



# Polystyrene Based Insulation Tile--Kooltile

User should check the validity of the Certificate by contacting Member Secretary, BMBA at BMTPC or the Holder of this Certificate.

Name and Address of Certificate Holder:  
**M/s Reliable Insupacks (P) Ltd**  
**B-2/7, Site B, UPSIDC**  
**Industrial Area Surajpur,**  
**Greater Noida – 201306 (UP)**

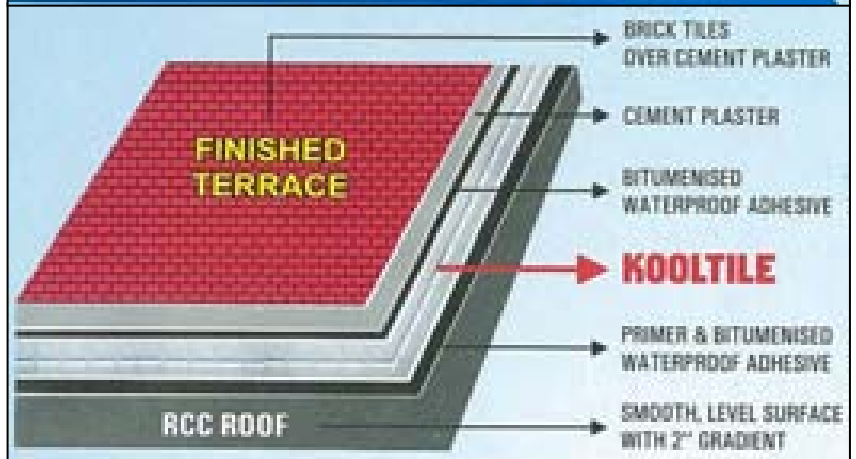
Performance Appraisal Certificate No.

PAC No **1015-P/2014**

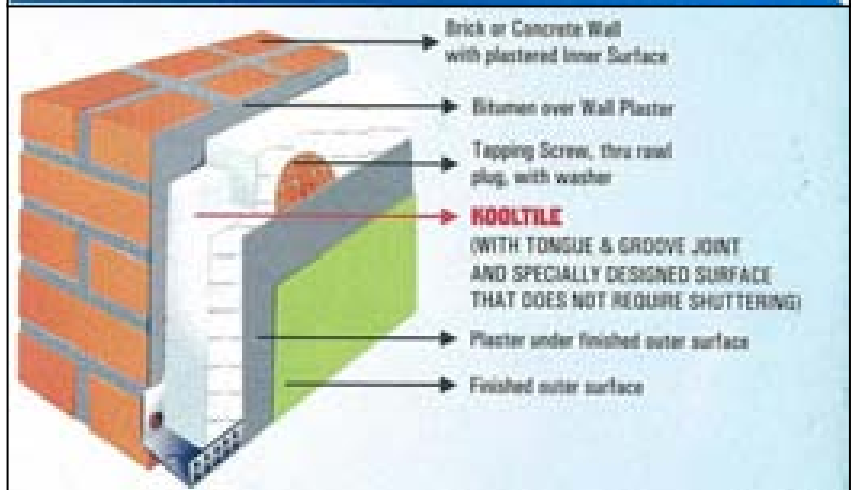
Issue No. **01**

Date of Issue: **14.11.2014**

## KOOLTILE - OVER DECK ROOF APPLICATION



## KOOLTILE - EXTERNAL WALL APPLICATION




**Building Materials & Technology Promotion Council**  
**Ministry of Housing & Urban Poverty Alleviation**  
**Government of India**  
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**PERFORMANCE APPRAISAL CERTIFICATE**  
**FOR**  
**POLYSTYRENE BASED INSULATION TILE – KOOLTILE**  
**ISSUED TO**  
**M/S RELIABLE INSUPACKS (P) LTD.**  
**STATUS OF PAC 1015-P/2014**

S.No.	Issue No.	Date of Issue	Date of renewal	Amendment		Valid up to (Date)	Remarks	Signature of authorized signatory
				No.	Date			
1.	2.	3.	4.	5.	6.	7.	8.	9.
1	1	14-11-2014	14-11-2016	--	--	15-11-2016		

Dr. Shashi Kumar  
 Chairman, TAC  
 & Member Secretary, BMSA  
 Building Materials and Technology Promotion Council  
 Ministry of Housing & Urban Poverty Alleviation, P.O.  
 Core 5A, 1st Floor, India Habitat Centre, Connaught Place  
 New Delhi-110 028

