



KIMMCO

KUWAIT INSULATING MATERIAL
MANUFACTURING CO. S.A.K. (Closed)

ISO 9001, ISO 14001
& OHSAS 18001 CERTIFIED



BUILDING SLAB (KBS)

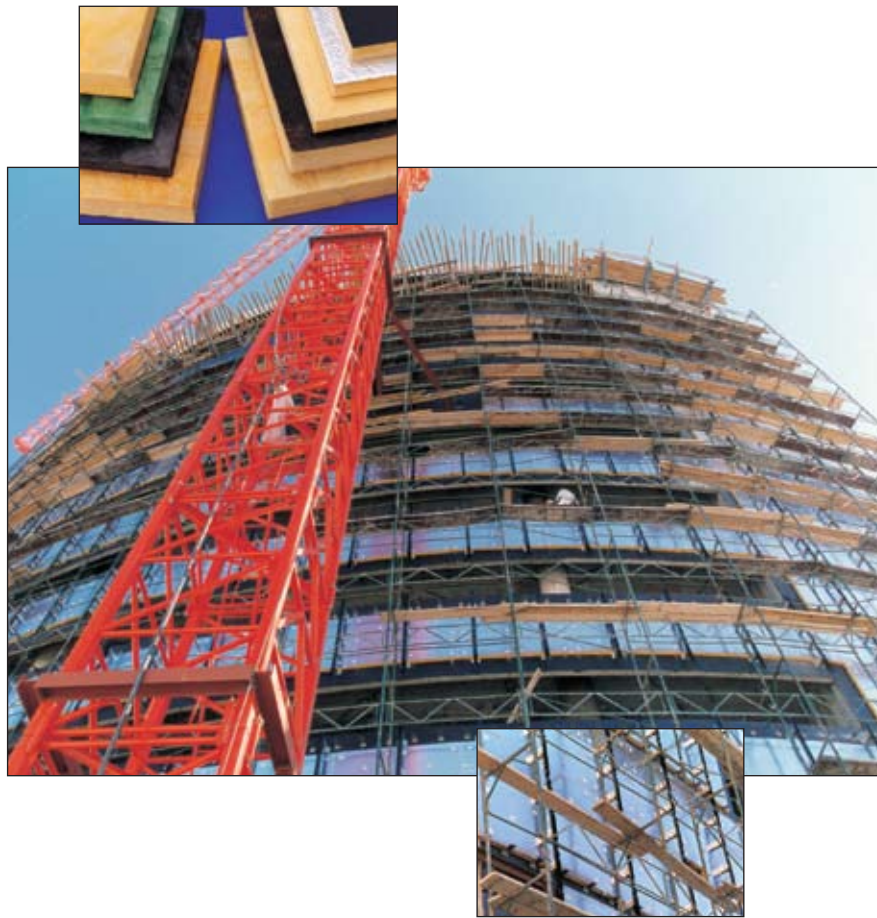


MANUFACTURED
UNDER LICENCE OF
ISOVER
SAINT-GOBAIN

www.kimmcoinsulation.com
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A subsidiary of
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INDUSTRIES 

BUILDING SLAB (KBS)



APPLICATIONS

For thermal and acoustic insulation of concrete floors in order to reduce energy losses and transmission of impact sound.

For insulation of single leaf walls with dressed stone or marble facings and cavity wall construction, precast structures and prefabricated buildings.

For thermal insulation of concrete and metal roof decks.

For thermal insulation of industrial applications: boilers, ovens, refrigerators, storage tanks, marine and road transport.

DESCRIPTION

KIMMCO Building Slabs are semi-rigid and rigid boards manufactured from stable glass fibers bonded with thermosetting resins.

Capable of withstanding the extreme temperatures encountered in industrial applications or in flat roofings, capable of withstanding normal loads met in domestic and commercial structures when used below floor screeds.

Easy to handle and cut to suit intricate shapes.

Light in weight, strong and resilient.

