الشـــرق الأوســـط للعـــوازل ذ.م.م.

Middle East Insulation LLC

Quality Cladding Systems

TECHNICAL INFORMATION

- Single Skin
- Sandwich Panel
- Slip Joint System
- MEI Insul - Boards
- Kalzip® System
- Aluminium Composite Panel
- Z - Purlin
- C - Purlin

CERTIFICATION ISO 9001:2015

Member of SN Registrars (Holdings) Ltd

UKAS MANAGEMENT SYSTEMS 8327

U.S. GREEN BUILDING COUNCIL MEMBER

FUJAIRAH CITY CENTRE

MIRDIF CITY CENTRE

MASDAR PROJECT

DUBAI METRO

SKI, MALL OF EMIRATES

SUGAR FACTORY

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Middle East Insulation LLC
Quality Cladding Systems

INDEX

Middle East Insulation was established in the year 1993 in Dubai, UAE. MEI is one of the leading manufacturers of Cladding System. MEI is working closely with all the customers to produce partnership that builds a successful and profitable business. MEI has a reputation for quality product, using it as a tool for professionalism.

The reliability on a product is of top priority in our business relationship. From a simple warehouse to sophisticated industrial complexes, Malls, Hotels requiring high degree of thermal insulation with astonishing look, MEI offers complete design, supply and installation services to meet all the roofing and wall cladding for any size and type of projects

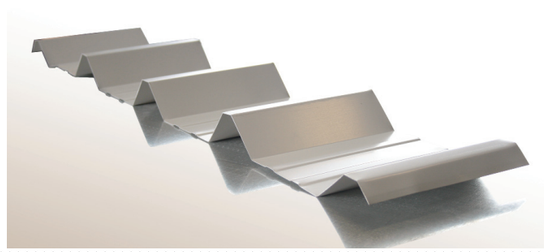
We are ISO 9001-2015 certified company which comes under A&H investment group. We are located in the Jebel Ali industrial area 2 on a facility of 120,000 sq ft equipped with state-of-the-art machinery

Our Products

MEI SINGLE SKIN SHEETS

Available in a variety of thickness, finishes and colors in aluminium or steel profile sheets of MEI 32/250, MEI 38/200, MEI 45/250 and MEI 45/150 Single Skin Sheets are recommended for the roofing and the walls of industrial, commercial, and agricultural buildings.

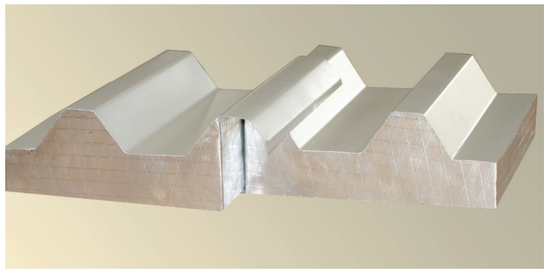
The Panels can be coated with Zinc as well as Aluminum Alloys. Other special coating includes Premier, Polyester. PVF2, Plastisol and ARS. MEI can provide a wide range of colors with reasonable period of time



MEI - SANDWICH PANEL

Sandwich Panels are available in Aluminium and Steel profile of MEI 38/200, MEI 45/150, MEI 32/250 and MEI 45/250. These panels, are specially designed for building requiring high insulation values. The factory injected insulation core with polyurethane gives excellent properties. It's available in unlimited choices of outer / inner sheet, thickness, finish and color.

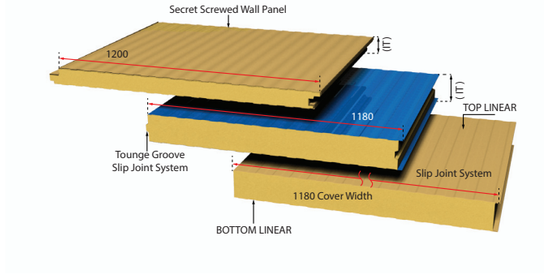
Polyurethane insulation composed principally of the catalyzed products of Polyisocyanurate and polyhydroxyl closed-cell structure. the same panel can produce with rockwool, phenolic & Polyisocyanurate injection.



MEI - SLIPJOINT PANEL

Slip Joint is a well organized Sandwich Panel used for wall cladding. It utilizes male and female action on the longitudinal joint to achieve superior tightness and insulation. Slip Joint can further be enhanced by providing a locking system (CAM LOCKS) at the longitudinal joint

Slip Joint Panels are available in Aluminium and Steel profiles. These panels are specially designed for building like Cold Storage, Portacabin..etc which requiring high insulation values. The factory injected insulation core with polyurethane, rockwool, phenolic & polyisocyanurate gives excellent properties.

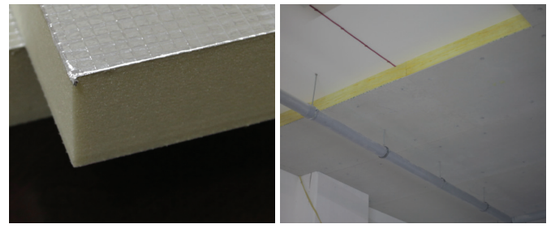


INSUL - BOARDS

Insul boards is flexible, semi-rigid or rigid thermal and acoustical insulating boards for custom curtain wall, roof & floor applications. They vary in density and are made from Phenolic, Polyisosanurate, polyurathan or inorganic glass fibers, bonded with a thermosetting binder like calcium silicate board or gypsum board.

Insul - Boards have best fire & Acoustic performance characteristics and helps maximize lighting efficiency. High-performance Insul-Board insulation board complies with the thermal requirements of building regulations and fully meets the demands of building professionals

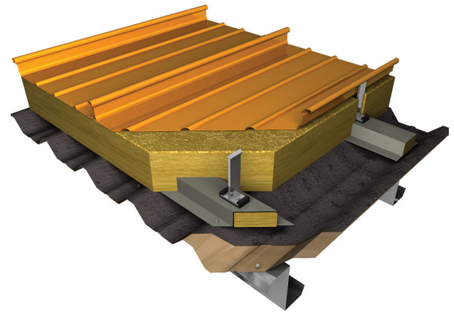
- Versatile and multi-purpose insulation board suitable for floor, wall and roof installations
- Best fire & smoke performance with Phenolic for public areas
- Ideal for new build or refurbishment projects and meets all current building regulations
- Provides excellent thermal performance
- Ideal when self-supporting insulation is required
- Lightweight, easy to cut and install
- Low emissivity (low-e) foil facing provides enhanced thermal performance within cavity air spaces



KALZIP® SYSTEM

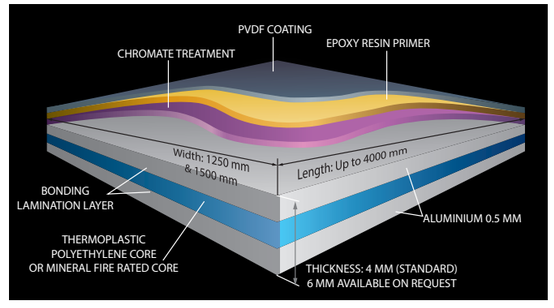
Kalzip® aluminium standing seam profiles are able to meet even the most demanding construction and design requirements, enabling you to create roof and facades which successfully combine outstanding functionality with stunning aesthetics.

The design potential is virtually limitless – from the discreet to the elaborate; combining sophisticated elegance with contemporary design.



MEI - ALUMINIUM COMPOSITE PANEL

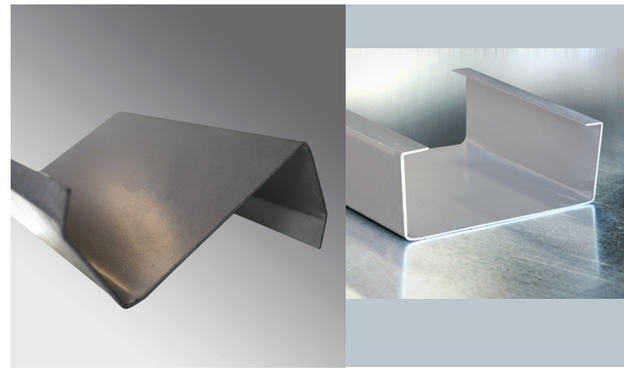
Aluminum composite panels Consists of two layers of smooth aluminum skins (0.2mm-0.5 mm thk) sandwiching a polyethylene core or fire resistant Mineral Fiber Core thermo-bonded by polymer adhesive film in a continuous thermo co-extrusion process, pre-finished with a premium coil coating, PVDF2 or Polyester coating and available in a variety of lengths and widths to allow for imaginative design and creativity.



Z & C PURLIN

MEI C & Z- section are secondary structural member used to gab between frames. These profiles are made from prehot dipped galvanized steel, G275 coating based on BSEN 10147 with minimum guaranteed yield strength 350 N/mm^2. the metal thickness vary from 1.5mm to 2.5mm.

Sleeves are used to join purlin above frames, where as 6 to 8 mm cleats and 16mm bolts are usually used to connect this profile to building frames.



ZINC COATING

Zinc is incorporated between the bare steel substrates (both side) and the outer coating for corrosion resistance.

Galvanization weight is confirming to BS EN 10147 with an average weight of 275 gm/m² (20 microns).

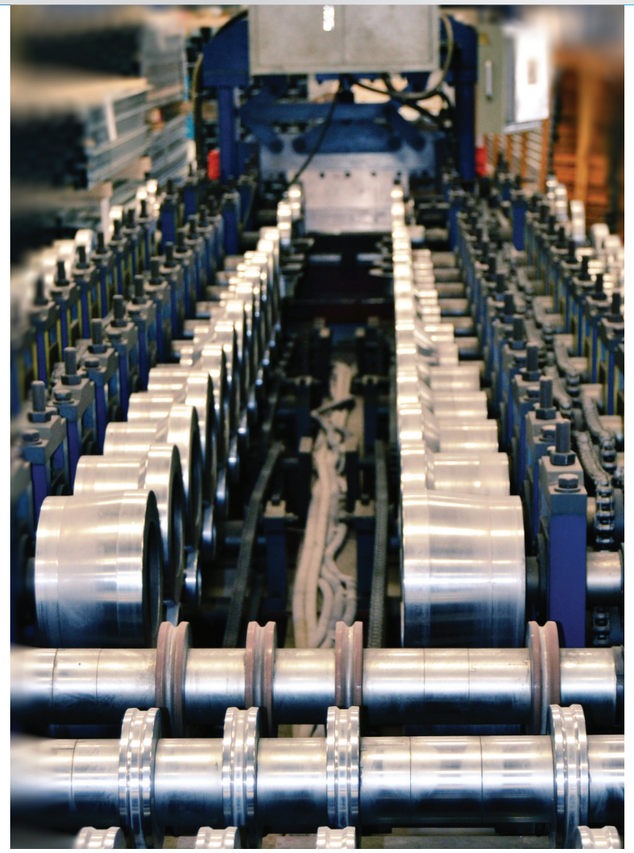
The combination of zinc and external coating adopted provides exceptional level of product performance and resistance to corrosion.

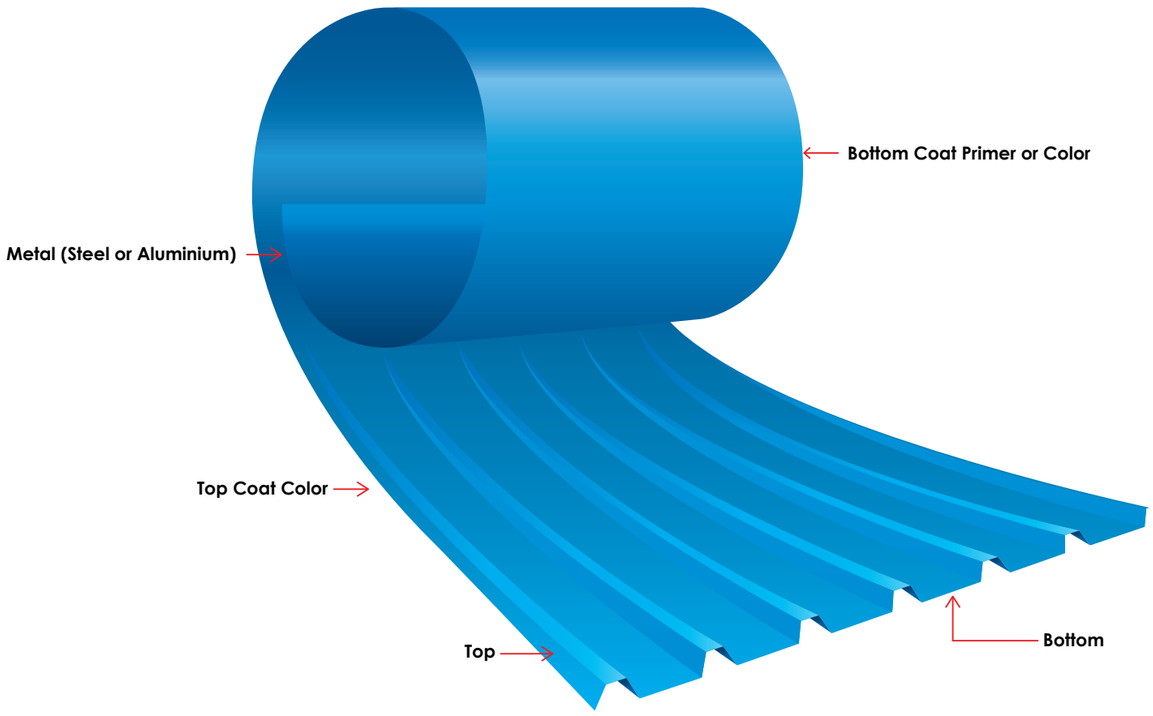
Cuts and exposed edges are protected by electrolytic action as Zinc "drags over" covering sheared and punched area.

ALUMINIUM ALLOYS

Aluminium Alloys are pre-treated by hot sulphuric acid alternation current Anodizing, Giving an excellent protection cover of Aluminium oxide.

Natural oxidization can protect all cuts and exposed area.





COLOURS

MEI can provide a wide range of colours with reasonable period of time. A stock of "fast moving" colour is usually available. Colour samples presented below are for illustration only. Actual colour may vary depending on substrata supplier and batch.

RAL 1001 (Beige)	RAL 1014 (Avorio)	RAL 1015 (Light Ivory)	RAL 5010 (Gention Blue)	RAL 5012 (Light Blue)	RAL 5014 (Pigeon Blue)
RAL 6018 (Yellow Green)	RAL 6024 (Traffic Green)	RAL 7035 (Light Gray)	RAL 9002 (Off White)	RAL 9006 (Alum. White)	RAL 9010 (White)

PRIMER

It is a specially formulated flexible light Grey backing cover with nominal thickness of 5 micron.

The reverse side of profile is normally coated with primer to provide adequate protection in dry internal environments.

POLYESTER

Polyester is a 25 microns coating combining economy with excellent flexibility and temperature stability. Under normal environmental condition, Polyester coating is durable protection cover. With appropriate attention sheet lifetime may increase considerably.

ARS

Other finishes, such as ARS (Abrasive Resistance Surface) are also available, this type is used for cladding, guttering and general engineering purposes. It has good stain and dirt resistance, excellent mark resistance and color retention properties.