PAC No. 1015 - P/2014      Issue No. 01      Date of issue: 14-11-2016

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## **PART 1 CERTIFICATION**

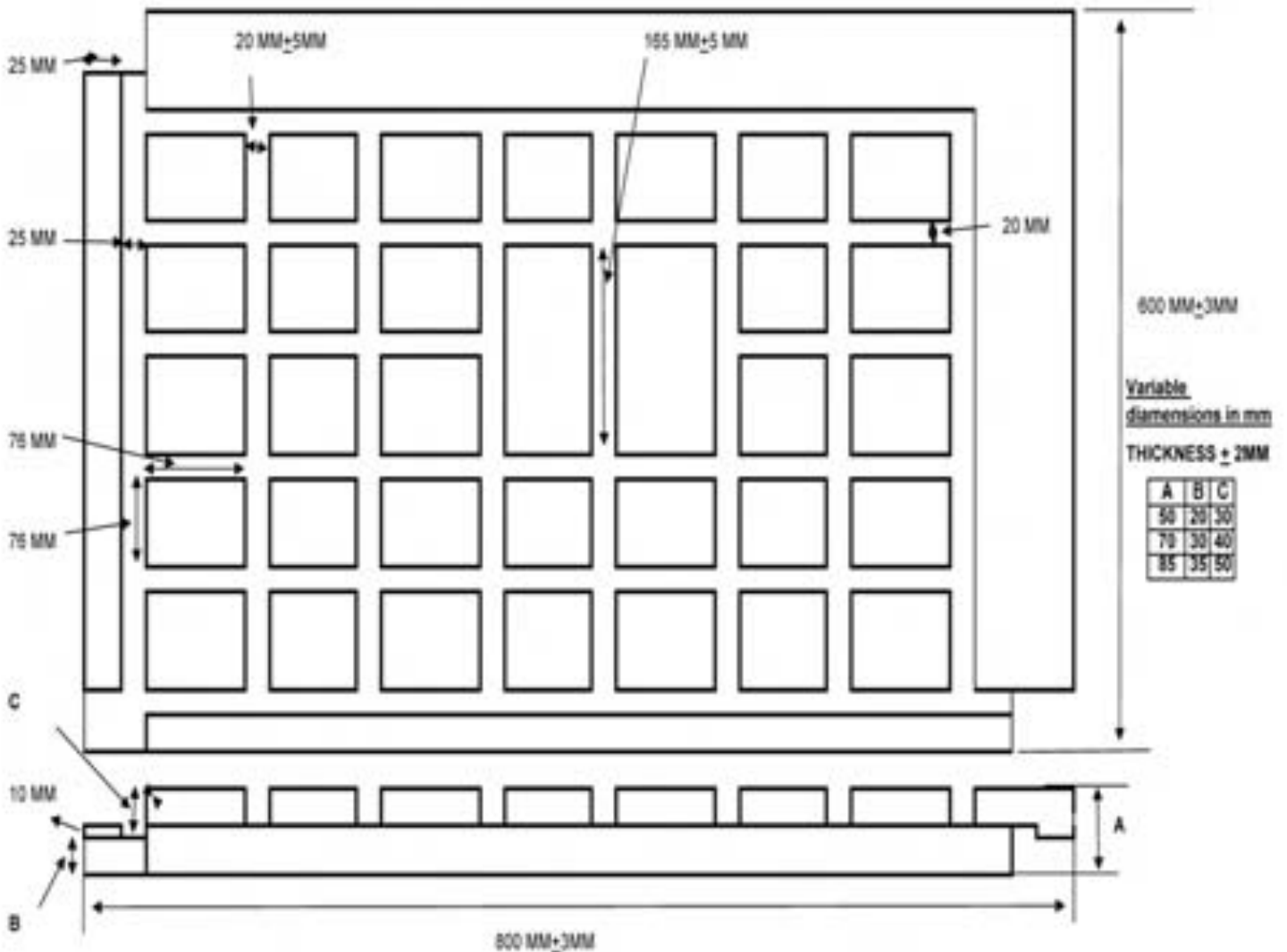
**1.1 Certificate Holder: M/s Reliable Insupacks (P) Ltd**  
B-2/7, Site B, UPSIDC Industrial Area  
Surajpur, Greater Noida – 201306 (UP)  
Phone No. 0120-6518438

