V1/0715/AI/TDO1

KORE

KORE Loft

Insulated Flooring System Design Guide

KORE Loft Insulated Flooring System

Key Features

- Excellent thermal performance for the lifetime of the building
- Sheets tongue and grooved
- Meets and exceeds building regulations
- Easy to work with and install
- Exceptional compressive strength
- Dual purpose solution; attic insulation and attic storage
- Maintenance free

Application & Description

Application

KORE Loft Insulation is laid over the attic joists to provide an insulated flooring system for safe access and storage in the attic space.

Description

KORE Loft Attic Insulation Flooring System is specifically designed to allow the floor of the attic to be insulated and still use the space for storage. The product is essential for ensuring there is safe, secure access from the attic hatch door to the water tank and other services in the attic. KORE Loft comprises of one composite sheet of silver expanded polystyrene (EPS) insulation bonded to an 18mm tongue and grooved chipboard sheet. The sheets sit on top of the joists in the attic and slot in together to form a floor for access and storage. A suitable insulation material is also installed between the joists at ceiling level to ensure the required U-values are achieved.

Product Name

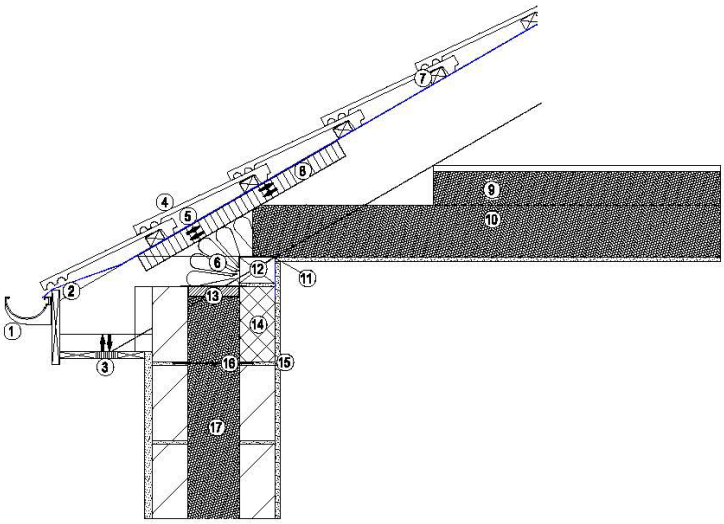
Product Name	Application	New Build	Retrofitting
KORE Loft EPS70 Silver	Attic Insulation Flooring System	Yes	Yes

Typical Construction & U-Value Calculations

Calculation Assumptions

All U-value calculations are in accordance with BS EN ISO 6946:2007. An inhomogeneous layer was considered in all calculations where the insulation runs between the timber joists. The timber centres were taken as 400mm. Please contact our technical team for calculations at different centres. It is assumed that the insulation is fitted accordingly and the correction factor for air gaps has been ignored. The thermal conductivity of the mineral wool product was taken as 0.044W/mK.

Detail 1: Insulation at Ceiling Level



1. Gutter
2. Tilting fillet/felt support to prevent ponding of felt at eaves level
3. Ventilated soffit
4. Tiled/slated roof
5. Airtight breather membrane
6. Ensure gap between wall plate and proprietary eaves vent is completely filled with insulation having a min. R-value across the insulation thickness of 1.2 m2K/W
7. 47mm x 35mm slate/tiling battens
8. Eaves ventilator to provide 25mm (min) unobstructed air passage over insulation
9. KORE Loft Board - 95mm KORE EPS70 bonded to 18mm chipboard fixed directly over joists
10. Mineral wool insulation 150mm (0.044W/m2k) between joists
11. Airtight tape applied to wall ceiling junction
12. 100mm x 75mm wallplate on continuous mortar bed, wall plate to be secured down to wall by restraint straps nailed to wall. Strap at least 750mm long, 450mm of which should be over blockwork
13. Insulated cavity closer to manufacturers specifications and details
14. Autoclaved aerated concrete (AAC) block to be used to ensure thermal break is maintained. (maximum thermal conductivity of 0.20W/mK). AAC block to be installed so to avoid any effect of moisture on thermal conductivity
15. 15mm internal sand cement render (internal includes airtight parge coat)
16. Wall ties to manufacturers specifications and details
17. 150mm KORE Fill Bonded Bead Insulation

U-Value Calculations: KORE Loft EPS70 Silver (0.031W/mK)

KORE Loft EPS70 Silver	Mineral Wool (mm)	U-Value W/m²K
70	150	0.16
95	100	0.16
95	150	0.14
110	150	0.13

Specification Guidelines

Building Standards

KORE Loft Insulation can satisfy the requirements of the Irish Building Regulations as outlined in:

- Part L - Conservation of Fuel and Energy - Dwellings (2011)
- Part L - Conservation of Fuel and Energy - Buildings other than Dwellings (2008)

Environmental

Expanded polystyrene is BRE Green Guide A+ Rated.

Design Standards

- BS 5250:2002 Code of practice for the control of condensation in buildings

For retrofit installations consult:

- NSAI S.R. 54:2014 Code of practice for the energy efficient retrofit of dwellings

Compressive Loading

The compressive strength of KORE Loft Insulation board is 82kPa ensuring loading for domestic requirements can be satisfied. KORE Loft EPS covered with chipboard can support these design loadings without undue deflection.

Ventilation and Control of Condensation

With insulation installed at ceiling level there is a risk that condensation will form on the surfaces of the cold side of the insulation in the loft space. This condensation occurs when warm moisture laden air is able to pass to the cold loft space but is prevented from dissipating into the external atmosphere by the roof structure. Steps must first be taken to prevent the formation of condensation and the passage of warm air and water vapour from passing through the structure into the cold loft space. Condensation can be prevented by ensuring the ceiling is well sealed and ensuring the cold side of the insulation is ventilated. A vapour control layer should be installed between the insulation and the plasterboard on the warm side of the insulation to control water vapour.