FACINGS

KIMMCO Building Slabs are available unfaced or with a variety of facings to suit the application such as bitumen kraft paper, canvas, or glass reinforced aluminum foil/kraft paper laminate facing (FSK), glass reinforced aluminum foil/high intensity bleached kraft paper (ASJ), metallized polyester, black glass cloth, Aluglass.

STANDARD DIMENSIONS

| Thickness mm | Width m | Length m |
|--|--------------------|---------------|
| 25 | 0.4, 0.6, 1.0, 1.2 | 1.0, 1.2, 2.4 |
| 40 | " | " |
| 50 | " | " |
| 75 | " | " |
| 100 | " | " |
| Non standard sizes may be available on request | | |

NOMINAL DENSITY

| KBS | kg/m ³ | lbs/ft ³ | APPLICATION |
|-----|-------------------|---------------------|-------------------------|
| 24 | 24 | 1.5 | Industrial |
| 32 | 32 | 2 | Industrial, walls |
| 36 | 36 | 2.25 | Industrial, walls |
| 48 | 48 | 3 | Industrial, walls |
| 64 | 64 | 4 | Industrial, walls |
| 72 | 72 | 4.5 | Industrial, walls |
| 80 | 80 | 5 | Industrial, floor, roof |
| 100 | 100 | 6.25 | Industrial, floor, roof |
| 120 | 120 | 7.5 | Industrial, floor, roof |

PERFORMANCES

WORKING TEMPERATURE

Fiber : 230°C and 450°C (for ovens and boilers insulation) upon request mentioning the working temperature.

Foil face : 100°C

At temperatures in excess of 230°C, a limited migration of binder may occur in the insulation in contact with the hot face. This in no way impairs the performance of the insulation.

PERMANENCE

Dimensionally stable under varying conditions of temperature and humidity, rot proof, odourless, non-hygroscopic and will not sustain vermin or fungus.

THERMAL CONDUCTIVITY

The dependencies of thermal conductivity of KIMMCO tel process products on the mean temperature and density, according to BS 874, ASTM C 177, 518, ISO 8301, 8302 or DIN 52612 are presented in the tables below:

| MEAN TEMPERATURE °C | THERMAL CONDUCTIVITY IN W/m.K FOR THE BELOW DENSITIES IN kg/m ³ | | | | | | | | | | |
|---------------------|--|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| | 24 | 32 | 36 | 48 | 64 | 80 | 96 | 100 | 110 | 115 | 120 |
| 0 | 0.031 | 0.030 | 0.029 | 0.029 | 0.030 | 0.031 | 0.031 | 0.031 | 0.031 | 0.031 | 0.031 |
| 10 | 0.032 | 0.031 | 0.030 | 0.030 | 0.031 | 0.033 | 0.033 | 0.033 | 0.033 | 0.033 | 0.033 |
| 25 | 0.035 | 0.033 | 0.032 | 0.031 | 0.032 | 0.035 | 0.035 | 0.035 | 0.035 | 0.035 | 0.035 |
| 50 | 0.039 | 0.037 | 0.036 | 0.035 | 0.036 | 0.037 | 0.037 | 0.037 | 0.037 | 0.037 | 0.037 |
| 75 | 0.043 | 0.040 | 0.039 | 0.037 | 0.038 | 0.040 | 0.040 | 0.040 | 0.040 | 0.040 | 0.040 |
| 100 | 0.047 | 0.044 | 0.043 | 0.041 | 0.043 | 0.043 | 0.043 | 0.043 | 0.043 | 0.043 | 0.043 |