### **1.2 Description of Product**

**1.2.1** *Name of the Product* – Polystyrene Based Insulation Tile -- Kooltile

**1.2.2** *Brief Description* – Kooltile is molded from a foamable plastic resin called *Expandable Polystyrene* (EPS). This resin is foamed using saturated steam in a fully automatic Batch pre-expanding machine, to the specified density and conveyed pneumatically through a fluidized bed drier into air permeable silos. The beads are matured in these silos for a predefined maturation period and conveyed into material distribution bins for checking of density of these pre-expanded beads. These beads after assessment of the density and manual intervention (by mixing higher or lower density beads) if require, conveyed pneumatically into a hopper of fully automatic molding machine. An aluminium die with the required shape for the Kooltile is fitted on to this molding machine. Beads are drawn into this die as a pre-programmed sequence, steam passed through the beads to mold the beads into the required shape, the molding stabilized, die cooled and finally the Kooltile ejected on to a nylon sloper for conveying to the finishing room (through a hot dry room). The Kooltile is rectangular in shape with a tongue and groove joint provided to enable locking together all tiles on their edges thus providing an airtight, monolithic insulation layer. The tile has in-built surface, shaped for uniform bonding with screed or finishing layer. Top surface of Kooltile is provided with lateral and longitudinal indentions of 10 mm depth to provide a shuttering surface for covering layer of mud or PCC for grouting the final/top layer of brick or other tiles. These tiles are of light weight as these are molded from polystyrene foam. Kooltile replaces the conventional mud-phuska laid over the concrete slab.

A sketch showing various dimensions for varying thicknesses of Kooltile of size 800 mm x 600 mm is given below:



**1.2.3** *Classification and Types of Kooltile* – Kooltile is classified on the basis of density as per the classification and type given below:

**1.2.3.1** *External roof application*

i) *Diamond* -- having density of 40 kg/m<sup>3</sup>. These tiles are available in three types namely Regular, Supreme and Premium having dimensions of 800 x 600 x 50 mm, 800 x 600 x 70 mm, 800 x 600 x 85 mm respectively.

ii) *Gold* -- having density of 32 kg/m<sup>3</sup>. These tiles are available in three types namely Regular, Supreme and Premium having dimensions of 800 x 600 x 50 mm, 800 x 600 x 70 mm, 800 x 600 x 85 mm respectively.

iii) *Silver* – having density of 24 kg/m<sup>3</sup>. These tiles are available in three types namely Regular, Supreme and Premium having

dimensions of 800 x 600 x 50 mm, 800 x 600 x 70 mm, 800 x 600 x 85 mm respectively.

#### **1.2.3.2** *External wall application*

EIFS -- having density of 18 kg/m<sup>3</sup>, these tiles are available in three types namely Regular, Supreme and Premium having dimensions of 800 x 600 x 50 mm, 800 x 600 x 70 mm, 800 x 600 x 85 mm respectively. These tiles are made from self-extinguishing grade EPS.

### **1.3 Assessments**

**1.3.1** *Scope of Assessment* – Suitability of Kooltile for use as Roof tile and wall tile for insulation purpose.

**1.3.2** *Basis of Assessment* –

The assessment is based on the results & reports of

- (i) Inspection of the factory
- (ii) Inspection of the manufacturing equipment used
- (iii) Assessment of quality assurance procedures implemented in the factory
- (iv) Tests got done in independent laboratories i.e. BEPL, Centre for Environmental Planning and Technology, Ahmedabad and Shriram Institute for Industrial Research, Delhi by the manufacture of the product
- (v) Tests got done on the samples of the product collected by the IO during inspection of the plant from Shriram Institute for Industrial Research, Delhi

**1.3.3** *Scope of Inspection* – Scope of inspection included the verification of production, performance and testing facilities at the factory including competence of technical personnel and status of quality assurance in the factory.

**1.3.5** *Manufacturing Process* –

- i) Foaming of EPS beads in automatic pre-foamer with fluidized bed drier as per foaming standards
- ii) Maturation in silo as per maturation schedule
- iii) Molding in shape molding machine as per molding parameters
- iv) Drying of the product as per dry room standards.
- v) Visual inspection of dry molded pieces
- vi) Inspection by quality control team as per item inspection system.

vii) The firm has got complete manufacturing facility required for the process.

#### **1.4 Use of the Kooltile & Its Limitations**

**1.4.1** The product shall be used as Roof and wall tiles for insulation purpose.

##### **1.4.2** *Limitations of Use*

**1.4.4.1** i) Lower density tiles may not be adequate to support heavy loads such as multiple water tanks of capacity more than 5000 liter, movement of DG sets etc. on the terrace.

ii) Water logging may lead to seepage and cracks on the roof unless screed at the base is provided at a gradient of 1:12.

iii) EPS, being a water vapour permeable material, may cause dampness and structural damage due to cracked surface.

iv) Limited options for using only cement concrete or high end finishing materials as heat penetration stops at insulation layer, leading to cracks on finishing surface.