HIGHLY REFLECTIVE ROOF COATING

Highly reflective roofs can reduce the indoor temperature of buildings by 10 to 12 degrees Celsius, which lowers their cooling needs and thus results in cooling energy savings of approximately 10 to 20 percent on the floor under the roof. The thickness of the Insulation fill material (E.g. – Rockwool) can be reduced without compromising the thermal resistance of whole system

Advantages :
» Reduce energy bills by decreasing air conditioning needs,
» Improve indoor thermal comfort for spaces that are not air conditioned,
» Decrease roof operating temperature, which may extend roof service life

Environmental Benefits
Reduce local air temperatures, which improves air quality and slows smog formation;
Reduce power plant emissions, including carbon dioxide, sulfur dioxide, nitrous oxides, and mercury, by reducing cooling energy use in buildings; and Reduce heat trapped in the atmosphere by reflecting more sunlight back into space, which can slow climate change

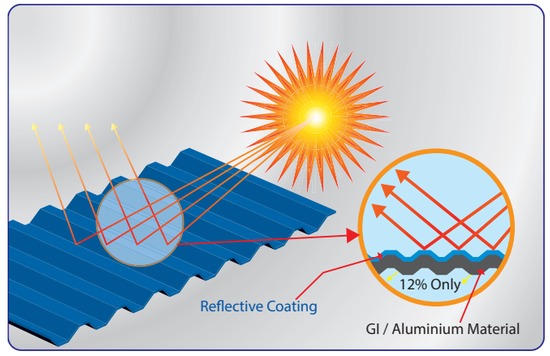
PVDF

Polyvinylidene Fluoride is 27 micron thick coating. It is suitable for worldwide roofing and cladding applications, PVF2 is an inert fluorine modified system based on Kynar 500 resin. The coating is resistance to solved attack and has continuous heat resistance (120°C).

Color retention is improved in all climatic conditions. PVF2 has excellent life expectancy on the weather side subjected to appropriate maintenance.

PLASTISOL

Plastisol is 100-200 microns (0.1mm-0.2mm) thick polyvinyl chloride coating (PVC) this coating exhibited an embossed leather grain finish. It is tough; withstand rough treatment in workshop, during transit, and on site. Plastisol is suitable for cold stores due to its excellent resistance to corrosion temperature and cleaning process.



Coating Thickness	Specification	Plastisol	PVF2	Polyester
Coating Thickness	BS 3900/C5	100-200	27	25
Specular Gloss (60°)	ASTM D523	10-20%	20-30%	30-50%
Pencil Hardness	ASTM D3363	N/A	F-H	H-2H
Scratch Resistance	BS 3900/E2	>3500g	3000g	2800g
Abrasion Resistance	ASTM D4060	10-12mg	16mg	20mg
Reverse Impact	ASTM D2794	18j	11j	16j
Min. Bend Diameter	BS 3900/EI	0t	6t	6t
Adhesive	BS 3900/E6	100%	100%	100%
Salt Spray Resistance	ASTM B 117-73	1000hr.	1000hr.	5000hr.
Humidity	BS 3900/f2	1000hr.	1000hr.	1000hr.
QUV Weather meter	ASTM G53 - 84	2000 Light hr.	3000Lhr.	1500 Lhr.
Max.Continuous Operating temp.	N/A	100°C	100°C	100°C
Min.Temp for Forming	N/A	16°C	16°C	16°C
Surface Spread of Flame	BS 476 Pt. 7	Class 1	Class 1	Class 1

GENERAL MATERIAL SPECIFICATION

Galvanized Steel

	Base Metal		Zinc Coating	
	All	Structural	Type	Wt. gm/m²
ASTM	A 525	A446/A to F	G60,G90	183,275
BS	2989	Z 25, 28, 32, 55	L2, C	200,275
DIN	17162	st E 250 to 350	200, 275	200, 275

*Other material specification are available on request

Notes:

- Structural capacity is based on B.S. 5950 Part 6/94
- Permissible span tables is constructed for A 446 Grade D material with Fy = 345, E = 205000 N/mm²
- Span should not exceed (No limit) value.
- Use unfactored (working) combinations of loads to check permissible span
- Panel Length as per request, (maximum 12m).

Aluminium

Specifications	Tensile Strength	RP Yield 0.2%
	Type	Wt. gm/m²
AA 3105 H25	180<RM<220	183,275
AA 3003 H24	170<RM<205	200,275

*Other material specification are available on request

Notes:

- Structural capacity is based on B.S. 8118 Part 1/91.
- Permissible span tables are constructed for AA 3105, AA 3003 H24, 25, 26. (BS 4300/6 Alloy NS 31) with E = 70000 N/mm² Fy = 170
- Span should not exceed (No limit) value
- Use unfactored (working) combinations of loads to check permissible span
- All dimension are nominal.

POLYURETHANE FOAMS (P.U):

Insulation composed principally of the catalysed reaction products of polyisocyanates and poly-hydroxyl (Polyol) components processed with foaming gas to foam rigid foam having predominantly closed - cell structure.

It is used world wide as insulation against temperature extremes and has been adopted as one of the best energy saving material in the building industry.

TYPICAL PROPERTIES OF POLYURETHANE - FIRE RATED

PROPERTY	TESTING METHOD	DECLARED VALUE	DCL RESULT
Thermal Conductivity	AS TM C518 : 2010	0.016-0.026 W/m.k	0.023 w/m.k
Water Absorption	ASTM C272	0.032-0.035gm/cm³.day	
Density	BS EN 1602	35-42kg/m³	40kg/m³
Close Cell Content	BS 4370 Method 10/1968	94-96%	
Compressive Strength @10% Strain	BS EN 826 : 1996	>100 kn/m²	118 kn/m²
Dimensional Stability	BS EN 1604 : 1997	0 ~+0.9% for 48h @ 70 °C	0-0.7% for 48h @ 70 °C
Water Vapour Transmission	ASTM E96 - 00	μ = 22 (minimum)	μ = 62.24
Friability (% of weight loss/minute)	BS 4370 PT.3 Method 12/1974	5.3gm/min.	
Fire Resistance	BS EN 13501 - 1 : 2007	PU B2 Class E	PU B2 Class E

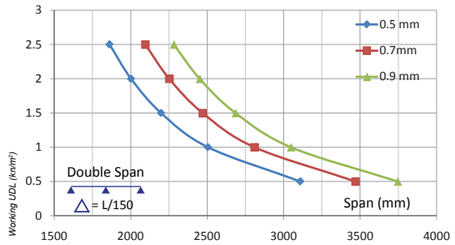
TYPICAL PROPERTIES OF POLYISOCYANURATE

PROPERTY	TESTING METHOD	DECLARED VALUE	DCL RESULT
Thermal Conductivity	ASTM C518 : 2010	0.016-0.028 W/m.k	0.0229 w/m.k
Water Absorption	ASTM C272	0.032-0.035gm/cm³.day	
Density	BS EN 1602 : 1997	35-42 kg/m³	38kg/m³
Close Cell Content	BS 4370 Method 10/1968	94-96%	
Compressive Strength @10% Strain	BS EN 826 : 1996	>100 Kn/m²	323 kn/m²
Dimensional Stability	BS EN 1604 : 1997	0 ~+1.0% for 14 days@100°C	0-0.9% for 48h @ 70 °C
Water Vapour Transmission	ASTM E96 - 00	μ = 13 (minimum)	μ = 54.76
Friability (% of weight loss/minute)	BS 4370 PT.3 Method 12/1974	5.3gm/min.	
Fire Resistance	BS EN 13501 - 1 : 2007	PIR-B2-Class E	PIR-B2-Class E

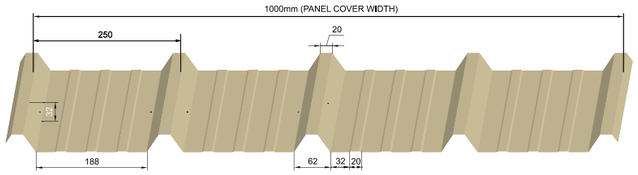
TYPICAL PROPERTIES OF POLYURETHANE - NON FIRE RATED

PROPERTY	TESTING METHOD	DECLARED VALUE	MEI LAB TEST
Thermal Conductivity	BS 4370-PT.2 Method 7/1973	0.016-0.022 W/m.k	0.021 (intial)-0.026(aged) w/mk
Water Absorption	ASTM C272	0.032-0.035gm/cm³.day	
Density	BS 4370 Method 2/1968	35-38kg/m³	39-40 kg/m3
Close Cell Content	BS 4370 Method 10/1968	94-96%	
Compressive Strength @10% Strain	BS EN 826:1996	>100 Kn/m²	150 kn/m2
Dimensional Stability	BS 4370 Method 5B/1968	0 ~+0.5% for 14 days@100°C	
Water Vapour Transmission	BS 4370 PT.2 Method 8/1973	0.033gm/m². mm Hg. day	
Friability (% of weight loss/minute)	BS 4370 PT.3 Method 12/1974	5.3gm/min.	
Non Fire Resistance		PU B3	PU-B3

Thickness	Weight	Section Modules		Moment of Inertia					Moment Capacity	
		+ve M	-ve M	I (Full)	I De-flection (Down-load)	I Deflection (Up-lift-wind)	+ve I	-ve I	+ve	-ve
mm	kg/m2	mm3/m		mm4/m					kN.m	
0.5	4.789	2353	2206	68389	65049	44481	61401	34788	0.812	0.761
0.7	6.704	3537	3640	96738	93463	67744	93224	54437	1.220	1.256
0.9	8.619	4561	5365	125662	121400	92872	121390	76516	1.574	1.851



E=205,000 N/mm2 **STEEL** Fy=345 N/mm2



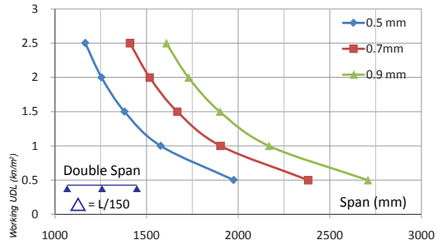
32/250 - SINGLE SKIN (Nominal Dimention)

Span Type	Single Span	Double Span	Interior Span
Thickness 0.50 mm	Permissible Span in (mm)		

Deflection		No limit	L/100	L/150	L/200	No limit	L/100	L/150	L/200	No limit	L/100	L/150	L/200
Load (Kn/m²)	0.5	2710	2655	2320	2108	2652	3560	3110	2825	2965	3560	3110	2825
	(0.5 wind)	(2819)	(2339)	(2044)	(1857)	(2912)	(3136)	(2740)	(2489)	(3256)	(3136)	(2740)	(2489)
	1.5	1623	1878	1640	1490	1571	2517	2199	1998	1757	2517	2199	1998
	(1.5 wind)	(1677)	(1654)	(1445)	(1313)	(1732)	(2218)	(1937)	(1760)	(1936)	(2218)	(1937)	(1760)
	2.5	1264	1590	1389	1262	1224	2132	1862	1692	1368	2132	1862	1692
	(2.5 wind)	(1307)	(1401)	(1224)	(1112)	(1350)	(1878)	(1641)	(1491)	(1509)	(1878)	(1641)	(1491)
0.70 mm													
Load (Kn/m²)	0.5	3279	2963	2588	2352	3356	3972	3470	3152	3752	3972	3470	3152
	(0.5 wind)	(3562)	(2661)	(2325)	(2112)	(3511)	(3568)	(3117)	(2832)	(3925)	(3568)	(3117)	(2832)
	1.5	1979	2110	1844	1675	2008	2829	2471	2245	2245	2829	2471	2245
	(1.5 wind)	(2141)	(1896)	(1656)	(1505)	(2110)	(2541)	(2220)	(2017)	(2360)	(2541)	(2220)	(2017)
	2.5	1545	1790	1564	1421	1567	2399	2096	1904	1752	2399	2096	1904
	(2.5 wind)	(1672)	(1608)	(1405)	(1276)	(1649)	(2155)	(1883)	(1711)	(1843)	(2155)	(1883)	(1711)
0.90 mm													
Load (Kn/m²)	0.5	3676	3198	2794	2538	4015	4287	3745	3402	4489	4287	3745	3402
	(0.5 wind)	(4254)	(2925)	(2555)	(2321)	(3922)	(3920)	(3425)	(3112)	(4385)	(3920)	(3425)	(3112)
	1.5	2236	2293	2003	1820	2425	3074	2686	2440	2711	3074	2686	2440
	(1.5 wind)	(2583)	(2097)	(1832)	(1665)	(2382)	(2812)	(2456)	(2232)	(2663)	(2812)	(2456)	(2232)
	2.5	1748	1948	1702	1546	1896	2612	2282	2073	2120	2612	2282	2073
	(2.5 wind)	(2023)	(1782)	(1557)	(1414)	(1865)	(2389)	(2087)	(1896)	(2085)	(2389)	(2087)	(1896)

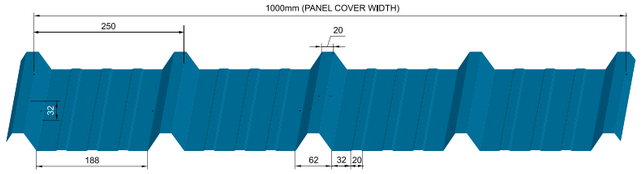
*Span should not exceed (No Limit) value

Thickness	Weight	Section Modules		Moment of Inertia					Moment Capacity	
		+ve M	-ve M	I (Full)	I Deflection (Down-load)	I Deflection (Up-lift-wind)	+ve I	-ve I	+ve	-ve
mm	kg/m2	mm3/m		mm4/m					kN.m	
0.5	1.647	1730	1810	68389	46162	30720	46162	30720	0.294	0.308
0.7	2.306	3073	3088	96738	81810	50273	81810	50273	0.522	0.525
0.9	2.965	4555	4535	125662	121512	71157	121512	71157	0.774	0.771



Typical Load-Span Relationship MEI 32/250 Aluminium

E=70,000 N/mm2 **ALUMINIUM** Fy=170 N/mm2



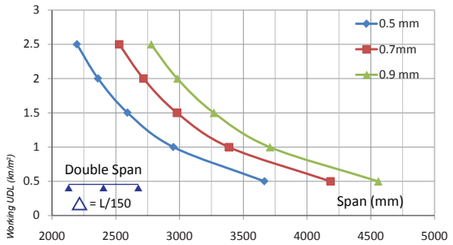
32/250 - SINGLE SKIN (Nominal Dimention)

Span Type	Single Span	Double Span	Interior Span
Thickness 0.50 mm	Permissible Span in (mm)		