| MEAN TEMPERATURE °F | THERMAL CONDUCTIVITY IN Btu.in/ft ² h.F FOR THE BELOW DENSITIES IN Lbs/ft ³ | | | | | | | | | | |
|---------------------|---|------|-------|------|------|------|------|-------|-------|--------|------|
| | 1.500 | 2 | 2.250 | 3 | 4 | 5 | 6 | 6.250 | 6.875 | 7.1875 | 7.5 |
| 32 | 0.21 | 0.20 | 0.20 | 0.20 | 0.21 | 0.21 | 0.21 | 0.21 | 0.21 | 0.21 | 0.21 |
| 50 | 0.22 | 0.22 | 0.21 | 0.21 | 0.23 | 0.23 | 0.23 | 0.23 | 0.23 | 0.23 | 0.23 |
| 77 | 0.24 | 0.23 | 0.22 | 0.22 | 0.23 | 0.24 | 0.24 | 0.24 | 0.24 | 0.24 | 0.24 |
| 122 | 0.27 | 0.25 | 0.25 | 0.24 | 0.25 | 0.26 | 0.26 | 0.26 | 0.26 | 0.26 | 0.26 |
| 167 | 0.30 | 0.27 | 0.27 | 0.26 | 0.27 | 0.29 | 0.28 | 0.28 | 0.28 | 0.28 | 0.28 |
| 212 | 0.33 | 0.30 | 0.30 | 0.29 | 0.30 | 0.30 | 0.30 | 0.30 | 0.30 | 0.30 | 0.30 |

| THICKNESS (mm) | THERMAL RESISTANCE (m ² / W.K) AT 25 °C MEAN TEMPERATURE | | | | | | | |
|----------------|---|--------|--------|--------|--------|--------|--------|---------|
| | KBS 24 | KBS 32 | KBS 36 | KBS 48 | KBS 64 | KBS 80 | KBS 96 | KBS 100 |
| 25 | 0.714 | 0.758 | 0.781 | 0.806 | 0.781 | 0.714 | 0.714 | 0.714 |
| 40 | 1.143 | 1.212 | 1.250 | 1.290 | 1.250 | 1.143 | 1.143 | 1.143 |
| 50 | 1.429 | 1.515 | 1.563 | 1.613 | 1.563 | 1.429 | 1.429 | 1.429 |
| 65 | 1.859 | 1.970 | 2.031 | 2.097 | 2.031 | 1.859 | 1.859 | 1.859 |
| 75 | 2.143 | 2.273 | 2.344 | 2.419 | 2.344 | 2.143 | 2.143 | 2.143 |
| 100 | 2.857 | 3.030 | 3.125 | 3.226 | 3.125 | 2.857 | 2.857 | 2.857 |

| THICKNESS (Inch) | THERMAL RESISTANCE (ft ² .h.F/Btu) AT 77 °F MEAN TEMPERATURE | | | | | | | |
|------------------|---|--------|--------|--------|--------|--------|--------|---------|
| | KBS 24 | KBS 32 | KBS 36 | KBS 48 | KBS 64 | KBS 80 | KBS 96 | KBS 100 |
| 1 | 4.121 | 4.371 | 4.507 | 4.653 | 4.507 | 4.121 | 4.121 | 4.121 |
| 1.5 | 6.182 | 6.556 | 6.761 | 6.979 | 6.761 | 6.182 | 6.182 | 6.182 |
| 2 | 8.242 | 8.742 | 9.015 | 9.306 | 9.015 | 8.242 | 8.242 | 8.242 |
| 2.5 | 10.303 | 10.927 | 11.269 | 11.632 | 11.269 | 10.303 | 10.303 | 10.303 |
| 3 | 12.363 | 13.113 | 13.522 | 13.958 | 13.522 | 12.363 | 12.363 | 12.363 |
| 4 | 16.484 | 17.483 | 18.030 | 18.611 | 18.030 | 16.484 | 16.484 | 16.484 |

These are typical values subject to normal manufacturing and testing variances.

FIRE SAFETY

Base fibers are non-combustible when tested in accordance with BS 476 (part 4) ASTM E 136, and ISO 1182.

KIMMCO Building Slabs have been tested and listed by the Underwriters Laboratories according to UL 723 (file R 9703).