#### **1.5 Conditions of Certification**

**1.5.1** *Technical Conditions* – Raw materials and the finished product shall conform to the requirements of the prescribed specifications.

**1.5.2** *Quality Assurance* – The Certificate Holder shall implement & maintain a quality assurance system in accordance with Scheme of Quality Assurance (SQA) given in the Annex attached with this Certificate.

**1.5.3** *Brochure/ Guidelines* – The Certificate holder shall provide detail instruction of laying of the tiles and subsequent maintenance, if any

##### **1.5.4** *Handling of User Complaints*

**1.5.4.1** The Certificate holder shall provide quick redressal to consumer/user complaints proved reasonable & genuine and within the conditions of warranty provided by the customer/ purchaser.

**1.5.4.2** The Certificate holder shall implement the procedure included in the SQA. As part of PACS Certification he shall maintain data on such complaints with a view to assess the complaint satisfaction and suitable preventive measures taken.

#### **1.6 Certification**

**1.6.1** On the basis of assessment given in Part III of this Certificate & subject to the conditions of certification, use & limitations set out in this

Certificate and if selected, installed & maintained as set out in Part I & II of this Certificate, Kooltile covered by this Certificate is fit for use set out in the Scope of Assessment.

## **PART 2 CERTIFICATE HOLDER'S TECHNICAL SPECIFICATIONS**

### **2.1 General**

**2.1.1** The PAC holder shall manufacture the Kooltile in accordance with the requirements specified in relevant Indian Standards. In addition it shall follow Company standards specifying requirements of various materials used in the manufacture of the product (See 2.2)

### **2.2 Specifications of the Product and Production & Inspection**

#### **2.2.1 Technical Specifications**

##### **2.2.1.1 Raw materials**

Expanded Polystyrene (EPS) shall be as per suppliers test reports and valid ROHS test certification.

##### **2.2.2 Product specifications**

<b>S. No.</b>	<b>Name</b>	<b>Density (kg/m<sup>3</sup>)</b>	<b>K-Value (W/m<sup>0</sup>.K)</b>	<b>R-Value (m<sup>2</sup>.K/W)</b>	<b>Dimension (mm)</b>	<b>Application</b>
<b>Kooltile Diamond (40D)</b>						
1.	Regular	40	0.031	1.61	800 x 600 x 50	External Roof
2.	Supreme			2.26	800 x 600 x 70	
3.	Premium			2.74	800 x 600 x 85	
<b>Kooltile Gold (32D)</b>						
4.	Regular	32	0.032	1.52	800 x 600 x 50	External Roof
5.	Supreme			2.13	800 x 600 x 70	
6.	Premium			2.58	800 x 600 x 85	
<b>Kooltile Silver (24D)</b>						
7.	Regular	24	0.034	1.45	800 x 600 x 50	External Roof
8.	Supreme			2.03	800 x 600 x 70	
9.	Premium			2.46	800 x 600 x 85	
<b>Kooltile EIFS (18D)</b>						
10.	Regular	18	0.036	1.41	800 x 600 x 50	External Wall
11.	Supreme			1.97	800 x 600 x 70	
12.	Premium			2.39	800 x 600 x 85	

##### **2.2.3 Tolerance**

- i) Tolerance on length dimensions of all types of Kooltile is  $\pm 3$ mm
- ii) Tolerance on thickness dimensions of all types of Kooltile is  $\pm 2$ mm
- iii) Tolerance in weight of all types of Kooltile is  $\pm 10$  %



## 2.2.4 Production & Inspection

**2.2.4.1 Production** -- Kooltile is manufactured by a process of foaming of polystyrene resin, maturation in silos, molding in shape molding machines and drying. After visual inspection of dry molded pieces, the product is packed in lots and shifted to the assigned store.

**2.2.4.2** Inspection is done at appropriate stages of manufacturing process. The packed tiles are stored properly to ensure that no damage occurs during transportation. As part of quality assurance regular in-process inspections are carried out by the trained personnel of the PAC holder.

**2.2.5 Performance Criteria of EPS Kooltile** – Expanded polystyrene (EPS) shall meet the following performance criteria:

S.No.	Performance Characteristics	Test Method	Requirements as per relevant Standards			
1.	Thermal conductivity	<b>IS 4671:1984</b>	<i>Bulk Density</i> at kg/m <sup>3</sup>		<i>Thermal Conductivity</i> 10° C (W/m <sup>o</sup> .K)	
			18		0.036	
			24		0.034	
			32		0.032	
			40		0.031	
2.	Compressive strength at 10% deformation, kg/cm <sup>2</sup> <i>Min</i>	<b>IS 4671:1984</b>	<i>Requirements at various densities</i>			
			18	24	32	40
			0.8	1.3	1.7	2.0
3.	Cross breaking strength, kg/cm <sup>2</sup> , <i>Min</i>	<b>IS 4671:1984</b>	1.6	2.0	2.4	2.8
4.	Water vapour permeance, g/m <sup>2</sup> .24 hr, <i>Max</i>	<b>IS 4671:1984</b>	35	25	15	10
5.	Thermal stability, %, <i>Max</i>	<b>IS 4671:1984</b>	1	1	1	1
6.	Moisture absorption, %	<b>IS 4671:1984</b>	2	1	1	1

## 2.3 Selection & Installation

**2.3.1** The user is responsible for the proper use of the product at site. PAC holder shall provide required guidance and instructions for usage of the product at site.

**2.3.2** *Good practice for installing the product at site* – Kooltile shall be used at site in accordance with the applicable specifications, instructions and guidelines of the manufacturer. The user shall also follow the Brochure of the product supplied by the manufacturer.

### **2.3.3**      *Packing, Handling and Marking at the User end using the Product*

**2.3.3.1**      *Packing* – The tiles shall be packed in polybag by the supplier. Label giving the packing details shall be made available on the polybag.

**2.3.3.2**      *Handling* -- The instructions given by the manufacturer for handling of these tiles shall be followed.

**2.3.3.3**      *Marking* -- The following information shall be legibly marked on each package:

- a) Name of manufacturer
- b) Brand
- c) Description – Density, Classification and type
- d) Net and gross weight of package

## **2.4**      ***Installation Procedure***

### **2.4.1**      **a) External Roof**

- i) Keep the roof surface smooth, dry and dust & dirt free
- ii) Apply uniformly two coats of asphalt based polymerized water proofing chemical or bituminous cold emulsion on the smooth surface
- iii) Fix and join the tiles along the slotted tongue & groove edges on the roof
- iv) Apply base layer of cement screed over tiles for a minimum of 50 mm gradient
- v) Fix brick tiles of specified quality over cement screed for terrace finish
- vi) Apply cement sand plaster (1:3) for grouting finishing layer

### **b) External Wall**

- i) Keep the wall surface smooth for protection and ease of adhesion
- ii) Apply uniformly two coats of bituminous cold emulsion on the smooth waterproof surface
- iii) Fix and join Kooltile of EIFS brand along the slotted tongue & groove edges on the wall
- iv) Hammer dowel-nails at all the for ends to fix Kooltile

v) Apply base layer of cement screed over tiles for a minimum thickness of 12.5 mm

vi) Apply cement sand plaster over screed for a minimum thickness of 12.5 mm

vii) Apply paint/ exterior finish on the plastered wall

## **2.5 Critical Details for Using Kooltile**

**2.5.1** *Precautions to be taken* — Following precautions shall be taken while using these tiles on the roof:

i) Base of the roof slab/ wall shall be smooth for proper adhesion of the tiles, else air-pockets can lead to poor and uneven insulated surface

ii) Self-extinguishing grade FPS shall be used for fire proof roof treatment

iii) A minimum gradient of 1:12 shall be provided in the screed laid over the roof in order to avoid water logging which may lead to seepage and cracks on the roof

iv) Due to leaking water pipes / tanks etc. on the roof, rain water outlets shall not be allowed to be blocked in order to avoid water logging which may lead to seepage and cracks on the roof

v) Proper grouting over brick tiles shall be laid in order to avoid damage to roof and structure due to loose tiles

vi) Tiles of lower density than specified by the manufacturer shall not be used as these may not be adequate to support heavy loads such as water tanks, movement of DG sets etc on the terrace

**2.6** ***Skills /Training Needed or Installation*** – No special skills other than normal skills of a mason as required for fixing of tiles shall be required for this material also. However, the PAC holder shall provide on request necessary guidance to the users at site, if required

**2.7** **Guarantees/ Warranties Provided by the PAC Holder-** The manufacturer shall furnish a warranty for a period of 15 years from the date of completion of installation work to the owner of the building/structure over which these tiles are to be installed, provided these tiles are installed strictly in accordance with the applicable specifications, instructions and guidelines of the manufacturer. Further, in case the need arises, the manufacturer shall replace the tiles or repair a damaged structural surface under which material was installed.

## 2.8 Services Provided by the PAC Holder to the Customer

2.8.1 The PAC holder shall provide pre-sale advisory regarding the product. Customer/user may obtain from the PAC holder details of the advice that may be provided to him.