Detailed Specification Guideline

Full specification guide is available on www.kore-system.com.

On Site

Installation Guidelines

- The insulation between the joists should be installed first, as per the manufacturer's recommendations.
- Where possible services and electrical cables should be relocated towards the eaves. Alternatively, the boards can be installed around the existing services. Electric cabling can be run over the KORE Loft Attic Flooring System once a provision for trip hazard is provided. The KORE Loft Board should not be chased to accommodate services at this affects the thermal bridging performance of the board.
- The board size is suited to accommodate joists at a maximum of 400mm centres.
- KORE Loft Boards are laid perpendicular to the ceiling joists and fixed directly to the timber joist. The edge should sit directly on top of the timber joist.
- Boards should be fitted together at the tongue and groove.
- All boards should be level to avoid trip hazard for the building occupant.

Cutting

On-site trimming of boards where necessary to maintain continuity of insulation is easily executed using a fine tooth saw. Care must be taken to maintain the thickness, flatness and squareness of the board to achieve close butting of joints and continuity of insulation.

Packaging and Storage

KORE Loft Boards must be protected from prolonged exposure to sunlight, and should be stored under cover in its original wrapping, not in contact with ground moisture and raised above ground level. Boards should be stored indoors. Care must be taken to avoid contact with solvents and with materials containing volatile organic components such as tar and newly treated timber.

Product Technical Details

Properties

Type

KORE Loft insulation is supplied as EPS70 as defined in IS EN 13163:2012. Other densities and grades are available upon request. Reaction to Fire Class E, containing a flame retardant additive.

Density

KORE Loft EPS70 Silver: 15kg/m^3

Thermal Conductivity

The thermal conductivity of KORE Loft insulation products are in accordance with IS EN 13163:2012 and EN12667 Thermal performance of building materials and products - determination of thermal resistance by means of guarded hot plate and heat flow meter method.

- KORE Loft EPS70 Silver: 0.031W/mK

Thermal Resistance

Thermal resistance, known as the R-value, varies with the thickness of the insulation. To calculate the thermal resistance (m^2.K/W) divide the thickness of the insulation by its thermal conductivity and round down the result to the nearest 0.05.

	KORE Loft EPS70 Silver
Insulation Thickness (mm)	**Thermal Resistance (m^2.K/W)**
70	2.26
95	3.06

Durability

The KORE Loft Insulation System is rot-proof, water repellent and durable.

Behaviour in Fire

When installed and used as per this technical document the increase in fire load in the building consequent to its use is negligible

Dimensions

Standard Size: 1.22m x .45m
Standard Thickness: KORE Loft: 75mm, 95mm
Chipboard: 18mm

Project specific dimensions can be accommodated.

Tolerances

Characteristic	Level/Class/ Limit Value	Value (mm)	Standard
Thickness	T2	±2mm	EN823
Length	L3	±3mm	EN822
Width	W3	±3mm	EN822
Squareness	S5	±5mm	EN824
Flatness	P5 ≤0.72m^2	±5mm	EN825

Dimensional Stability

KORE Loft EPS70: In accordance with IS EN 13163:2012 and EN1603, dimensional stability, DS(N)5, declared value ±0.5%.

Compressive Strength

KORE Loft EPS70: In accordance with IS EN 13163:2012 and EN826, compressive strength and 10% deformation, CS(10)70, declared value 82kPa.

Bending Strength

KORE Loft EPS70: In accordance with IS EN 13163:2012 and EN12089, bending strength, BS115, declared value ≥115.

Tensile Strength

KORE Loft EPS70: In accordance with IS EN 13163:2012 and EN1607, tensile strength perpendicular to the surface, TR150, declared value ≥150kPa.

Long Term Water Absorption by Partial Immersion

KORE Loft EPS70: In accordance with IS EN 13163:2012 and EN12087, long term water absorption by partial immersion, declared value value WL(P)i 0.2kg/m^2.

Long Term Water Absorption by Total Immersion

KORE Loft EPS70: In accordance with IS EN 13163:2012 and EN12087, long term water absorption by total immersion, declared value WL(T)i 5%.

Front Facing

The KORE Loft Board is faced with an 18mm flooring grade tongue and grooved chipboard.

Standards

KORE Loft insulation is manufactured to BS EN 13163:2012 under Quality Management System approved to EN ISO 9001:2008 Quality Management.

Technical Services

Contact our team today for:

- U-value calculations
- Condensation risk analysis
- Determination of exposure zone
- Accredited drawings and details
- Thermal bridging analysis results
- Temperature factor analysis

Other Products

KORE Loft Insulated Flooring System can be installed in conjunction with a wide range of KORE products and services. When installing KORE Loft Insulation, consider the following products for a whole-home solution:

- KORE External Wall Insulation
- KORE Fill Bonded Bead Cavity Wall Insulation
- KORE's Range of Draught Proofing Solutions
- KORE Wall and Roof Ventilation
- KORE Hot and Cold Water Lagging and Jackets
- KORE's Pipe Insulation

Contact Details

P +353 49 4336998 F 049 4336823
E info@kore-icf.com W www.kore-system.com

The Green
Kilnaleck
Co. Cavan

Facebook: www.facebook.com/KOREIreland
Twitter: www.twitter.com/KORESystem

Disclaimer

KORELOFT

A Product of AIRPACKS

The Green, Kilnaleck, Co. Cavan, Ireland