Glass reinforced aluminium/kraft laminate facing (FSK) are U.L. classified as follows:

Flame spread : not over 25
Smoke developed : not over 50

MOISTURE ABSORPTION

Less than 1% by volume when tested in accordance with BS 2972 or 6676, ASTM C 1104. KIMMCO building slabs do not absorb moisture from the ambient air nor water by capillary attraction. Only water under pressure can enter the insulation products, but that will quickly dry out owing to the material's open cell structure.

FSK faced building slabs comply with ASTM E 96 desiccant method. Permeance not to exceed 0.02 perms (Federal standard HH-B-100B Type 1).

NON TOXIC

KIMMCO BUILDING SLAB IS NOT HAZARDOUS TO HEALTH

(see KIMMCO MSDS).

ACOUSTICS

ASTM C 423 - Mounting A as per ASTM E 795

| PRODUCT | | Absorption coefficients at the octave frequencies HZ | | | | | | |
|---------|----------------|--|------|------|------|------|------|------|
| Type | Thickness (mm) | 125 | 250 | 500 | 1000 | 2000 | 4000 | NRC |
| KBS 48 | 50 | 0.16 | 0.52 | 0.89 | 0.92 | 1.03 | 0.95 | 0.85 |
| KBS 64 | 25 | 0.18 | 0.29 | 0.69 | 0.80 | 0.90 | 0.89 | 0.65 |
| | 50 | 0.21 | 0.48 | 1.02 | 1.00 | 1.00 | 0.96 | 0.85 |
| KBS 120 | 25 | 0.00 | 0.25 | 0.85 | 0.98 | 1.00 | 0.80 | 0.75 |
| | 50 | 0.22 | 0.76 | 0.92 | 0.96 | 0.98 | 0.87 | 0.90 |

These are typical values subject to normal manufacturing and testing variances

RESISTANCE TO COMPRESSION

Regarding the floor and roof rigid slabs, the compressive strength load required to produce a reduction in thickness of 10% (ASTM C 165 procedure A) will be:

40 kPa (835 lb/ft²) for KBS 110 kg/m³.

CONFORMITY TO STANDARDS

KIMMCO Building Slabs comply with the following standards:

AMERICAN STANDARDS

ASTM C 165, 167, 168, 177, 303, 356, 411, 423, 518, 553, 612 (class 1 to 3), 665 § 13.8 & 13.9, 1045, 1101/1101M, 1104/1104M, 1136 (type1&2), 1335;
E 84, 96, 136, 795

UL 723

F.S. HH-B-100B (Type1), HH-I-521F, HH-I-558B

NFPA 255

NAIMA Standards

ASHRAE 90.1 requirements

BRITISH STANDARDS

BS 476 (parts 4, 6 & 7), 874, 2972, 3533, 3958 (part 5), 6676 (Part 1)