2.8.2 Users/Customers should ascertain from the PAC holder the type of service, the PAC holder is prepared to provide.

## Part 3 BASIS OF ASSESSMENT AND BRIEF DESCRIPTION OF ASSESSMENT PROCEDURE

### 3.1 Basis of Assessment

#### 3.1.1 *Factory Inspection*

The factory was inspected by the technical representative of the Council. During inspection the entire manufacturing process along with the equipment was inspected. The manufacturing process was found to conform to the process description given in the Annex. The in-process inspection and the inspection of the finished product were in accordance with the SQA approved as a part of the requirements for grant of this PAC.

### 3.2 Laboratory Tests Done for Assessment

3.2.1 *Testing of samples* -- The performance tests for Kooltile specified in IS 4671:1984 pertaining to "Specifications for Expanded Polystyrene for Thermal Insulation Purposes" namely Thermal conductivity, Density, Compressive strength, Flexural strength, Cross-breaking strength, Water vapour permeance, Thermal stability and Moisture absorption and listed below have been carried out by M/s Shriram Institute for Industrial Research, Delhi on two samples of the product collected by the IO during inspection of the plant. The samples conform to the tests as per the performance characteristics and specifications given by the manufacturer.

*Tests performed at Shriram Institute for Industrial Research, Delhi*

S. No.	Tests	Kooltile		Method used
		Diamond 40 Kg/m <sup>3</sup>	EIFS (Wall) 18 Kg/m <sup>3</sup>	
1.	Density, Kg/m <sup>3</sup>	41	19	IS 4671:1984
2.	Compressive strength, Kg/cm <sup>2</sup>	2.1	1.2	IS 4671:1984

3.	Cross-breaking strength, Kg/cm <sup>2</sup> (Flexural strength)	2.5	1.9	IS 4671:1984
4.	Water Vapour Permeability, g/m <sup>2</sup> 24h	1.9	2.4	IS 4671:1984
5.	Moisture absorption, %	0.2	0.4	IS 4671:1984
6.	Thermal stability, % (at 80±1°C for 7 days)	0.4	0.4	IS 4671:1984
7.	Thermal Conductivity, W/m K (at RT)	0.038 (for 40 sec duration)	0.034 (for 20 sec duration)	ISO 22007 (Part 2)

### 3.3 Supply of the Products

Details of the products supplied by the manufacturer are given below:-

<b>S.No.</b>	<b>Description</b>	<b>Customer and Location</b>	<b>When supplied</b>
1.	Kooltile – Gold (Regular)	Mr. Arjun, Neelkanth Apptt. Sec-62, Noida	April, 2013
2.	Kooltile – Gold (Regular)	Mr. Ishwar Giri, J-101, Sec -25, Noida	May 2013
3.	Kooltile – Silver (Regular)	Mr. Devender Singh, A-31, Sec-93B, Noida	June 2013
4.	Kooltile – Gold (Regular)	Mr. Avinash Srivastav, B-132, Sec-122, Noida	June 2013
5.	Kooltile – Gold (Regular)	Mr. Vinod Tibbarwal, A-31, New Friends Colony, New Delhi	June 2013
6.	Kooltile – Gold (Regular)	Mrs. Chinky Davis, Sainik Farm, New Delhi	June 2013
7.	Kooltile – Gold (Regular)	M/s Ganesh Ferrocement, Plot 9, 10B, Vasant Kunj Market, New Delhi	July 2013
8.	Kooltile – Gold (Regular)	Mr. Jitender, Chandan Hula, Chattarpur, New Delhi	August 2013
9.	Kooltile – Silver (Supreme)	M/s Genus Apparel, 14/3, Singhania Chowk, DLF-1, Faridabad	September 2013
10.	Kooltile – Gold (Regular)	Mr. Kamal, A-195, Surya Nagar, Gaziabad (UP)	September 2013

## **PART 4 STANDARD CONDITIONS**

The certificate holder shall satisfy the following conditions:

- 4.1** The certificate holder shall continue to have the product reviewed by BMBA.
- 4.2** The product shall be continued to be manufactured according to and in compliance with the manufacturing specifications and quality assurance measures which applied at the time of issue or revalidation of this certificate. The Scheme of Quality Assurance separately approved shall be followed.
- 4.3** The quality of the product shall be maintained by the certificate holder.
- 4.4** The product user should install, use and maintain the product in accordance with the provisions in this Certificate.
- 4.5** This certificate does not cover uses of the product outside the scope of this appraisal.
- 4.6** The product is appraised against performance provisions contained in the standards listed in Part-V. Provisions of any subsequent revisions or provisions introduced after the date of the certificate do not apply.
- 4.7** Where reference is made in this Certificate to any Act of Parliament of India, Rules and Regulations made there under, statutes, specifications, codes of practice, standards etc. of the Bureau of Indian Standards or any other national standards body and the International Organization for Standardization (ISO), manufacturer's company standards, instruction/manual etc., it shall be construed as reference to such publications in the form in which they were in force on the date of grant of this Certificate (and indicated in Part V to this Certificate)
- 4.8** The certificate holder agrees to inform BMBA of their distributors / licensees whenever appointed by him and agrees to provide to BMBA a six monthly updated list thereof.
- 4.9** The certificate holder agrees to provide to BMBA feedback on the complaints received, the redressal provided, and the time taken to provide redressal on complaint to complaint basis as soon as redressal is provided. BMBA agrees to provide the certificate holder the user feedback received by it, if any.
- 4.10** If at any time during the validity period, PACH is unable to fulfill the conditions in his PAC, he should on his own initiative suspend using the PAC and notify Chairman, TAC the date from which he has suspended its use, the reason for suspension and the period by which he will be able to resume. He shall not resume without the prior permission of BMBA. He shall also inform, simultaneously, his agents, licensees, distributors, institutional, government, public sector buyers, other buyers and all those whom he has informed about his holding the PAC. He shall also inform all those who buy his product(s) during the period of suspension. He shall provide to BMBA at the earliest the list of who have been so informed by him.
- 4.11** In granting this Certificate, BMBA takes no position as to:

- (a) The presence or absence of patent or similar rights relating to the product;
- (b) The legal right of the Certificate holder to market, install or maintain the product;
- (c) The nature of individual installations of the product, including methods of workmanship.

- 4.12 BMTPC and the Board of Agreement of BMTPC (BMBA) take no position relating to the holder of the Performance Appraisal Certificate (PACH) and the users of the Performance Appraisal Certificate (PAC) respecting the patent rights / copy rights asserted relating to the product / system / design / method of installation etc. covered by this PAC. Considerations relating to patent / copy rights are beyond the scope of the Performance Appraisal Certification Scheme (PACS) under which this PAC has been issued. PACH and users of this PAC are expressly advised that determination of the Claim / validity of any such patent rights / copy rights and the risk of infringement of such rights are entirely the responsibility of PACH on the one hand and that of the users on the other.
- 4.13 It should be noted that any recommendations relating to the safe use of the product which are contained or referred to in this Certificate are the minimum standards required to be met with when the product is installed, used and maintained. They do not purport in any way to restate or cover all the requirements of related Acts such as the Factory Act, or of any other statutory or Common Law duties of care, or of any duty of care which exist at the date of this Certificate or in the future, nor is conformity with the provisions of this Certificate to be taken as satisfying the requirements of related Acts.
- 4.14 In granting this Certificate, BMTPC and BMBA does not accept responsibility to any person or body for any loss or damage, including personal injury, arising as a direct or indirect result of the use of this product.
- 4.15 The certificate holder indemnifies BMBA, its officers and officials involved in this assessment against any consequences of actions taken in good faith including contents of this certificate. The responsibility fully rests with the certificate holder and user of the product.
- 4.16 The responsibility for conformity to conditions specified in this PAC lies with the manufacturer who is granted this PAC. The Board (BMBA) will only consider requests for modification or withdrawal of the PAC.
- 4.17 The PAC holder shall not use this certificate for legal defense in cases against him or for legal claims he may make from others.



Dr. Shalish Kr. Agarwal  
Chairman, TAG

& Member Secretary, BMBA

Building Materials and Technology Promotion Council  
Ministry of Housing and Urban Affairs, (Govt. of India)  
Core 5A, Lodhi Estate, Lodhi Road,  
New Delhi-110 003  
Chairman, TAG &  
Member Secretary, BMBA

Place: New Delhi

for and on behalf of

Date of issue \_\_\_\_\_

## **PART 5 LIST OF STANDARDS AND CODES USED IN ASSESSMENT**

**Part 5.1 Standards** - These Standards are referred for carrying out a particular test only and do not specify the requirement for the whole product as such.

**Part 5.1.1 IS 3346:1980** – Method of determination of thermal conductivity for thermal insulation materials

**Part 5.1.2 IS 4671: 1984** – Specifications for expanded polystyrene for thermal insulation purposes

**Part 5.1.3 ISO 22007-2:2008** – Plastics – Determination of Thermal Conductivity and thermal diffusivity: Transient plane heat source (hot disc) method

**Part 5.2 Company Standards of the PAC holder** – The branded design & specifications of the raw materials and finished product are as submitted by the manufacturer. The PAC holder has to make available the company standards to the consumers according to which testing have been done.