Deflection		No limit	L/100	L/150	L/200	No limit	L/100	L/150	L/200	No limit	L/100	L/150	L/200
Load (Kn/m²)	0.5	1668	1688	1474	1340	1730	2263	1977	1796	1934	2263	1977	1796
	(0.5 wind)	(1846)	(1474)	(1287)	(1170)	(1804)	(1975)	(1726)	(1568)	(2017)	(1975)	(1726)	(1568)
	1.5	985	1179	1030	935	1008	1580	1380	1254	1127	1580	1380	1254
	(1.5 wind)	(1077)	(1029)	(899)	(817)	(1053)	(1379)	(1205)	(1095)	(1177)	(1379)	(1205)	(1095)
	2.5	765	995	870	790	782	1334	1166	1059	875	1334	1166	1059
	(2.5 wind)	(836)	(869)	(759)	(690)	(817)	(1165)	(1018)	(925)	(914)	(1165)	(1018)	(925)
0.70 mm													
Load (Kn/m²)	0.5	2213	2034	1777	1614	2247	2727	2382	2164	2513	2727	2382	2164
	(0.5 wind)	(2396)	(1729)	(1511)	(1373)	(2390)	(2318)	(2025)	(1840)	(2672)	(2318)	(2025)	(1840)
	1.5	1311	1424	1244	1130	1314	1909	1668	1515	1469	1909	1668	1515
	(1.5 wind)	(1404)	(1211)	(1058)	(961)	(1400)	(1623)	(1418)	(1288)	(1565)	(1623)	(1418)	(1288)
	2.5	1018	1204	1051	955	1021	1613	1409	1281	1141	1613	1409	1281
	(2.5 wind)	(1091)	(1023)	(894)	(812)	(1088)	(1372)	(1198)	(1089)	(1216)	(1372)	(1198)	(1089)
0.90 mm													
Load (Kn/m²)	0.5	2681	2311	2019	1834	2708	3098	2707	2459	3028	3098	2707	2459
	(0.5 wind)	(2885)	(1934)	(1689)	(1535)	(2892)	(2592)	(2264)	(2057)	(3233)	(2592)	(2264)	(2057)
	1.5	1593	1623	1418	1288	1590	2175	1900	1726	1777	2175	1900	1726
	(1.5 wind)	(1697)	(1358)	(1186)	(1077)	(1701)	(1820)	(1590)	(1444)	(1902)	(1820)	(1590)	(1444)
	2.5	1238	1372	1199	1089	1235	1839	1607	1460	1381	1839	1607	1460
	(2.5 wind)	(1320)	(1148)	(1003)	(911)	(1323)	(1539)	(1344)	(1221)	(1479)	(1539)	(1344)	(1221)

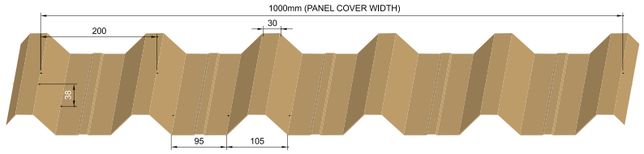
*Span should not exceed (No Limit) value

Thickness	Weight	Section Modules		Moment of Inertia					Moment Capacity	
		+ve M	-ve M	I (Full)	I Deflection (Download)	I Deflection (Uplift-wind)	+ve I	-ve I	+ve	-ve
mm	kg/m2	mm3/m		mm4/m					kN.m	
0.5	4.789	4160	3486	121777	106593	88142	103570	71126	1.435	1.203
0.7	6.704	6462	5671	171930	163809	133853	162358	111364	2.229	1.957
0.9	8.619	8555	8312	222917	218797	183485	216912	157342	2.952	2.868



Typical Load-Span Relationship
MEI 38/200 Steel

E=205,000 N/mm² **STEEL** Fy=345 N/mm²

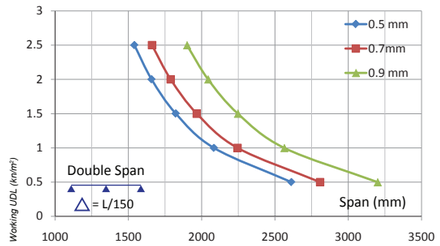


38/200 - SINGLE SKIN (Nominal Dimention)

Span Type	Single Span				Double Span				Interior Span			
Thickness 0.50 mm	Permissible Span in (mm)											
Deflection	No limit	L/100	L/150	L/200	No limit	L/100	L/150	L/200	No limit	L/100	L/150	L/200
Load (Kn/m²) 0.5	3603	3131	2735	2485	3334	4197	3666	3331	3727	4197	3666	3331
(0.5 wind)	(3545)	(2938)	(2567)	(2332)	(3872)	(3939)	(3441)	(3126)	(4329)	(3939)	(3441)	(3126)
1.5	2158	2214	1934	1757	1975	2968	2592	2355	2208	2968	2592	2355
(1.5 wind)	(2108)	(2078)	(1815)	(1649)	(2302)	(2785)	(2433)	(2211)	(2574)	(2785)	(2433)	(2211)
2.5	1680	1875	1638	1488	1538	2513	2195	1995	1720	2513	2195	1995
(2.5 wind)	(1643)	(1760)	(1537)	(1397)	(1794)	(2359)	(2061)	(1872)	(2006)	(2359)	(2061)	(1872)
0.70 mm												
Load (Kn/m²) 0.5	4432	3572	3121	2835	4189	4789	4183	3801	4683	4789	4183	3801
(0.5 wind)	(4446)	(3340)	(2918)	(2651)	(4745)	(4477)	(3911)	(3553)	(5305)	(4477)	(3911)	(3553)
1.5	2675	2544	2223	2019	2506	3411	2980	2707	2802	3411	2980	2707
(1.5 wind)	(2672)	(2379)	(2078)	(1888)	(2852)	(3189)	(2786)	(2531)	(3189)	(3189)	(2786)	(2531)
2.5	2088	2158	1885	1713	1956	2893	2527	2296	2187	2893	2527	2296
(2.5 wind)	(2088)	(2018)	(1763)	(1601)	(2228)	(2705)	(2363)	(2147)	(2491)	(2705)	(2363)	(2147)
0.90 mm												
Load (Kn/m²) 0.5	5035	3892	3400	3089	4998	5217	4557	4140	5588	5217	4557	4140
(0.5 wind)	(5295)	(3670)	(3206)	(2913)	(5372)	(4919)	(4298)	(3904)	(6006)	(4919)	(4298)	(3904)
1.5	3062	2791	2438	2215	3018	3741	3268	2969	3374	3741	3268	2969
(1.5 wind)	(3216)	(2632)	(2299)	(2089)	(3263)	(3528)	(3082)	(2800)	(3648)	(3528)	(3082)	(2800)
2.5	2394	2371	2071	1882	2360	3178	2777	2523	2639	3178	2777	2523
(2.5 wind)	(2518)	(2236)	(1953)	(1775)	(2555)	(2997)	(2618)	(2379)	(2856)	(2997)	(2618)	(2379)

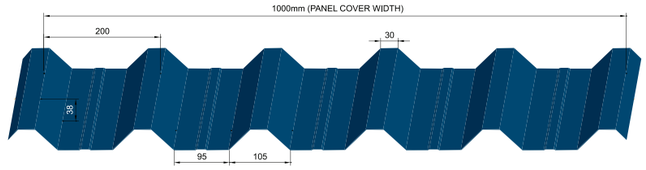
*Span should not exceed (No Limit) value

Thickness	Weight	Section Modules		Moment of Inertia					Moment Capacity	
		+ve M	-ve M	I (Full)	I Deflection (Download)	I Deflection (Uplift-wind)	+ve I	-ve I	+ve	-ve
mm	kg/m2	mm3/m		mm4/m					kN.m	
0.5	1.647	2853	2987	121777	75957	63337	75957	63337	0.485	0.508
0.7	2.306	5093	5145	171930	134017	106045	134017	106045	0.866	0.875
0.9	2.965	7688	7646	222917	200715	153710	200715	153710	1.307	1.300



Typical Load-Span Relationship
MEI 38/200 Aluminium

E=70,000 N/mm² **ALUMINIUM** Fy=170 N/mm²

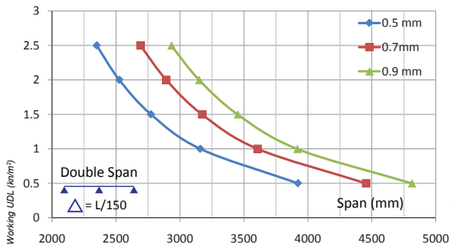


38/200 - SINGLE SKIN (Nominal Dimention)

Span Type	Single Span				Double Span				Interior Span			
Thickness 0.50 mm	Permissible Span in (mm)											
Deflection	No limit	L/100	L/150	L/200	No limit	L/100	L/150	L/200	No limit	L/100	L/150	L/200
Load (Kn/m²) 0.5	2371	1875	1638	1489	2222	2671	2333	2120	2484	2671	2333	2120
(0.5 wind)	(1546)	(1590)	(1389)	(1262)	(2317)	(2514)	(2196)	(1995)	(2591)	(2514)	(2196)	(1995)
1.5	1383	1310	1144	1039	1295	1865	1629	1480	1448	1865	1629	1480
(1.5 wind)	(1097)	(1265)	(1105)	(1004)	(1352)	(1755)	(1534)	(1393)	(1512)	(1755)	(1534)	(1393)
2.5	1074	1106	966	878	1005	1575	1376	1250	1123	1575	1376	1250
(2.5 wind)	(1653)	(1235)	(1079)	(980)	(1049)	(1483)	(1295)	(1177)	(1173)	(1483)	(1295)	(1177)
0.70 mm												
Load (Kn/m²) 0.5	2849	2398	2095	1903	2900	3214	2808	2551	3243	3214	2808	2551
(0.5 wind)	(3092)	(2218)	(1937)	(1760)	(3077)	(2973)	(2597)	(2360)	(3440)	(2973)	(2597)	(2360)
1.5	1688	1679	1467	1332	1696	2251	1966	1786	1896	2251	1966	1786
(1.5 wind)	(1812)	(1553)	(1357)	(1232)	(1803)	(2082)	(1818)	(1652)	(2015)	(2082)	(1818)	(1652)
2.5	1311	1419	1239	1126	1317	1902	1662	1510	1473	1902	1662	1510
(2.5 wind)	(1408)	(1312)	(1146)	(1042)	(1400)	(1759)	(1537)	(1396)	(1566)	(1759)	(1537)	(1396)
0.90 mm												
Load (Kn/m²) 0.5	3484	2732	2387	2169	3517	3663	3200	2907	3932	3663	3200	2907
(0.5 wind)	(3747)	(2500)	(2184)	(1984)	(3757)	(3351)	(2927)	(2660)	(4201)	(3351)	(2927)	(2660)
1.5	2070	1918	1676	1522	2064	2571	2246	2041	2308	2571	2246	2041
(1.5 wind)	(2204)	(1755)	(1533)	(1393)	(2210)	(2352)	(2055)	(1867)	(2471)	(2352)	(2055)	(1867)
2.5	1609	1622	1417	1287	1604	2174	1899	1726	1794	2174	1899	1726
(2.5 wind)	(1714)	(1484)	(1296)	(1178)	(1718)	(1989)	(1738)	(1579)	(1921)	(1989)	(1738)	(1579)

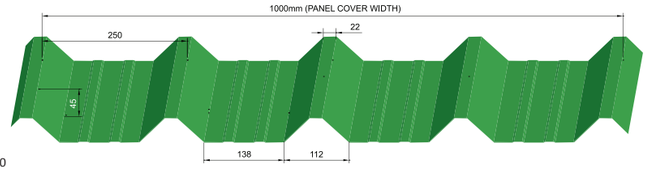
*Span should not exceed (No Limit) value

Thickness	Weight	Section Modules		Moment of Inertia					Moment Capacity	
		+ve M	-ve M	I (Full)	I Deflection (Download)	I Deflection (Uplift-wind)	+ve I	-ve I	+ve	-ve
mm	kg/m2	mm3/m		mm4/m					kN.m	
0.5	4.789	3660	3412	147510	130690	93830	117815	77694	1.263	1.177
0.7	6.704	5969	5477	207959	197933	142327	193560	120281	2.059	1.890
0.9	8.619	7862	7923	269242	257717	194817	256819	168199	2.712	2.733



Typical Load-Span Relationship
MEI 45/250 Steel

E=205,000 N/mm² **STEEL** Fy=345 N/mm²



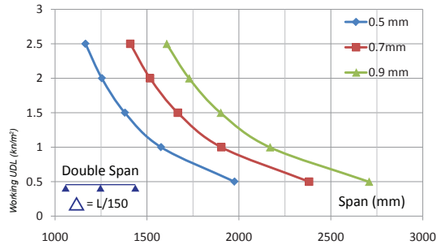
45/250 - SINGLE SKIN (Nominal Dimention)

Span Type	Single Span	Double Span	Interior Span
Thickness 0.50 mm	Permissible Span in (mm)		

Deflection		No limit	L/100	L/150	L/200	No limit	L/100	L/150	L/200	No limit	L/100	L/150	L/200
Load (Kn/m²)	0.5	3380	3351	2927	2659	3298	4492	3924	3565	3687	4492	3924	3565
	(0.5 wind)	(3507)	(3000)	(2621)	(2381)	(3632)	(4022)	(3514)	(3192)	(4061)	(4022)	(3514)	(3192)
	1.5	2024	2369	2070	1881	1954	3176	2775	2521	2185	3176	2775	2521
	(1.5 wind)	(2085)	(2122)	(1853)	(1684)	(2160)	(2844)	(2485)	(2257)	(2415)	(2844)	(2485)	(2257)
	2.5	1576	2007	1753	1593	1522	2690	2350	2135	1702	2690	2350	2135
	(2.5 wind)	(1625)	(1797)	(1570)	(1426)	(1683)	(2409)	(2104)	(1912)	(1882)	(2409)	(2104)	(1912)
0.70 mm													
Load (Kn/m²)	0.5	4260	3805	3324	3020	4117	5100	4456	4048	4603	5100	4456	4048
	(0.5 wind)	(4369)	(3409)	(2978)	(2706)	(4561)	(4569)	(3992)	(3627)	(5099)	(4569)	(3992)	(3627)
	1.5	2571	2710	2367	2151	2463	3633	3174	2883	2754	3633	3174	2883
	(1.5 wind)	(2626)	(2428)	(2121)	(1927)	(2741)	(3255)	(2843)	(2583)	(3065)	(3255)	(2843)	(2583)
	2.5	2007	2299	2008	1824	1922	3081	2692	2446	2149	3081	2692	2446
	(2.5 wind)	(2051)	(2059)	(1799)	(1635)	(2142)	(2761)	(2412)	(2191)	(2394)	(2761)	(2412)	(2191)
0.90 mm													
Load (Kn/m²)	0.5	4826	4110	3590	3262	4880	5509	4813	4373	5456	5509	4813	4373
	(0.5 wind)	(5169)	(3744)	(3271)	(2971)	(5149)	(5019)	(4384)	(3983)	(5757)	(5019)	(4384)	(3983)
	1.5	2935	2947	2575	2339	2947	3951	3452	3136	3295	3951	3452	3136
	(1.5 wind)	(3140)	(2685)	(2346)	(2131)	(3128)	(3599)	(3144)	(2857)	(3497)	(3599)	(3144)	(2857)
	2.5	2295	2504	2187	1987	2304	3357	2932	2664	2576	3357	2932	2664
	(2.5 wind)	(2458)	(2281)	(1993)	(1810)	(2449)	(3058)	(2671)	(2427)	(2738)	(3058)	(2671)	(2427)