GERMAN STANDARDS

DIN 18165, 52612

ISO

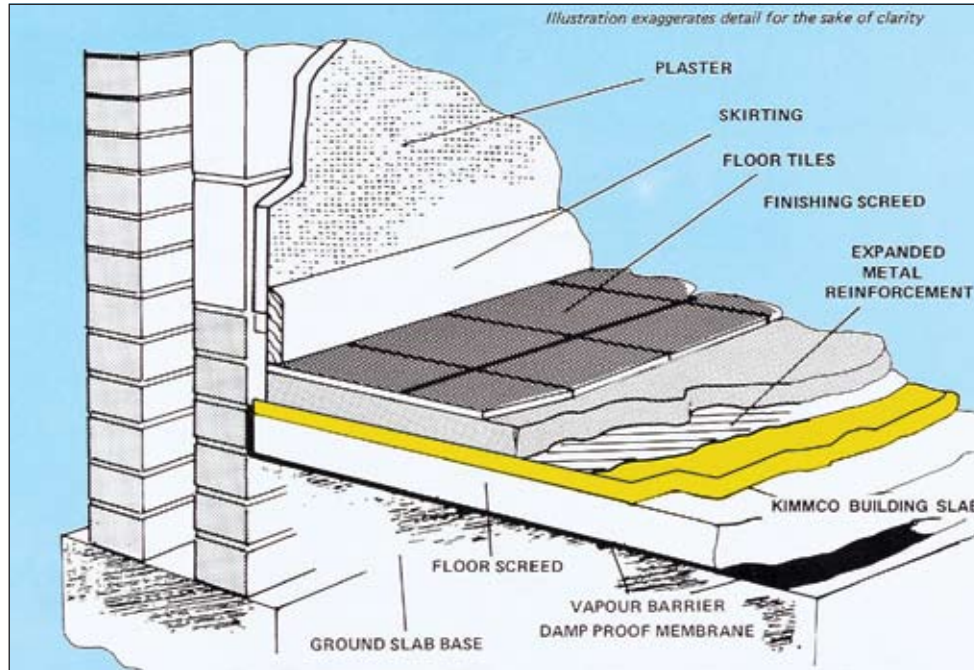
354, 1182, 8301, 8302, 9229, 9291

TYPICAL INSTALLATION

CONCRETE FLOORS ABOVE D.P.C. LEVEL

Cover concrete floorslab with a suitable damp proof membrane, ensuring adequate coverage at joints. Membrane should be taken up vertical surfaces to finished screed level.

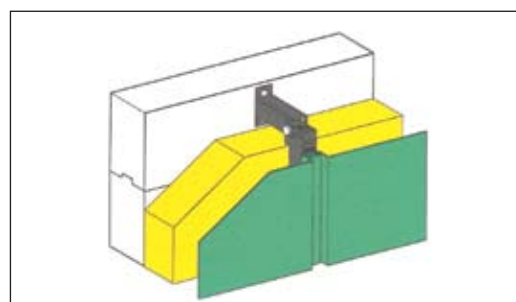
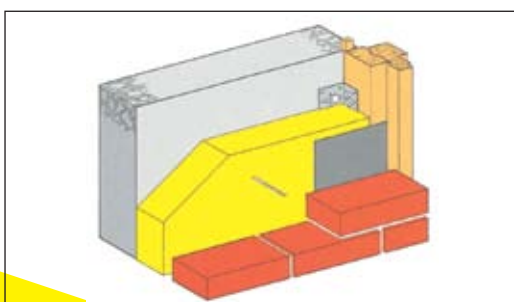
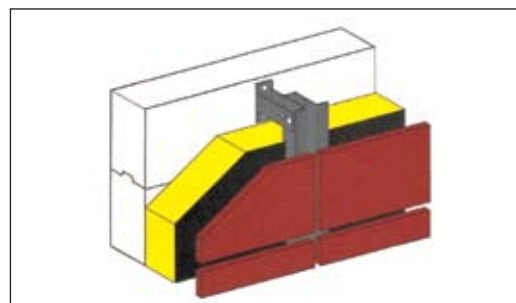
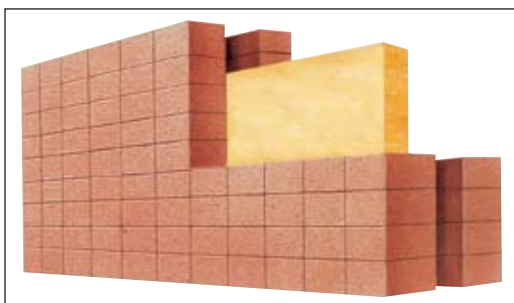
KIMMCO Building Slab is laid directly on top of the damp proof membrane with edges close butted and joints staggered. Edge insulation consisting of strips of insulation not more than 2.5cm thick cut from standard slab with a width to suit the specified screed thickness should be placed vertically against the walls, the bottom edge resting on top of the horizontal and vertical insulation with care taken to ensure that laps are well covered. It is recommended that the screed should be 60 mm thick with a galvanised mesh reinforcement laid into it.