## CERTIFICATION

In the opinion of Building Materials & Technology Promotion Council's Board of Agreement (BMBA), **Kooltile** bearing the mark manufactured by M/s Reliable Insupacks (P) Ltd., Greater Noida (UP) is satisfactory if used as set out above in the text of the Certificate. This Certificate **PAC No. 1015-P/2014** is awarded to **M/s Reliable Insupacks (P) Ltd., Greater Noida (UP)**.

The period of validity of this Certificate is as shown on Page 1 of this PAC. This Certificate consists of a cover page and pages 1 to 19.



Dr. Shalish Kr. Agarwal  
Chairman, TAC  
& Member Secretary, BMBA

Building Materials and Technology Promotion Council  
Ministry of Housing & Urban Poverty Alleviation, (Govt. of India)  
Case 5A, 1st Floor, India Habitat Centre, Lodhi Road,

On behalf of BMTPC Board of Agreement 003

New Delhi, India

Place: New Delhi

Date

Chairman, Technical Assessment Committee (TAC) of

BMBA & Member Secretary, BMTPC Board of Agreement  
(BMBA) Under Ministry of Housing and Urban Poverty  
Alleviation, Government of India



## **PART 6 ABBREVIATIONS**

### **Abbreviations**

BMBA	Board of Agreement of BMTPC
BMTPC	Building Materials and Technology Promotion Council
CPWD	Central Public Works Department
ED	Executive Director of BMTPC
IO	Inspecting Officer
MS	Member Secretary of BBA
PAC	Performance Appraisal Certificate
PACH	PAC Holder
PACS	Performance Appraisal Certification Scheme
SQA	Scheme of Quality Assurance
TAC	Technical Assessment Committee (of BMBA)

## **Performance Appraisal Certification Scheme - A Brief**

Building Materials & Technology Promotion Council (BMTPC) was set up by the Government of India as a body under the Ministry of Housing & Urban Poverty Alleviation to serve as an apex body to provide inter-disciplinary platform to promote development and use of innovative building materials and technologies laying special emphasis on sustainable growth, environmental friendliness and protection, use of industrial, agricultural, mining and mineral wastes, cost saving, energy saving etc. without diminishing needs of safety, durability and comfort to the occupants of buildings using newly developed materials and technologies.

During the years government, public and private sector organizations independently or under the aegis of BMTPC have developed several new materials and technologies. With liberalization of the economy several such materials and technologies are being imported.

However, benefits of such developments have not been realized in full measure as understandably the ultimate users are reluctant to put them to full use for want of information and data to enable them to make informed choice.

In order to help the user in this regard and derive the envisaged social and economic benefits the Ministry of Housing & Urban Poverty Alleviation has instituted a scheme called Performance Appraisal Certification Scheme (PACS) under which a Performance Appraisal Certificate (PAC) is issued covering new materials and technologies. PAC provides after due investigation, tests and assessments, amongst other things information to the user to make informed choice.

To make the PACS transparent and authentic it is administered through a Technical Assessment Committee (TAC) and the BMTPC Board of Agreement (BMBA) in which scientific, technological, academic, professional organizations and industry interests are represented.

The Government of India has vested the authority for the operation of the Scheme with BMTPC through Gazette Notification No. 1-16011/5/99 H-II in the Gazette of India No. 49 dated 4th December, 1999.

Builders and construction agencies in the Government, public and private sectors can help serve the economic, development and environmental causes for which the people and Government stand committed by giving preference to materials and technologies which have earned Performance Appraisal Certificates.

Further information on PACS can be obtained from the website: [www.bmtpc.org](http://www.bmtpc.org)

**ANNEX**

**BUILDING MATERIALS & TECHNOLOGY PROMOTION COUNCIL**

*QUALITY ASSURANCE PLAN FOR KOOLTILE*

<b>S.No.</b>	<b>Parameters to be inspected</b>	<b>Requirement Specified</b>	<b>Test Method</b>	<b>Frequency of Testing</b>
<b>1. Raw Material -- EPS Resin</b>				
1.	Bead size	Shall be as per supplier's specifications	As per Supplier's test report & ROHS certification	Each lot
2.	Density of matured beads	Shall be as per supplier's specifications	As per Supplier's test report & ROHS certification	Once hourly
<b>2. Kooltile</b>				
1	Visual inspection for defects	Shall be in order	Visual	Each lot
2	Inspection for molding parameters and for height	As per in-process inspection report format	Height gauge	4 times/lot
3	Compressive strength	Shall be as per manufacturer's specifications	IS 4671:1984	Once in six months on testing machine
4	Thermal Conductivity	Shall be as per manufacturer's specifications	IS 4671:1984	Once in two years from NABL lab