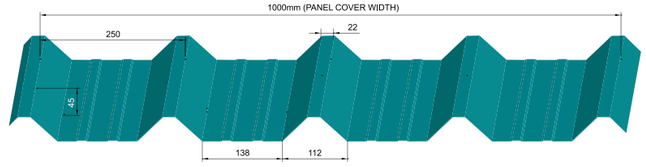
*Span should not exceed (No Limit) value

Thickness	Weight	Section Modules		Moment of Inertia					Moment Capacity	
		+ve M	-ve M	I (Full)	I Deflection (Download)	I Deflection (Uplift-wind)	+ve I	-ve I	+ve	-ve
mm	kg/m2	mm3/m		mm4/m					kN.m	
0.5	1.647	2652	2890	147510	87777	68589	87777	68589	0.451	0.491
0.7	2.306	4742	4984	207959	156087	115000	156087	115000	0.806	0.847
0.9	2.965	7144	7423	269242	234682	166978	234682	166978	1.214	1.262



Typical Load-Span Relationship
MEI 45/250 Aluminium

E=70,000 N/mm² **ALUMINIUM** Fy=170 N/mm²



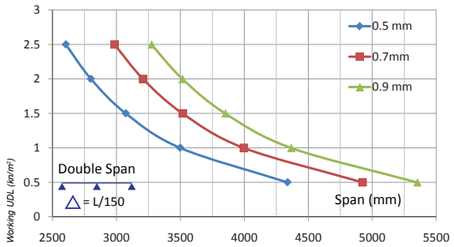
45/250 - SINGLE SKIN (Nominal Dimention)

Span Type	Single Span	Double Span	Interior Span
Thickness 0.50 mm	Permissible Span in (mm)		

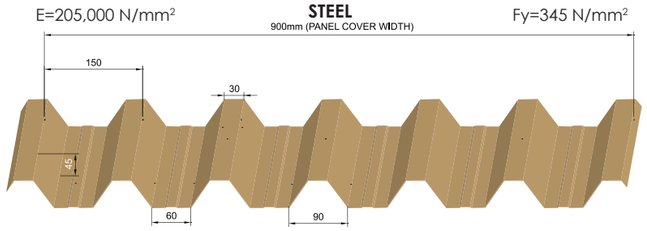
Deflection		No limit	L/100	L/150	L/200	No limit	L/100	L/150	L/200	No limit	L/100	L/150	L/200
Load (Kn/m²)	0.5	2065	2091	1827	1660	2186	2803	2449	2225	2444	2803	2449	2225
	(0.5 wind)	(2332)	(1926)	(1683)	(1529)	(2234)	(2582)	(2255)	(2049)	(2498)	(2582)	(2255)	(2049)
	1.5	1220	1460	1275	1159	1274	1957	1710	1553	1424	1957	1710	1553
	(1.5 wind)	(1361)	(1345)	(1175)	(1067)	(1303)	(1803)	(1575)	(1431)	(1457)	(1803)	(1575)	(1431)
	2.5	947	1233	1077	979	989	1653	1444	1312	1105	1653	1444	1312
	(2.5 wind)	(1056)	(1136)	(992)	(902)	(1012)	(1523)	(1330)	(1209)	(1131)	(1523)	(1330)	(1209)
0.70 mm													
Load (Kn/m²)	0.5	2749	2523	2204	2002	2855	3382	2954	2684	3192	3382	2954	2684
	(0.5 wind)	(3044)	(2279)	(1991)	(1808)	(2969)	(3054)	(2668)	(2424)	(3319)	(3054)	(2668)	(2424)
	1.5	1629	1766	1543	1402	1670	2368	2069	1879	1867	2368	2069	1879
	(1.5 wind)	(1783)	(1595)	(1394)	(1266)	(1739)	(2139)	(1868)	(1697)	(1945)	(2139)	(1868)	(1697)
	2.5	1265	1493	1304	1185	1297	2001	1748	1588	1450	2001	1748	1588
	(2.5 wind)	(1385)	(1348)	(1178)	(1070)	(1351)	(1807)	(1579)	(1434)	(1511)	(1807)	(1579)	(1434)
0.90 mm													
Load (Kn/m²)	0.5	3358	2878	2515	2285	3465	3858	3371	3062	3874	3858	3371	3062
	(0.5 wind)	(3692)	(2570)	(2245)	(2040)	(3622)	(3445)	(3009)	(2734)	(4049)	(3445)	(3009)	(2734)
	1.5	1995	2021	1765	1604	2034	2709	2366	2150	2274	2709	2366	2150
	(1.5 wind)	(2172)	(1804)	(1576)	(1432)	(2130)	(2418)	(2113)	(1919)	(2382)	(2418)	(2113)	(1919)
	2.5	1551	1709	1493	1356	1581	2290	2001	1818	1767	2290	2001	1818
	(2.5 wind)	(1689)	(1525)	(1333)	(1211)	(1657)	(2045)	(1786)	(1623)	(1852)	(2045)	(1786)	(1623)

*Span should not exceed (No Limit) value

Thickness	Weight	Section Modules		Moment of Inertia					Moment Capacity	
		+ve M	-ve M	I (Full)	I Deflection (Download)	I Deflection (Uplift-wind)	+ve I	-ve I	+ve	-ve
mm	kg/m2	mm3/m		mm4/m					kN.m	
0.5	5.321	6502	5706	198058	178296	164777	171946	138285	2.243	1.968
0.7	7.449	10134	9287	279100	270732	248966	270164	216016	3.496	3.204
0.9	9.577	13284	13642	361192	359876	340225	356995	304923	4.583	4.707



Typical Load-Span Relationship
MEI 45/150 Steel

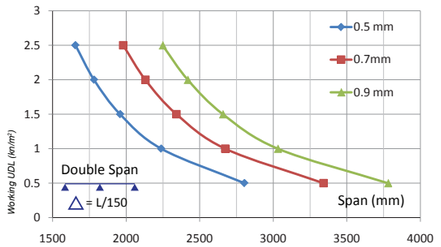


45/150 - SINGLE SKIN (Nominal Dimention)

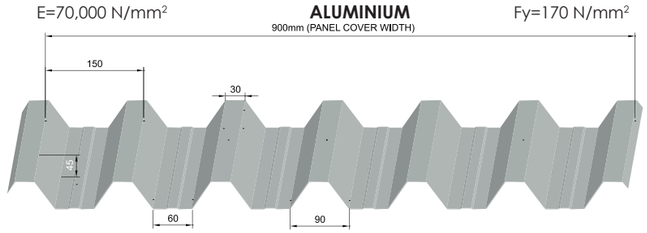
Span Type	Single Span				Double Span				Interior Span			
Thickness 0.50 mm	Permissible Span in (mm)											
Deflection	No limit	L/100	L/150	L/200	No limit	L/100	L/150	L/200	No limit	L/100	L/150	L/200
Load (Kn/m²) 0.5	4489	3704	3236	2940	4247	4966	4338	3941	4748	4966	4338	3941
(0.5 wind)	(4513)	(3608)	(3152)	(2864)	(4818)	(4837)	(4226)	(3839)	(5387)	(4837)	(4226)	(3839)
1.5	2694	2625	2293	2083	2523	3519	3074	2793	2821	3519	3074	2793
(1.5 wind)	(2692)	(2557)	(2234)	(2029)	(2874)	(3427)	(2994)	(2720)	(3213)	(3427)	(2994)	(2720)
2.5	2099	2224	1943	1765	1966	2981	2604	2366	2198	2981	2604	2366
(2.5 wind)	(2099)	(2166)	(1892)	(1719)	(2241)	(2904)	(2537)	(2305)	(2506)	(2904)	(2537)	(2305)
0.70 mm												
Load (Kn/m²) 0.5	5523	4206	3674	3338	5330	5638	4925	4475	5959	5638	4925	4475
(0.5 wind)	(5653)	(4090)	(3573)	(3246)	(5905)	(5482)	(4789)	(4351)	(6601)	(5482)	(4789)	(4351)
1.5	3343	3004	2624	2384	3201	4026	3517	3196	3578	4026	3517	3196
(1.5 wind)	(3412)	(2921)	(2552)	(2318)	(3564)	(3915)	(3420)	(3108)	(3984)	(3915)	(3420)	(3108)
2.5	2611	2549	2227	2023	2500	3417	2985	2712	2795	3417	2985	2712
(2.5 wind)	(2668)	(2479)	(2166)	(1968)	(2786)	(3323)	(2903)	(2638)	(3115)	(3323)	(2903)	(2638)
0.90 mm												
Load (Kn/m²) 0.5	6234	4569	3992	3627	6358	6125	5351	4862	7108	6125	5351	4862
(0.5 wind)	(6729)	(4485)	(3918)	(3559)	(6640)	(6012)	(5252)	(4771)	(7424)	(6012)	(5252)	(4771)
1.5	3806	3288	2872	2610	3857	4408	3850	3498	4312	4408	3850	3498
(1.5 wind)	(4108)	(3227)	(2819)	(2561)	(4053)	(4326)	(3779)	(3433)	(4532)	(4326)	(3779)	(3433)
2.5	2979	2795	2442	2219	3019	3747	3274	2974	3375	3747	3274	2974
(2.5 wind)	(3220)	(2744)	(2397)	(2178)	(3177)	(3678)	(3213)	(2919)	(3552)	(3678)	(3213)	(2919)

*Span should not exceed (No Limit) value

Thickness	Weight	Section Modules		Moment of Inertia					Moment Capacity	
		+ve M	-ve M	I (Full)	I Deflection (Download)	I Deflection (Uplift-wind)	+ve I	-ve I	+ve	-ve
mm	kg/m2	mm3/m		mm4/m					kN.m	
0.5	1.830	4624	4738	198058	132299	118757	132299	118757	0.786	0.805
0.7	2.562	8065	8121	279100	227000	198051	227000	198051	1.371	1.381
0.9	3.294	11977	12005	361192	333095	285944	333095	285944	2.036	2.041



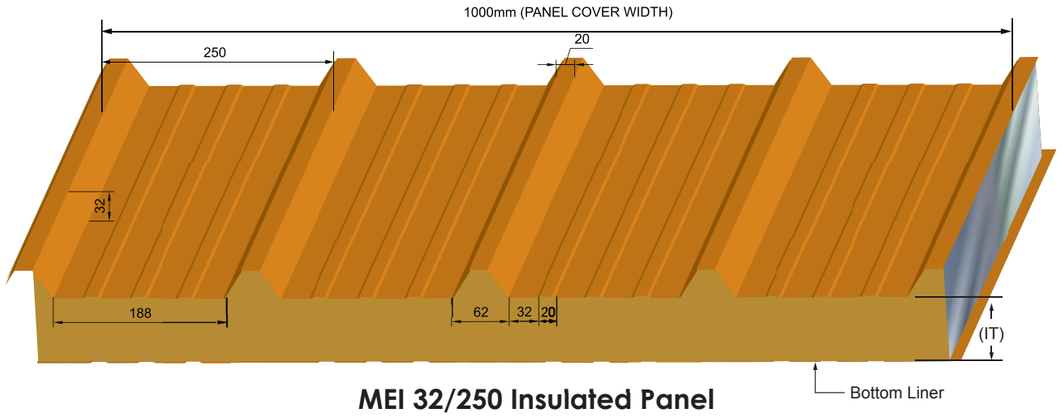
Typical Load-Span Relationship
MEI 45/150 Aluminium



45/150 - SINGLE SKIN (Nominal Dimention)

Span Type	Single Span				Double Span				Interior Span			
Thickness 0.50 mm	Permissible Span in (mm)											
Deflection	No limit	L/100	L/150	L/200	No limit	L/100	L/150	L/200	No limit	L/100	L/150	L/200
Load (Kn/m²) 0.5	2724	2395	2092	1901	2795	3210	2804	2548	3124	3210	2804	2548
(0.5 wind)	(2981)	(2310)	(2018)	(1833)	(2945)	(3097)	(2705)	(2458)	(3292)	(3097)	(2705)	(2458)
1.5	1610	1673	1462	1328	1630	2243	1960	1780	1822	2243	1960	1780
(1.5 wind)	(1741)	(1614)	(1410)	(1281)	(1720)	(2164)	(1890)	(1717)	(1923)	(2164)	(1890)	(1717)
2.5	1250	1414	1235	1122	1265	1895	1655	1504	1415	1895	1655	1504
(2.5 wind)	(1352)	(1364)	(1191)	(1082)	(1336)	(1828)	(1597)	(1451)	(1493)	(1828)	(1597)	(1451)
0.70 mm												
Load (Kn/m²) 0.5	3578	2854	2493	2265	3637	3825	3342	3036	4066	3825	3342	3036
(0.5 wind)	(3876)	(2727)	(2382)	(2164)	(3863)	(3655)	(3193)	(2901)	(4319)	(3655)	(3193)	(2901)
1.5	2122	2000	1747	1588	2130	2681	2342	2128	2381	2681	2342	2128
(1.5 wind)	(2274)	(1911)	(1670)	(1517)	(2267)	(2562)	(2238)	(2033)	(2534)	(2562)	(2238)	(2033)
2.5	1649	1691	1477	1342	1654	2266	1980	1799	1850	2266	1980	1799
(2.5 wind)	(1768)	(1616)	(1411)	(1282)	(1761)	(2166)	(1892)	(1719)	(1969)	(2166)	(1892)	(1719)
0.90 mm												
Load (Kn/m²) 0.5	4338	3228	2820	2562	4395	4327	3780	3435	4914	4327	3780	3435
(0.5 wind)	(4681)	(3068)	(2680)	(2435)	(4675)	(4113)	(3593)	(3264)	(5227)	(4113)	(3593)	(3264)
1.5	2581	2269	1982	1801	2584	3042	2658	2414	2889	3042	2658	2414
(1.5 wind)	(2759)	(2157)	(1884)	(1712)	(2755)	(2891)	(2526)	(2295)	(3081)	(2891)	(2526)	(2295)
2.5	2007	1919	1677	1523	2009	2573	2248	2042	2246	2573	2248	2042
(2.5 wind)	(2146)	(1824)	(1594)	(1448)	(2143)	(2445)	(2136)	(1941)	(2396)	(2445)	(2136)	(1941)

*Span should not exceed (No Limit) value



MEI 32/250 Insulated Panel

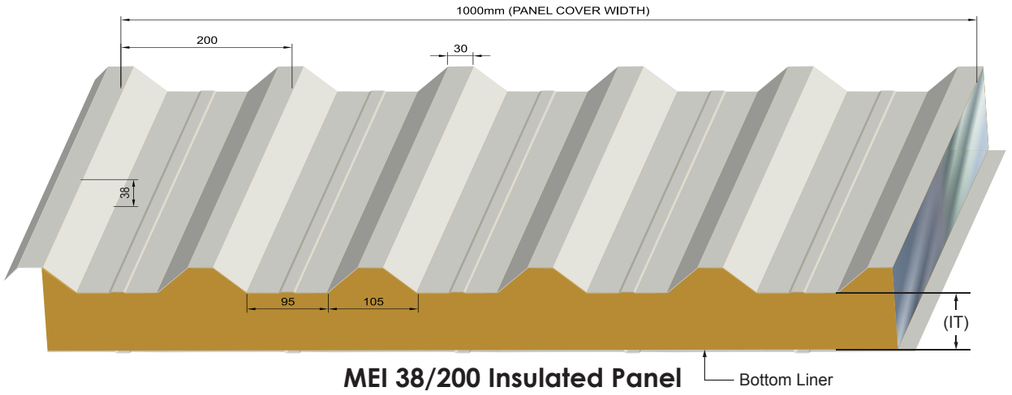
MEI 32/250 P.U. INSULATED PANEL		INSULATION THICKNESS (IT mm)							
		35		50		80		100	
		Allowable Span (mm)							
		Steel	Alum.	Steel	Alum.	Steel	Alum.	Steel	Alum.
Top Thickness (mm)	0.5	2300	2025	2725	2435	3750	3100	4050	3550
	0.7	2725	2300	3375	2935	4150	3600	4850	4125
	0.9	3025	2675	3740	3125	4800	4000	5175	4425
Combined Conductivity W/m²°C	P.U.	0.55		0.385		0.245		0.195	

SPAN DESIGN CRITERIA

- Steel yield strength 345 N/mm², Elastic modulus 205 KN/mm².
- Aluminium yield 170 N/mm², modulus 70 KN/mm²
- Maximum combination of working loads 1.5 KN/m²
- Span selected as the minimum value from pressure and suction case, assuming no bond slip.
- Bottom skin (Liner) thickness = 0.5mm.
- Allowable elastic deflection is L/150<20mm.
- Multi - span construction.