CAVITY WALLS

Use galvanized, stainless steel or nylon hangers with retaining washers for holding the insulation in correct position.

The 2" FSK overlap of KIMMCO Building Slab to be positioned at the bottom of each slab in order to cover the top of the underlying slab to protect the insulation from accidental water spilling during the outside wall construction.

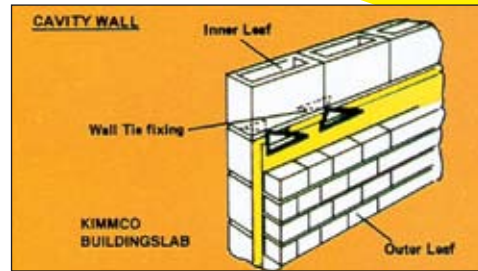


CAVITY WALLS WITH TIES

Construction methods are only slightly affected by the use of KIMMCO Building Slab. The inner leaf of the wall construction should be cleaned of mortar protrusions before fitting building slab between each horizontal run of wall ties. Mortar droppings should be removed from top edges of insulation before placing the next row in position. The insulation must be placed against the outer face of the inner leaf of the wall. A minimum air gap of 1 cm should be left between the insulation and the inner face of the external wall leaf. This ensures normal drainage and ventilation of the cavities. Joints between insulation slabs must be close butted with all vertical joints staggered.

KIMMCO Building Slabs are held back against the face of the inner leaf by the drip prong of the wall ties, special clips or adhesive.

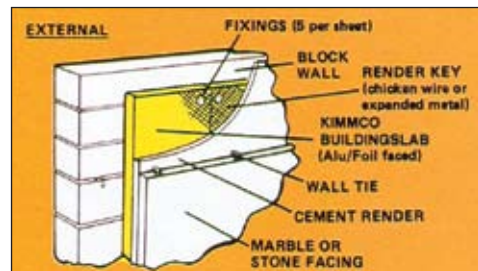
In applications using marble or stone facings, it is important that the facing be tied back to the main structure, the ties to be inserted at joints between the insulation. Type and frequency of fixing depends on size and weight of facing material specified.



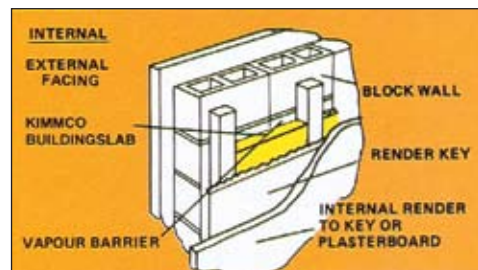
SOLID WALL CONSTRUCTION

Insulation can be applied to the back up wall in one of the following manners:

a) Batten out surface of wall to suit width of slabs ensuring that KIMMCO building slab can be fixed snugly between battens without gaps. Apply a vapour barrier over the Building Slab, fixing it to the battens with staples or flat head nails. Vapour barrier to be applied horizontally with each run overlapping previous by at least 15cm. Fix expanded metal, galvanized chicken mesh or plastic netting over the vapour barrier as a key for the rendering, fixing it into the vertical battens by staples or flat head nails. Some additional fixing may be required between battens to remove excess bellying. Apply external render coats or plaster board.



b) Apply foil faced KIMMCO Building Slab to the wall with recognized mechanical fastenings such as Hilti using large head washers. Insulation should be applied with staggered vertical joints. All boards to be close butted. Apply expanded metal, galvanized chicken mesh or plastic netting over the insulation using mechanical fasteners. External rendering or other facing can now be applied.

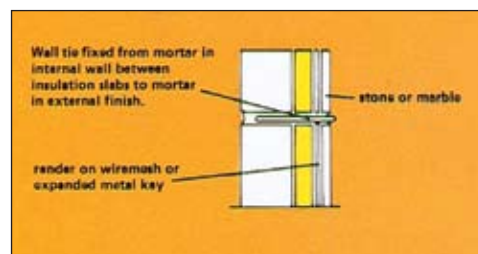


c) KIMMCO recommends that metal wall ties or wires be used to tie the external wall finish (marble or stone) to the internal wall. This gives additional stability to the structure. Care should be taken to ensure that the wall ties are long enough to reach from the internal wall through the insulation to the external finish.

