural frame. The **wall thickness** could vary between 150 to 500mm thick.

Technical specifications

Water penetration and rising damp: Hemp shiv is a naturally vapour-permeable material and because of its porous nature, it allows water vapour to travel through it. The hemp shiv hygroscopic behaviour is enabled by the microscopic structure of tiny capillaries created by the cell walls, oriented in the direction of the plant stem. This allows the hemp shiv to attract and hold moisture from the surrounding climate and re-releasing it in response to change the humidity of the environment again.

Thermal performance and energy usage: More so than any of its other characteristics, the thermal properties of hemp systems set them apart from other building materials. Both the R-values and the U-values of hemp systems are good performers.

Condensation: Hemp shiv is a tough cellulose material, similar to wood. It can withstand repeated absorption and desorption of moisture over an almost indefinite period of time without ill effect, as long as it is not constant streams of water. Therefore hemp systems, as an organic material, outperforms the vapour permeability of other building materials.

Acoustic performance: The micro and macro-porosity of hemp systems contribute to an acoustic quality that is unusual and an outlier from that of other building materials. Therefore, acoustic performance testing for this application would need to be conducted to confirm the performance.

Durability: Technically, hemp systems are a good performer in the durability section.

Table 1: Technical Information of AFRIMATHEMP Blocks (without plaster).

Authentications	Technical value
Modular Dimensions	390 x 190 mm
Thickness	110 mm
Weight	6 kg
Number of Blocks per m ²	13.5 blocks
Compressive strength	1 mPa
Dry Thermal Resistance	TBC
Thermal Conductivity	TBC
Water vapour resistance factor μ [-]	2.77
Acoustic Insulation (without render)	51dB
Fire Rating (without render)	120min

Application

For the **AFRIMATHEMP blocks**, a lime mortar is used between bricks to bond them with a 3-10mm joint. The best practice for the first course on the outside is to allow 150mm to 300mm from the ground. **AFRIMATHEMP hempcrete** walls are created within an off-shutter system and should allow 150mm to 300mm from the ground.

For more information on both hemp blocks and hempcrete best practise see the installation instruction manual. For best thermal performance, one of the dedicated **AFRIMATHEMP** plaster systems should be applied to external walls.

Storage

AFRIMATHEMP blocks & hempcrete mixed bags storage must be on a flat surface, wrapped and protected from the rain in a well-ventilated area. These pallets weigh a maximum of 600kg. It is best to not exceed 6 months without protection outside and 3-4years under cover for the maximum duration.

Instructions for use

See the installation instruction manual.