CONDUCTIVITY CALCULATED WITH FOLLOWING CONDITIONS

- Thermal conductivity of polyurethane (P.U.) is 0.02 W/m. °C
- Metal sheets ignored.
- Summer condition at roof (Heat transfer from out to inside).
- Assumed external wind speed 4mph (6.4 km/h)



MEI 38/200 Insulated Panel

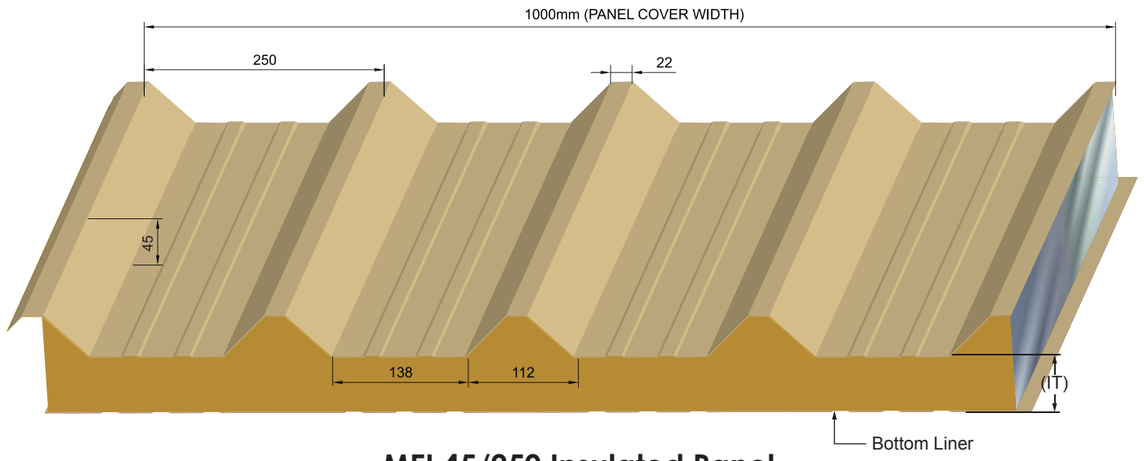
MEI 38/200 P.U. INSULATED PANEL		INSULATION THICKNESS (IT mm)							
		35		50		80		100	
		Allowable Span (mm)							
		Steel	Alum.	Steel	Alum.	Steel	Alum.	Steel	Alum.
Top Thickness (mm)	0.5	2450	2400	2850	2750	3875	3450	4300	3900
	0.7	2850	2800	3500	3200	4350	4000	5000	4500
	0.9	3150	3100	3865	3650	4925	4200	5550	4550
Combined Conductivity W/m²°C	P.U.	0.419		0.326		0.226		0.187	

SPAN DESIGN CRITERIA

- Steel yield strength 345 N/mm², Elastic modulus 205 KN/mm².
- Aluminium yield 170 N/mm², modulus 70 KN/mm²
- Maximum combination of working loads 1.5 KN/m²
- Span selected as the minimum value from pressure and suction case, assuming no bond slip.
- Bottom skin (Liner) thickness = 0.5mm.
- Allowable elastic deflection is L/150<20mm.
- Multi - span construction.

CONDUCTIVITY CALCULATED WITH FOLLOWING CONDITIONS

- Thermal conductivity of polyurethane (P.U.) is 0.02 W/m. °C
- Metal sheets ignored.
- Summer condition at roof (Heat transfer from out to inside).
- Assumed external wind speed 4mph (6.4 km/h)



MEI 45/250 Insulated Panel

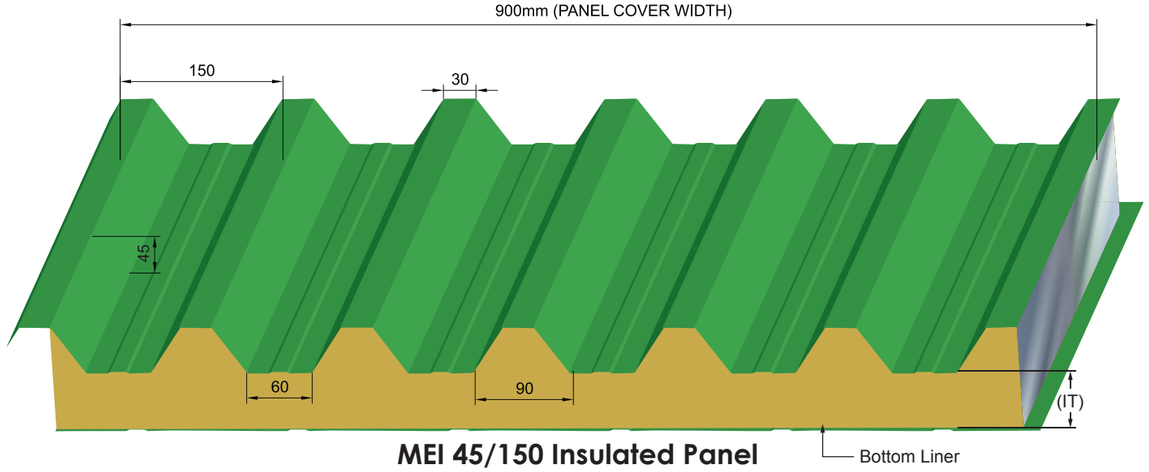
MEI 45/250 P.U. INSULATED PANEL		INSULATION THICKNESS (IT mm)							
		35		50		80		100	
		Allowable Span (mm)							
		Steel	Alum.	Steel	Alum.	Steel	Alum.	Steel	Alum.
Top Thickness (mm)	0.5	2250	2000	2600	2350	3400	3050	3950	3500
	0.7	2650	2350	3050	2750	4000	3550	4600	4100
	0.9	2950	2600	3400	3050	4400	3950	5100	4400
Combined Conductivity W/m²°C	P.U.	0.429		0.332		0.229		0.189	

SPAN DESIGN CRITERIA

- Steel yield strength 345 N/mm², Elastic modulus 205 KN/mm².
- Aluminium yield 170 N/mm², modulus 70 KN/mm²
- Maximum combination of working loads 1.5 KN/m²
- Span selected as the minimum value from pressure and suction case, assuming no bond slip.
- Bottom skin (Liner) thickness = 0.5mm.
- Allowable elastic deflection is L/150<20mm.
- Multi - span construction.

CONDUCTIVITY CALCULATED WITH FOLLOWING CONDITIONS

- Thermal conductivity of polyurethane (P.U.) is 0.02 W/m. °C
- Metal sheets ignored.
- Summer condition at roof (Heat transfer from out to inside).
- Assumed external wind speed 4mph (6.4 km/h)



MEI 45/150 Insulated Panel

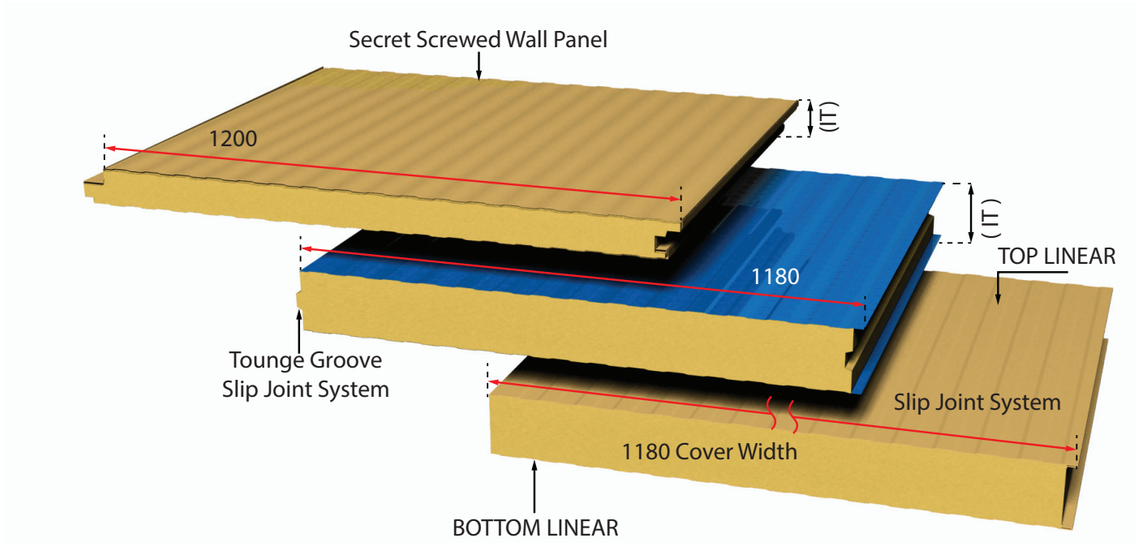
MEI 45/150 P.U. INSULATED PANEL		INSULATION THICKNESS (IT mm)							
		35		50		80		100	
		Allowable Span (mm)							
		Steel	Alum.	Steel	Alum.	Steel	Alum.	Steel	Alum.
Top Thickness (mm)	0.5	2750	2400	3100	2750	3950	3450	4450	3900
	0.7	3200	2800	3650	3200	4600	4000	5200	4500
	0.9	3600	3100	4500	3650	5100	4200	5750	4550
Combined Conductivity W/m²°C	P.U.	0.395		0.311		0.218		0.182	

SPAN DESIGN CRITERIA

- Steel yield strength 345 N/mm², Elastic modulus 205 KN/mm².
- Aluminium yield 170 N/mm², modulus 70 KN/mm²
- Maximum combination of working loads 1.5 KN/m²
- Span selected as the minimum value from pressure and suction case, assuming no bond slip.
- Bottom skin (Liner) thickness = 0.5mm.
- Allowable elastic deflection is L/150<20mm.
- Multi - span construction.

CONDUCTIVITY CALCULATED WITH FOLLOWING CONDITIONS

- Thermal conductivity of polyurethane (P.U.) is 0.02 W/m. °C
- Metal sheets ignored.
- Summer condition at roof (Heat transfer from out to inside).
- Assumed external wind speed 4mph (6.4 km/h)



MEI Slip Joint P.U. INSULATED PANEL		INSULATION THICKNESS (IT mm)							
		35		50		80		100	
		Allowable Span (mm)							
		Steel	Alum.	Steel	Alum.	Steel	Alum.	Steel	Alum.
Top Thickness (mm)	0.5	2650	2200	3150	2650	4000	3350	4450	3750
	0.7	3150	2400	3850	3050	4450	3850	5400	4300
	0.9	3500	2600	4000	3250	5000	4050	5600	4550
Combined Conductivity W/m²°C	P.U.	0.557		0.403		0.260		0.210	

SPAN DESIGN CRITERIA

- Steel yield strength 345 N/mm², Elastic modulus 205 KN/mm².
- Aluminium yield 170 N/mm², modulus 70 KN/mm²
- Maximum combination of working loads 1.5 KN/m²
- Span selected as the minimum value from pressure and suction case, assuming no bond slip.
- Bottom skin (Liner) thickness = 0.5mm.
- Allowable elastic deflection is L/150<20mm.
- Multi - span construction.

CONDUCTIVITY CALCULATED WITH FOLLOWING CONDITIONS

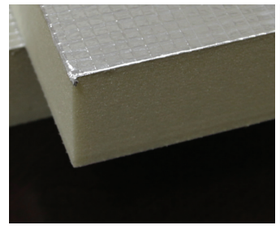
- Thermal conductivity of polyurethane (P.U.) is 0.02 W/m. °C
- Metal sheets ignored.
- Summer condition at roof (Heat transfer from out to inside).
- Assumed external wind speed 4mph (6.4 km/h)

INSUL – BOARDS

Insul boards is flexible, semi-rigid or rigid thermal and acoustical insulating boards for custom curtain wall, ceiling & floor applications. They vary in density and are made from Phenolic, Polyisosanurate, polyurathan or inorganic glass fibers, bonded with a thermosetting binder like calcium silicate board, gypsum board or cement board.

Insul - Boards have best fire & Acoustic performance characteristics and helps maximize lighting efficiency. High-performance Insul-Board insulation board complies with the thermal requirements of building regulations and fully meets the demands of building professionals

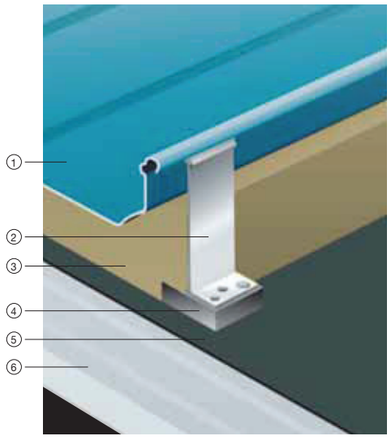
- Versatile and multi-purpose insulation board suitable for floor, wall and ceiling installations
- Best fire & smoke performance with Phenolic for public areas
- Ideal for new build or refurbishment projects and meets all current building regulations
- Provides excellent thermal performance
- Ideal when self-supporting insulation is required
- Lightweight, easy to cut and install
- Low emissivity (low-e) foil facing provides enhanced thermal performance within cavity air spaces



Insul Boards									
Polyisocyanurate									
Polyisocyanurate	40 kg/m3 density			0.02 W/m.k thermal conductivity					
Bonded Binder	10mm thick Calcium Silicate			10mm thick Gypsum Board			10mm thick Cement Board		
PIR thickness mm	50	80	100	50	80	100	50	80	100
Combined conductivity w/m2.k	0.392	0.247	0.198	0.391	0.246	0.198	0.392	0.247	0.198
Polyurethane									
Polyurethane	40 kg/m3 density			0.02 W/m.k thermal conductivity					
Bonded Binder	10mm thick Calcium Silicate			10mm thick Gypsum Board			10mm thick Cement Board		
PIR thickness mm	50	80	100	50	80	100	50	80	100
Combined conductivity w/m2.k	0.392	0.247	0.198	0.391	0.246	0.198	0.392	0.247	0.198
Rock wool									
Rock wool	80 kg/m3 density			0.034 W/m.k thermal conductivity					
Bonded Binder	10mm thick Calcium Silicate			10mm thick Gypsum Board			10mm thick Cement Board		
RW thickness mm	50	80	100	50	80	100	50	80	100
Combined conductivity w/m2.k	0.658	0.416	0.334	0.654	0.415	0.333	0.658	0.416	0.334
Glass Fiber									
Glass Fiber	80 kg/m3 density			0.042W/m.k thermal conductivity					
Bonded Binder	10mm thick Calcium Silicate			10mm thick Gypsum Board			10mm thick Cement Board		
RW thickness mm	50	80	100	50	80	100	50	80	100
Combined conductivity w/m2.k	0.806	0.512	0.411	0.800	0.509	0.410	0.806	0.512	0.411

The Kalzip® system – the result of great innovative effort.