KIMMCO recommends to seal all joints where vapour barriers are used.

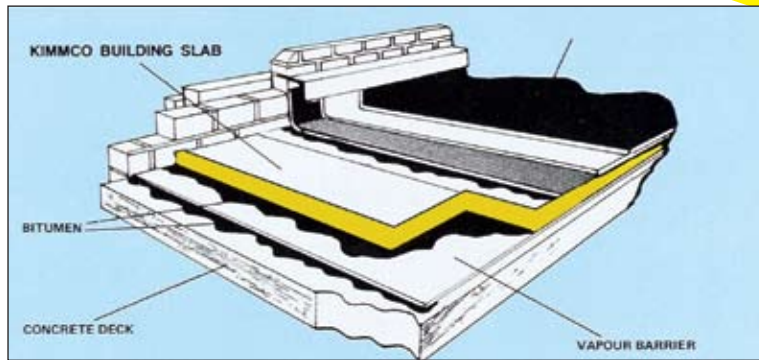
CONCRETE ROOFS

The roof surface should be clean and dry. A perfectly smooth surface to the concrete is not necessary but care should be taken to ensure the boards do not rock.



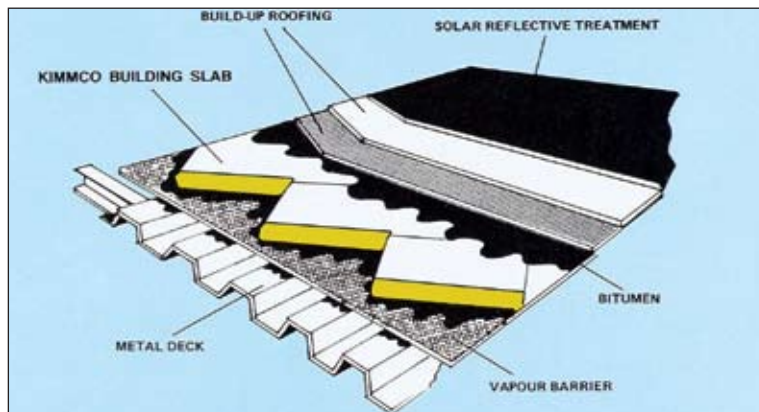
KIMMCO Building Slab should be bedded in a bitumen compound on top of an approved continuous vapour barrier with well lapped joints. Weathering treatments should be laid in accordance with manufacturers instructions. A reflective surface finish should be applied to reduce absorption of solar heat.

KIMMCO Building Slab can be used with synthetic membranes by sticking, in accordance with the membranes manufacturers specifications.



METAL ROOFS

KIMMCO Building Slab may be applied to metal roof decks by bitumen adhesion or by mechanical fixings. For bitumen compound on top of a continuous vapour barrier, care must be taken to ensure that joints between boards are supported by the deck profiles and are not laid with the open flutes running continuously beneath. It is recommended that the insulation be placed at a 45 deg. angle to the line of the deck flutes. For mechanical fastening, one of several methods may be used, i.e. Lexscuco clips or screw and washer fixings. Washers should be 50 mm in diameter with a large countersink cup so that screw heads do not protrude above insulation.



FALSE CEILING

Falls should be incorporated in roof deck construction by contractor.

ACCESS ROOFS

KIMMCO Building Slab laid directly beneath weather proofing such as built up roofing is suitable for roofs carrying normal light maintenance traffic. A finish of concrete tiles or similar should be applied where continuous foot traffic is expected.

KIMMCO Building Slab should not be used for roof decks where heavy point loadings can be expected or where vehicles of any type will be used.

Typical industrial application

