

# THERMAL INSULATING MASONRY HOLLOW BLOCK



## INVENTION

The invention is a Masonry Hollow Block that is developed by partially replacing fine aggregates and coarse aggregates used in construction of hollow blocks with insulating materials such as perlite, polyethylene, and crumb rubber. Additionally, the design of the block is also improved to enhance thermal resistance. The change in design combined with use of insulation materials helps in reducing the thermal conductivity of developed block by about 80% when compared to typical hollow block.

## APPLICATION

Construction Industry

## ADVANTAGES

- The new design of block proposed in this invention can reduce the thermal conductivity by 71%.
- By using insulation materials in the block construction, the thermal conductivity could be reduced by a further 5-10% (see table below).

CONVENTIONAL HOLLOW BLOCKS	PROPOSED DESIGN			
	Without insulation	With insulation		
		Perlite	HDPE	Crumb rubber
1.60	0.460 (71% ↓)	0.309 (81 % ↓)	0.387 (76 % ↓)	0.404 (75 % ↓)

## MARKET SIZE AND GROWTH

Transparency Market Research predicts the global concrete block and brick manufacturing market to expand at a moderate 3.8% CAGR for the forecast period 2017-2027. At this pace, the market evaluated at 1,837.48 billion units in 2016 will become 2769.24 billion units by 2027 end.

In terms of geography, the key segments of the concrete block and brick manufacturing market include North America, Latin America, Europe, Asia Pacific, and the Middle East and Africa.

Figure 1: Global Concrete Blocks and Brick Manufacturing Market Size (By region, 2017)

[Source: Transparency Market Research, 2017]



## PROJECT STATUS

The developed block met ASTM C-129 requirements for non-load bearing masonry bricks in addition to satisfying the ASTM C-332 standard as being lightweight masonry bricks.

## LOOKING FOR A DEVELOPMENT PARTNER

KFUPM is interested in seeking market feedback from industry, licensing the technology to a company to commercialize it and/or partner with a company for further development of this technology.

## PATENT PROTECTION

The invention is protected through US patent application 16/022071 filed on June 28, 2018. It covers the design and composition of hollow block. The Intellectual Property is owned by King Fahd University of Petroleum & Minerals.

## ABOUT KFUPM

King Fahd University of Petroleum & Minerals is a leading educational organization for science and technology. The Innovation & Industrial Relations (IIR) office at KFUPM is tasked with taking innovation from lab to market place. For any inquiries regarding this technology, please get in touch with IIR using the contact details below.

For further information please contact:

Name: Mohammed Najid

Email: manajid@kfupm.edu.sa

Telephone: +966-1-3860 3198