Kalzip® – the complete solution



A typical Kalzip® roof structure:

1. *Kalzip® profiled sheet*
2. *Kalzip® aluminium 'secret fix' clip*
3. *Thermal-insulation (compressible)*
4. *Thermal barrier pad*
5. *Vapour control barrier and air-lock layer*
6. *Trapezoidal sheet*

Kalzip® is a flexible, weather-proof, easy-to-install system made of aluminium profiled sheets and well co-ordinated accessories.

Installed using the modular design principle, Kalzip® is the complete solution for high quality shape and function – throughout the building's entire life.

Physical construction aspects such as sound-proofing, heat-insulation and moisture-protection, as well as climatic and health requirements, are taken into consideration in the layers of the roof structure.

If produced on site the lightweight sheets can be supplied in lengths of 80 metres and more and allow a particularly fast and economical installation.

Lightweight and quick to install

Special aluminium clips have to be used for joining the Kalzip® profiled sheets with the substructure of the roof. They are locked into the seam and will be overlapped by the following Kalzip® element, so that the fixing elements are hidden under the roofing. This ensures that the roofing elements need not to be punctured for fastening.

The newly developed E clip even improves the as such excellent sliding properties of the Kalzip® roofing.

The mechanical zipping of the seams produces a load bearing connection. Vapor diffusion, however, is still possible in this area enableing residual moisture to evaporate after the installation.

Durable, maintenance-free

In its standard form, Kalzip® has a stucco embossed finish with a protective plating on both sides.

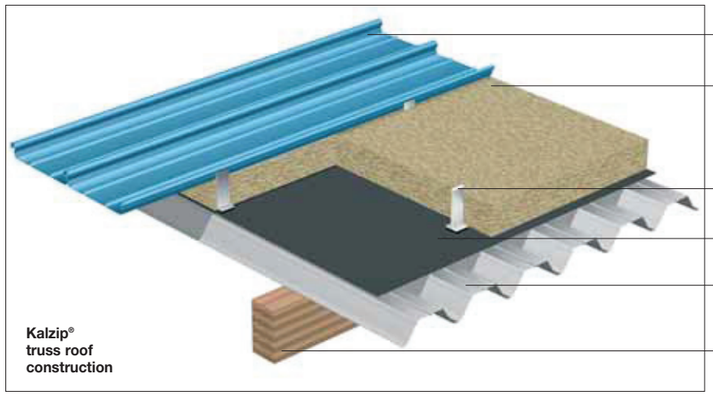
This helps to make the material impervious to external influences.

Rolled on both sides, Kalzip® protective plating increases the strength and service-life of the building's aluminium shell. Colour coating fulfills a purely visual function.

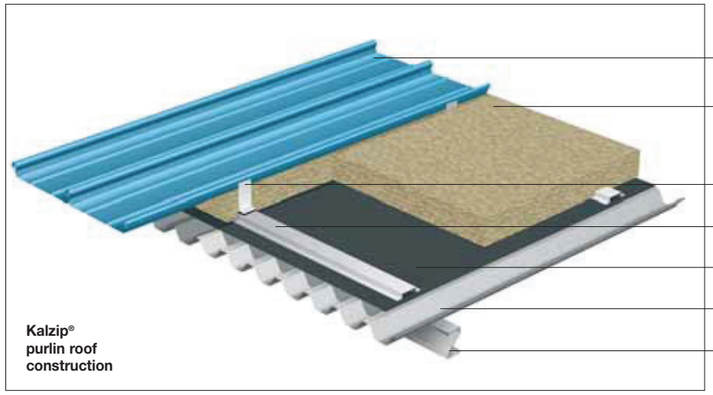
Kalzip® meets current-day requirements in a special way:

- Lightweight
- Great strength
- Resistance
- Corrosion-proof
- Practically maintenance-free
- Resistant to atmospheric effects
- Flexible shape
- Non combustible
- Can be used as lightning conductor
- Can be re-usable
- High quality material
- Can be recycled
- Can be re-used, maintaining full functional quality

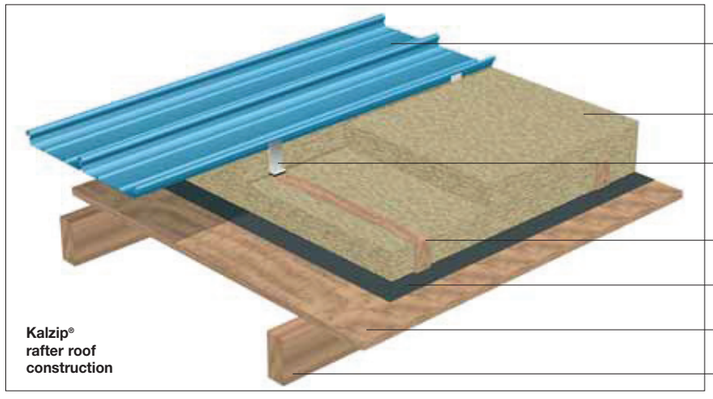
Also safe to construct.



Kalzip® truss roof construction



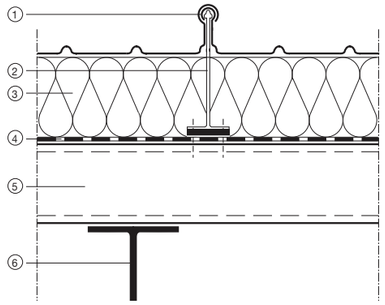
Kalzip® purlin roof construction



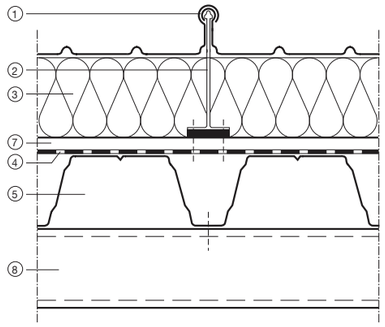
Kalzip® rafter roof construction

A building system with no “ifs and buts”.

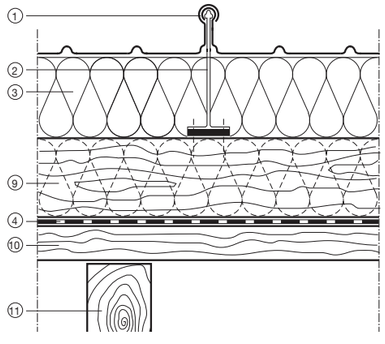
Kalzip® truss roof construction



Kalzip® purlin roof construction



Kalzip® rafter roof construction



① *Kalzip® profiled sheet*
② *Kalzip® aluminium 'secret fix' clip with thermal barrier pad*
③ *Thermal-insulation*
④ *Vapour control and air-lock layer*
⑤ *Trapezoidal sheet*
⑥ *Truss*
⑦ *Top hat section*
⑧ *Purlin*
⑨ *Timber support and thermal-insulation*
⑩ *Wooden supporting substructure*
⑪ *Rafters*

Kalzip® is convincing because:

It offers unlimited possibilities, high quality construction and flexibility
- As a ventilated and non-ventilated roof design, it is suitable for all roof shapes and pitches from 1.5 degrees and is suitable for all sub-structures and supporting structures.
- It is flexible and can be adapted to suit the requirements of private and public sector clients whatever the building's basic shape, geometry or size.
- Its light weight makes it particularly suitable for renovating old roofs. Kalzip® AF and "Rockwool Prodach" insulation systems are particularly suitable for renovating corrugated asbestos roofs. Approval from the professional control board is required in each case.
- Continuous sheets can be produced in lengths of 80 m and more.
- It has a neutral colour, timeless aluminium stucco embossed finish with a discreet surface which is appreciated by knowledgeable experts.
- Available in a multitude of colours. RAL and special colours, all of high-quality and weather-proof.
- Kalzip AluPlusZinc® has a matt zinc-patinated smooth surface (PEGAL process) and excels by its high natural strength, its increased resistance against abrasion due to weathering and its fine appearance.
- It allows a wide scope of different shapes: straight, convex or concave roll-formed, crimp-curved, tapered, tapered-convex curved ... Our growing know-how of the ductility of the base metal aluminium again and again opens new design aspects.

Excellent construction qualities
- High thermal-insulation requirements can be easily fulfilled. The roof structure can be easily adapted to suit the building's exact requirements by selecting the appropriate thickness of insulation material.
- The construction makes high-quality sound-proofing easy and simple.

Durable and economic
- Corrosion-resistant aluminium alloy.
- Increased resistance against acid rain and industrial emissions due to the protective plating on both sides.
- Non-sensitive to UV rays, resistant to micro-organisms, longlive expectancy.
- Extremely fast installation being to a large extent independent of the prevailing weather conditions – ergonomic and cost saving due to prefabricated components.

Extremely safe throughout its entire life
- Special aluminium clips have to be used for joining the Kalzip® profiled sheets with the substructure of the roof. They are locked into the seam and will be overlapped by the following Kalzip® element, so that the fixing elements are hidden under the roofing.
- The mechanical zipping of the seams produces a load bearing connection.
- Positive and negative loads will be safely absorbed.
- Vapour diffusion, however, is still possible in this area enableing residual moisture to evaporate after the installation.
- Tried and tested detailed solutions for roof penetrations as well as for joints and gable ends.
- Non-flammable. Resistant to airborne-fire and radiant heat.
- Kalzip® can act as a part of the air termination network.

Excellent ecological characteristics
- Aluminium, combined with other elements, is the third most common element in the earth's crust and is available everywhere in nature.
- Once produced, aluminium can be recycled to provide products for generations.
- The Kalzip® roof covering can easily be re-used.
- Recycled aluminium material can be re-used again for the manufacture of other products. The aluminium's beneficial properties remain intact.
- Only 5 % of the original manufacturing power is required for recycling.
- An insulated Kalzip® roof contributes significantly to reducing air pollution and so to preserving our environment.

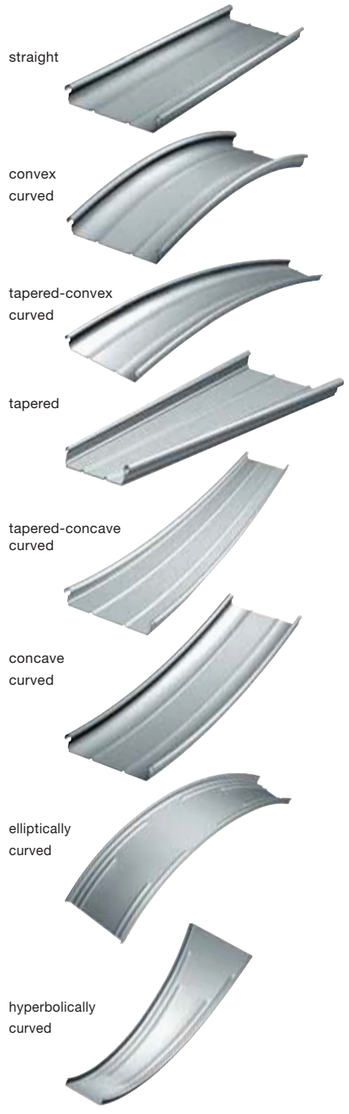
The Kalzip® range.

Kalzip® aluminium profiled sheets

Dimensions mm		Thickness mm
Kalzip® 50/333	333 / 50	1,2 1,0 0,9 0,8
Kalzip® 50/429	429 / 50	1,2 1,0 0,9 0,8
Kalzip® 65/305	305 / 65	1,2 1,0 0,9 0,8
Kalzip® 65/333	333 / 65	1,2 1,0 0,9 0,8
Kalzip® 65/400	400 / 65	1,2 1,0 0,9 0,8
Kalzip® 65/500 **)	500 / 65	1,2 1,0 0,9 0,8
Kalzip® AF 65/333 *)	333 / 65	1,2 1,0 0,9 0,8
Kalzip® AF 65/434 *)	434 / 65	1,2 1,0 0,9 0,8
Kalzip® AS 65/422 *)	422 / 65	1,2 1,0 0,9 0,8

*) only when used with rigid thermal insulation or timber lining
**) recommended for facade cladding (thickness ± 0.9 mm)

There are many variations in shape for instance

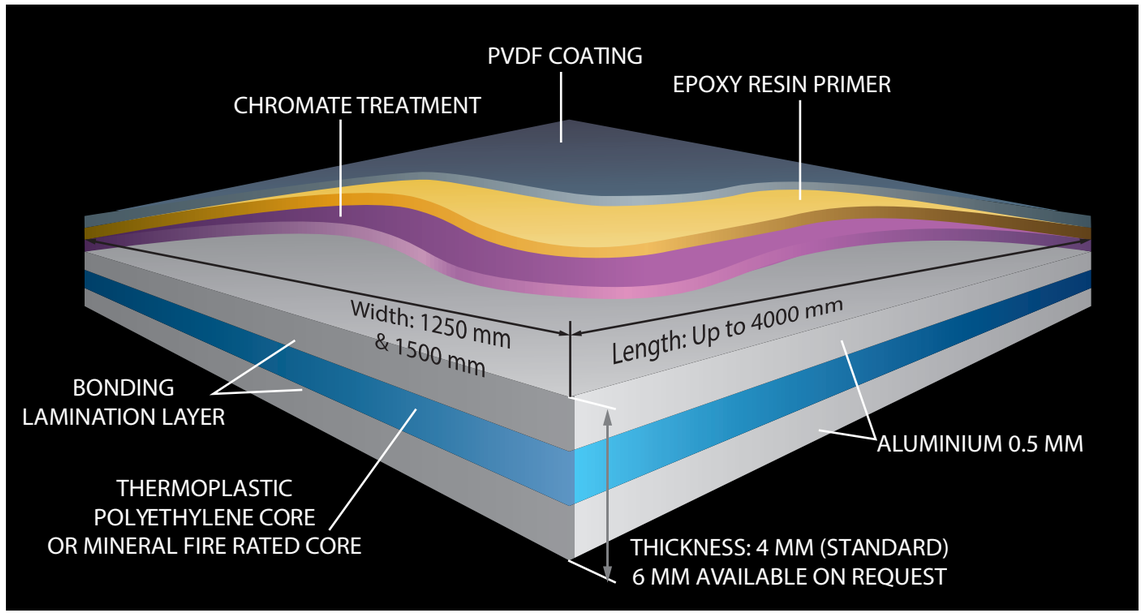


Kalzip®

MEI – ALUMINIUM COMPOSITE PANEL

Aluminum composite panels Consists of two layers of smooth aluminum skins (0.2mm-0.5 mm thk) sandwiching a polyethylene core, thermo-bonded by polymer adhesive film in a continuous thermo co-extrusion process, pre-finished with a premium coil coating, PVDF2 or Polyester coating and available in a variety of lengths and widths to allow for imaginative design and creativity.

They are frequently used as external cladding of building, partitions, false ceilings, etc… and also widely applied to signage industry as an alternative to those heavier, expensive substrates.
Can be easily cut, folded, shaped, and punched. They're widely used as indoor and outdoor Architectural cladding, decorative insulation materials.



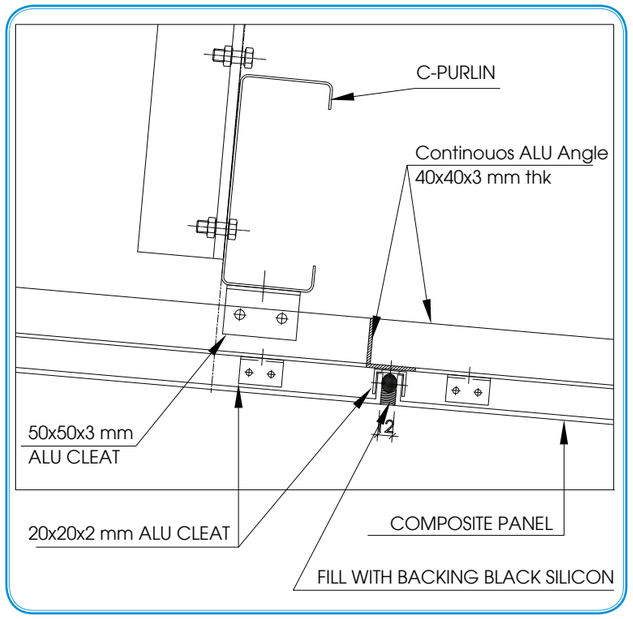
ALUMINIUM COMPOSITE PANELS HAVE MANY PHYSICAL PROPERTIES, SUCH AS !

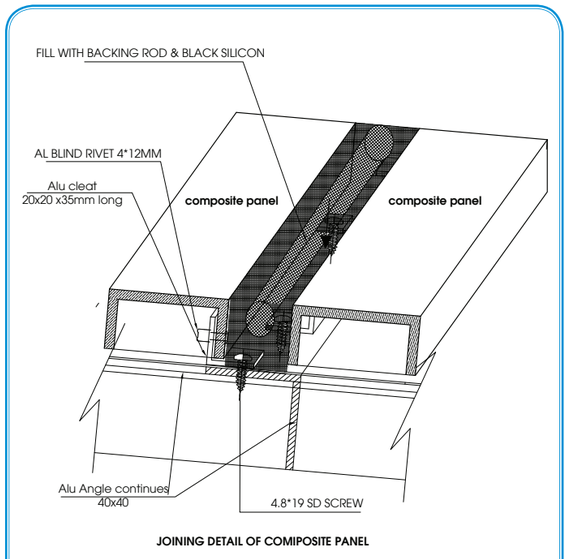
- **High strength**
- **Highly cost -effective**
- **Fire resistance**
- **Weather proof**
- **Waterproof**
- **Sound insulation**
- **Impact resistance**
- **Light, easy to fold, curve, cut, shape and maintain etc.**

MATERIAL SPECIFICATION

- **Thickness ranges**: from 2mm to 6mm
- **Standard size**: 1,220 x 2,440mm
- **Non standard sizes** (available upon requirements).
- **Width** can be 1220, 1250, 1270, 1500, 1550, and 1570mm.
- **Length** 2,440mm and customized length Within 5,000mm
- **Weight**: 5.6kg/m2 based on 4mm thick

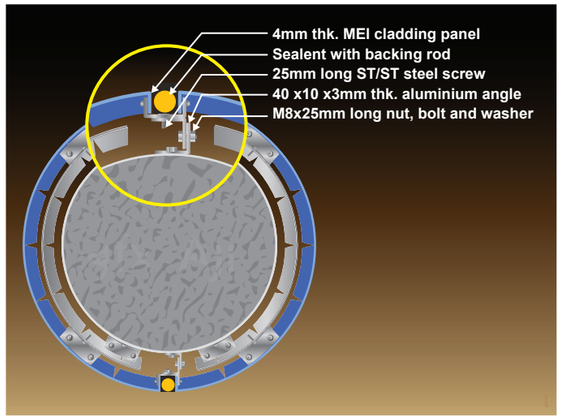
SECTION COMPOSITE PANEL DETAIL

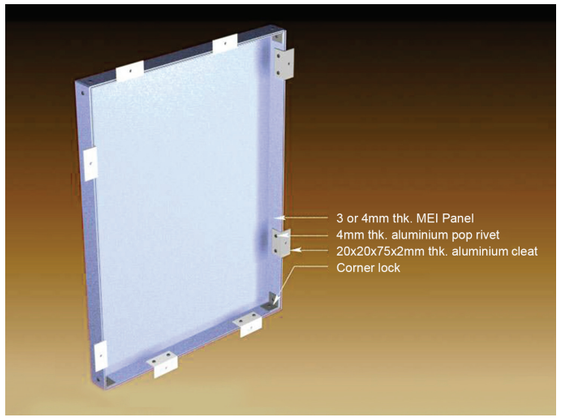




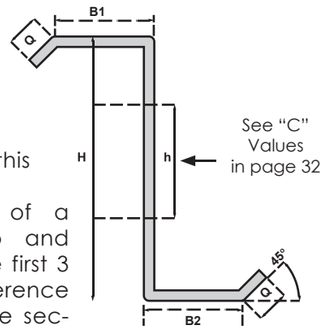
JOINING DETAIL OF COMIPOSITE PANEL

REAR VIEW OF MEI COMPOSITE PANEL





MEI Z- section are secondary structural member used to gab between frames. These profiles are made from pre-hot dipped galvanized steel, G275 coating based on BSEN 10147 with minimum guaranteed yield strength 350 N/mm². The metal thickness vary from 1.5mm to 2.5mm. Sleeves are used to join purlin above frames, where as 6 to 8 mm cleats and 16mm bolts are usually used to connect this profile to building frames.



The section reference of a Z-Section 202mm deep and 2.5mm thick=202 Z25. The first 3 digits of the section reference indicate the depth of the section in millimeters (ie: 202 equals 202mm deep

The fourth digit is a letter that signifies the profile type (ie: Z for Z profile). The last two digits indicate the material thickness 25 equals 2.5mm)

Z - PURLIN

No.	Size	H	B1	B2	Q	t	Girth
1	Z 142	142	60	55	10-25	1.5-2.5	285
2	Z 172	172	65	60	10-25	1.5-2.5	325
3	Z 202	202	65	60	10-25	1.5-2.5	355
4	Z 232	232	60	55	10-25	1.5-2.5	375
5	Z 250	250	60	55	10-25	1.5-2.5	390
6	Z 262	262	80	72	10-25	1.5-2.5	440
7	Z 302	302	90	82	10-25	1.5-2.5	500

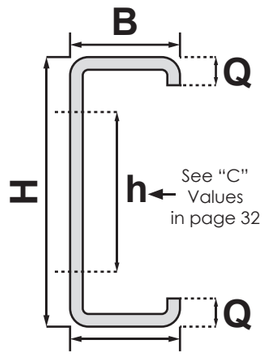
NOMINAL DIMENSIONS

SECTION REFERENCE	WEIGHT Kg/m	AREA cm²	DEPTH mm	TOP mm	Bottom mm	t mm
142 Z 13	2.94	3.75	142	60	55	1.3
142 Z 14	3.16	4.03	142	60	55	1.4
142 Z 15	3.38	4.31	142	60	55	1.5
142 Z 16	3.60	4.58	142	60	55	1.6
142 Z 18	4.03	5.13	142	60	55	1.8
142 Z 20	4.46	5.68	142	60	55	2.0
172 Z 13	3.35	4.27	172	65	60	1.3
172 Z 14	3.60	4.59	172	65	60	1.4
172 Z 15	3.85	4.91	172	65	60	1.5
172 Z 16	4.10	5.22	172	65	60	1.6
172 Z 18	4.59	5.85	172	65	60	1.8
172 Z 20	5.08	6.48	172	65	60	2.0
172 Z 23	5.81	7.40	172	65	60	2.3
172 Z 25	6.29	8.01	172	65	60	2.5
202 Z 14	3.93	5.01	202	65	60	1.4
202 Z 15	4.21	5.36	202	65	60	1.5
202 Z 16	4.48	5.70	202	65	60	1.6
202 Z 18	5.02	6.39	202	65	60	1.8
202 Z 20	5.56	7.08	202	65	60	2.0
202 Z 23	6.35	8.09	202	65	60	2.3
202 Z 25	6.88	8.76	202	65	60	2.5
232 Z 15	4.79	6.11	232	60	55	1.5
232 Z 16	5.11	6.5	232	60	55	1.6
232 Z 18	5.73	7.29	232	60	55	1.8
232 Z 20	6.34	8.08	232	60	55	2
232 Z 23	7.26	9.24	232	60	55	2.3
232 Z 25	7.86	10.01	232	60	55	2.5
250 Z 15	4.60	5.85	250	60	55	1.5
250 Z 16	4.90	6.23	250	60	55	1.6
250 Z 18	5.51	7	250	60	55	1.8
250 Z 20	6.12	7.77	250	60	55	2
250 Z 23	7.04	8.94	250	60	55	2.3
250 Z 25	7.65	9.71	250	60	55	2.5
262 Z 16	5.57	7.10	262	80	72	1.6
262 Z 18	6.25	7.96	262	60	72	1.8
262 Z 20	6.92	8.82	262	60	72	2.0
262 Z 23	7.92	10.09	262	60	72	2.3
262 Z 25	8.59	10.94	262	80	72	2.5
262 Z 29	9.90	12.61	262	80	72	2.9
302 Z 20	7.89	10.06	302	90	82	2
302 Z 23	9.04	11.52	302	90	82	2.3
302 Z 25	9.80	12.49	302	90	82	2.5
302 Z 29	11.31	14.41	302	90	82	2.9

NOMINAL DIMENSIONS

Ixx cm⁴	Iyy cm⁴	Zxx cm³	Zyy cm³	rxx cm	ryy cm	cx cm	cy cm	Mc.x kNm	Mc.y kNm
121.1	31.3	16.86	5.36	5.65	2.87	7.19	5.53	5.55	2.09
130.3	33.5	18.10	5.74	5.65	2.87	7.19	5.52	6.26	2.24
138.9	35.7	19.34	6.12	5.64	2.86	7.19	5.52	6.97	2.39
147.8	37.9	20.56	6.49	5.64	2.85	7.19	5.51	7.68	2.53
165.2	42.1	23.00	7.24	5.63	2.84	7.19	5.50	9.03	2.82
182.2	46.2	25.40	7.96	5.62	2.83	7.19	5.49	10.31	3.10
198.7	38.7	22.87	6.10	6.79	3.00	8.69	6.02	6.98	2.38
213.4	41.5	24.57	6.54	6.78	2.99	8.69	6.01	7.90	2.55
228.1	44.2	26.25	6.97	6.78	2.98	8.69	6.01	8.85	2.72
242.7	46.9	27.93	7.40	6.77	2.98	8.69	6.00	9.79	2.89
271.6	52.2	31.26	8.25	6.76	2.97	8.69	5.99	11.63	3.22
300.2	57.4	34.55	9.09	6.75	2.95	8.69	5.98	13.40	3.54
342.5	64.9	39.42	10.30	6.74	2.93	8.69	5.97	15.90	4.02
370.4	69.8	42.63	11.10	6.73	2.92	8.69	5.96	17.50	4.33
310.8	44.5	30.49	6.53	7.84	2.86	10.19	6.01	9.41	2.55
332.2	44.2	32.59	6.97	7.83	2.86	10.19	6.00	10.55	2.72
353.5	46.9	34.68	7.40	7.83	2.85	10.19	6.00	11.69	2.88
395.8	52.2	38.83	8.25	7.82	2.84	10.19	5.99	13.92	3.22
437.7	57.4	42.94	9.08	7.81	2.83	10.19	5.98	16.08	3.54
499.8	64.9	49.03	10.29	7.79	2.81	10.19	5.96	19.16	4.01
540.7	51.1	53.04	11.09	7.78	2.80	10.19	5.95	21.14	4.32
500.4	65	42.59	8.78	9.01	3.25	11.75	6.94	12.56	3.42
532.7	69	45.34	9.32	9	3.24	11.75	6.94	14.02	3.64
596.8	76.9	50.79	10.4	8.99	3.23	11.75	6.93	16.98	4.06
660.3	84.6	56.2	11.47	8.98	3.22	11.75	6.92	19.92	4.47
754.6	95.9	64.22	13.02	8.97	3.2	11.75	6.9	24.19	5.08
816.8	103.3	69.51	14.04	8.96	3.19	11.75	6.89	26.92	5.48
592.5	70.04	47.62	9.26	9.67	3.33	12.67	7.21	14.48	3.62
630.5	74.35	50.59	9.81	9.66	3.32	12.67	7.2	16.42	3.83
706.5	82.9	56.68	10.95	9.65	3.31	12.67	7.19	19.57	4.27
781.85	91.2	62.73	12.07	9.64	3.3	12.67	7.18	23	4.7
893.8	103.3	71.7	13.71	9.63	3.28	12.67	7.16	27.23	5.35
967.65	111.3	77.62	14.78	9.62	3.27	12.67	7.15	27.72	5.77
728.3	78.1	54.83	10.03	10.08	3.30	13.28	7.25	16.02	3.91
816.2	87.1	61.45	11.20	10.07	3.29	13.28	7.24	19.54	4.37
903.4	95.9	68.01	12.34	10.06	3.28	13.28	7.23	23.08	4.81
1033.0	108.7	77.76	14.03	10.05	3.26	13.28	7.22	28.28	5.47
1118.5	117.1	84.20	15.13	10.04	3.25	13.28	7.21	31.63	5.90
1287.4	133.4	96.91	17.27	10.02	3.22	13.28	7.19	38.06	6.73
1362.7	135.7	89.15	15.48	11.58	3.65	15.29	8.23	27.81	6.04
1559.1	154.2	102	17.61	11.57	3.64	15.29	8.22	34.67	6.87
1689	166.2	110.5	19.01	11.55	3.62	15.29	8.21	39.18	7.41
1945.9	189.6	127.31	21.73	11.53	3.6	15.29	8.18	47.87	8.48

MEI C- sections are secondary structural members used to gab between frames. These profiles are made from pre-hot dipped galvanized steel, G2 75 coating based on BSEN 10147 with minimum guaranteed yield strength 350 N/mm². The metal thickness vary from 1.5mm to 2.5mm. Sleeves are used to join purlin above frames, where as 6 to8mm cleat and 16mm bolt are- usually used to connect this profile to building frames.



The section reference of a C-Section 302mm deep and 2.5mm thick = 302 C 25. The first 3 digits of the section reference indicate the depth of the section in millimeters (ie: 302 equals 302mm deep) The fourth digit is letter that signifies the profile type (ie:C for C profile). The last two digits indicate the material thickness (25 equals 2.5mm)

C - PURLIN

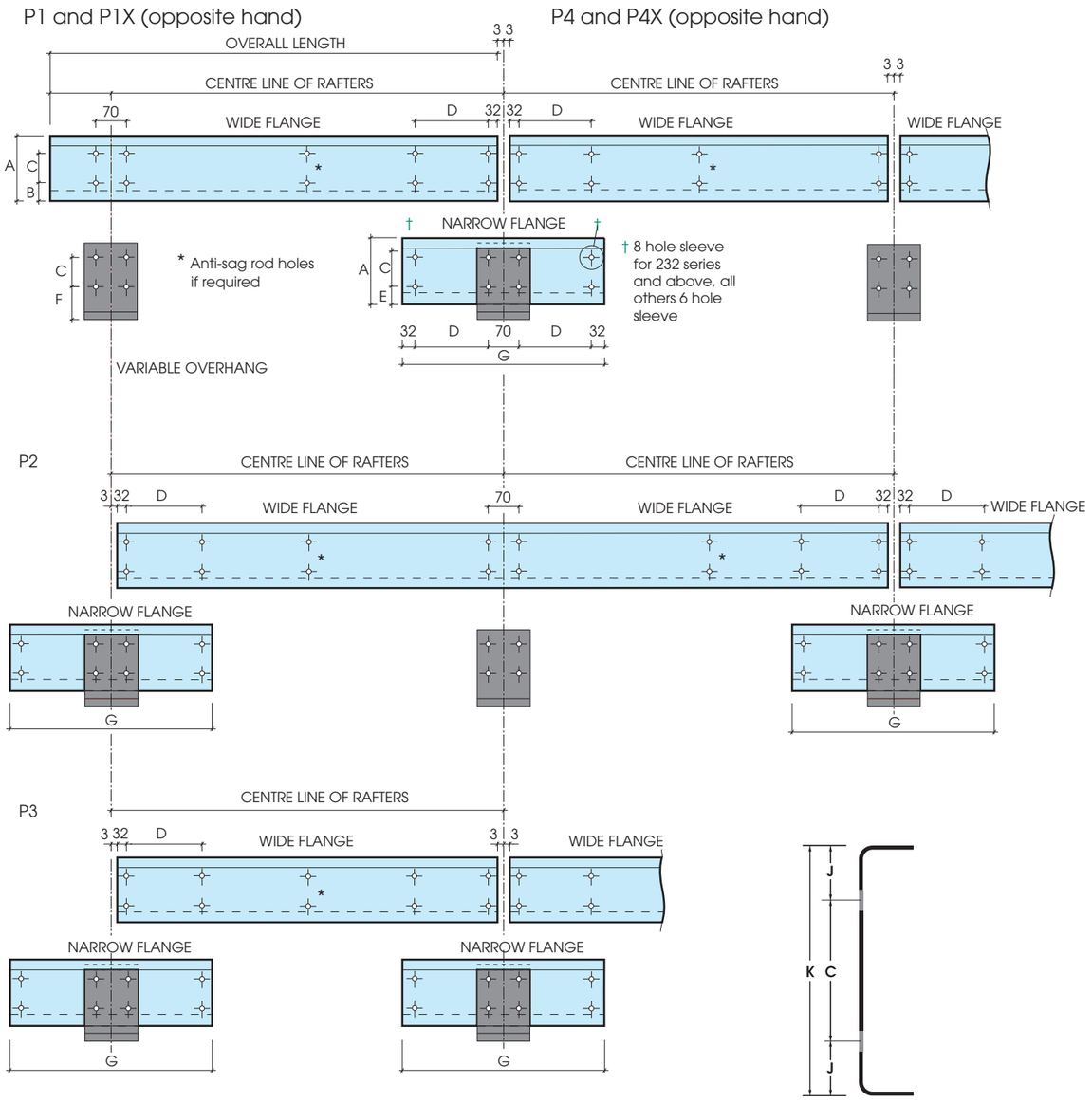
No	Size	H	B	Q	t	girth
		mm	mm	mm	mm	mm
1	C112	112	64	10-30	1.5-2.5	255
2	C 142	142	64	10-30	1.5-2.5	285
3	C 172	172	69	10-30	1.5-2.5	325
4	C 202	202	69	10-30	1.5-2.5	355
5	C 232	232	80	10-30	1.5-2.5	408
6	C262	262	80	10-30	1.5-2.5	440
7	C 302	302	80	10-30	1.5-2.5	500

NOMINAL DIMENSIONS

SECTION REFERENCE	WEIGHT Kg/m	AREA cm²	DEPTH mm	FLANGE mm	t mm
112 C 13	2.6	3.32	112	64	1.3
112 C 14	2.8	3.56	112	64	1.4
112 C 15	3.0	3.81	112	64	1.5
112 C 16	3.19	4.06	112	64	1.6
112 C 18	3.58	4.55	112	64	1.8
112 C 20	3.96	6.04	112	64	2.0
142 C 13	2.94	3.75	142	64	1.3
142 C 14	3.16	4.03	142	64	1.4
142 C 15	3.38	4.30	142	64	1 .5
142 C 16	3.6	4.58	142	64	1.6
142 C 18	4.03	5.13	142	64	1.8
142 C 20	4.46	5.68	142	64	2.0
172 C 13	3.35	4.27	172	69	1.3
172 C 14	3.60	4.59	172	69	1.4
172 C 15	3.85	4.91	172	69	1.5
172 C 16	4.10	5.22	172	69	1 6
172 C 18	4.59	5.85	172	69	1.8
172 C 20	5.08	6.48	172	69	2.0
172 C 23	5.81	7.40	172	69	2.3
172 C 25	6.29	8.01	172	69	2.5
202 C 14	3.93	5.01	202	69	1.4
202 C 15	4.21	5.36	202	69	1.5
202 C 16	4.48	5.70	202	69	1.6
202 C 18	5.02	6.39	202	69	1.8
202 C 20	5.56	7.08	202	69	2.0
202 C 23	6.35	8.09	202	69	2.3
202 C 25	6.88	8.76	202	69	2.5
232 C 15	4.79	6.11	232	80	1.5
232 C 16	5.11	6.50	232	80	1.6
232 C 18	5.73	7.29	232	80	1.8
232 C 20	6.34	8.08	232	80	2.0
232 C 23	7.26	9.24	232	80	2.3
232 C 25	7.86	10.01	232	80	2.5
262 C 16	5.57	7.10	262	80	1.6
262 C 18	6.25	7.96	262	80	1.8
262 C 20	6.92	8.82	262	80	2.0
262 C 23	7.92	10.09	262	80	2.3
262 C 25	8.59	10.94	262	80	2.5
302 C 20	7.89	10.06	302	80	2.0
302 C 23	9.04	11.52	302	80	2.3
302 C 25	9.80	12.49	302	80	2.5

NOMINAL DIMENSIONS

Ixx cm⁴	Iyy cm⁴	Zxx cm³	Zyy cm³	rxx cm	ryy cm	cx cm	cy cm	Mc.x kNm	Mc.y kNm
70.97	17.6	12.67	4.09	4.62	2.31	2.07	0.581	4.02	1.59
76.16	18.94	13.6	4.38	4.62	2.31	2.07	0.625	4.56	1.7
81.35	20.19	14.52	4.66	4.62	2.3	2.07	0.662	5.08	1.81
86.44	21.42	15.44	4.95	4.62	2.3	2.07	0.692	5.56	1.92
96.56	23.83	17.24	5.51	4.6	2.29	2.07	0.747	6.55	2.14
106.54	26.2	19.2	6.02	4.6	2.28	2.07	0.794	7.52	2.35
124.1	20.6	17.48	4.62	5.73	2.33	1.95	0.569	5.55	1.80
133.3	22.0	18.77	4.95	5.73	2.33	1.95	0.606	6.25	1.93
142.4	23.5	20.05	5.28	5. 72	2.32	1.95	0.641	6.96	2.06
151.4	24.9	21.32	5.60	5.72	2.32	1.95	0.673	7.66	2.18
169.3	27. 7	23.68	6.23	5.71	2.31	1.95	0.729	9.05	2.43
187.0	30.5	26.34	6.86	5.70	2.30	1.95	0.775	10.37	2.67
203.6	26.8	23.68	5.46	6.86	2.49	1.99	0.505	6.95	2.13
218.7	28.8	25.44	5.86	6.86	2.49	1.99	0.539	7.87	2.28
233.8	30.7	27.18	6.24	6.85	2.48	1.99	0.571	8.80	2.44
248.7	32.6	28.92	6.63	6.85	2.48	1.99	0.601	9.74	2.59
278.3	36.3	32.36	7.39	6.84	2.47	1.99	0.656	10.62	2.88
307.6	39.9	35.77	8.13	6.83	2.46	1.99	0.702	13.45	3.17
351.0	45.2	40.82	9.21	6.81	2.45	1.99	0.757	16.05	3.59
379.5	48.7	44.13	9.92	6.80	2.44	1.99	0.787	17.70	3.87
317.3	30.2	31.42	5.95	7.91	2.44	1.83	0.497	9.35	2.32
339.2	32.2	33.58	6.35	7.90	2.43	1.83	0.527	10.49	2.48
360.9	34.2	35.74	6.74	7.90	2.43	1.83	0.554	11.63	2.63
404.1	38.1	40.01	7.51	7 .89	1.42	1.83	0.605	13.90	2.93
446.9	41.9	44.25	8.26	7.88	2.41	1.83	0.646	16.12	3.22
510.2	47.5	50.52	9.37	7.86	2.40	1.83	0.696	19.30	3.65
551.9	51.1	54.65	10.09	7.85	2.39	1.83	0.713	21.33	3.93
503.0	44.4	43.36	7.90	9.04	2.69	1.98	0.476	12.50	3.08
535.4	47.1	46.16	8.39	9.04	2.68	1.98	0.503	13.94	3.27
599.9	52.5	51.71	9.36	9.03	2.67	1.98	0.552	16.86	3.65
663.7	57.9	57.22	10.31	9.02	2.66	1.98	0.596	19.77	4.02
758.4	65.7	65.38	11.70	9.00	2.65	1.98	0.648	24.00	4.56
820.9	70.8	70.77	12.61	8.99	2.64	1.98	0.677	26.71	4.92
733.9	55.3	56.03	9.19	10.12	2.78	1.99	0.463	15.94	3.59
822.5	61.7	62.79	10.26	10.11	2.77	1.99	0.51	19.42	4.00
910.4	68.0	69.49	11.31	10.10	2.76	1.99	0.552	22.93	4.41
1040.9	77.2	79.46	12.61	10.09	2.75	1.99	0.605	28.09	5.01
1127.0	83.2	86.03	13.85	10.08	2.74	1.99	0.633	31.42	5.40
1369.3	95.7	90.68	14.22	11.61	3.07	2.17	0.5	27.7	5.55
1566.7	108.8	103.76	16.17	11.59	3.05	2.17	0.554	34.51	6.31
1697.2	117.3	112.4	17.45	11.58	3.05	2.17	0.585	38.96	6.81



Z - SLEEVED SYSTEM
Detailing Dimensions in mm

A	B	C	D	E	F	G
142	42	56	240	44	50	614
172	42	86	290	44	50	714
202	42	116	350	44	50	834
232	42	146	410	44	50	954
250	42	164	433	44	50	1000
262	42	176	460	44	50	1054
302	52	195	610	55	60	1354

C - SECTION SLEEVED SYSTEM
Detailing Dimensions in mm

A	B	C	D	K	J	G	F
112	30.0	52	190	117	32.5	514	36
142	43.0	56	240	147	45.5	614	50
172	43.0	86	290	177	45.5	714	50
202	43.0	116	350	207	45.5	834	50
232	43.0	146	410	238	46.0	954	50
262	43.0	176	460	268	46.0	1054	50
302	53.5	195	610	308	56.5	1354	60

AUS Metalic & Sandwich Material Testing Report

AUS | American University of Sharjah
COLLEGE OF ENGINEERING

Technical Report

Contract CEN – 02 / 11-12

First Party		Second Party	
College of Engineering			
American University of Sharjah		Middle East Insulation LLC-Dubai	
P.O. Box	26666 Sharjah, UAE	P.O. Box	14225 Dubai, UAE
Telephone:	+971 6 515 2852	Telephone:	+971 4 880 1600
Fax:	+971 6 515 2979	Fax:	+971 4 880 1700
Email:	cen-outreach@aus.edu	Email:	contact@mei-uae.com

Signed in 10/4/2012 between the American University of Sharjah and Middle East Insulation LLC-Dubai.

Re.: Utilize the lab resources at AUS for metallic construction materials testing

This report certifies that a series of tests has been taken place and witnessed at the American University-Sharjah (AUS) laboratories as a part of joint program between AUS and Middle East Insulation (MEI). All tests and results have been observed, monitored, and acknowledged by both parties.

The programconsists of testing single skin profiles (Steel and Aluminium)and polyurethane injected foam (sandwich panels), with different thickness, metal, and profiles.

All the samples were produced and supplied by MEI and tested in the Construction & Structural Laboratory – Department of Civil Engineering of the American University of Sharjah.

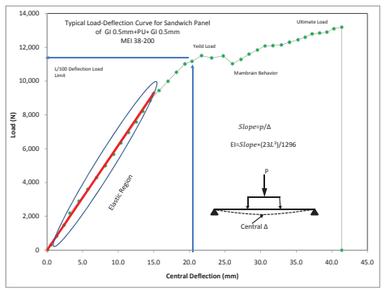
General observation: single skin and sandwich panel tests

It was noted that the failure of all tested samples (Single skin and sandwich panels) were non-catastrophic as it shows excessive deflection and compressional local flange buckling. Three distinguished zones were noted during testing progress.

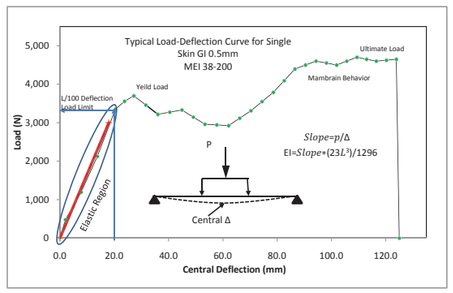
1- Linear elastic stage where deflection varies proportionally with load imposed. The relation between the two components represents the flexural rigidity of the tested panel.
2- Plastic zone in which large deflection was noted after the linear elastic behaviour.
3- Skin stressed stage. In this zone, with the excessive deflection, the diaphragm action of the panel affected by the screw fixing increases the load carrying capacity. There was continuous flange distortion till sheet-screw tearing at the panel ends occur. This zone is prominent and may provide an extra factor of safety against catastrophic failure.
4- The moment of inertia and section capacity used to construct MEI catalogue matches the results from the test.

AUS | American University of Sharjah
Tel +971 6 515 2958 Fax +971 6 515 2979
PO Box 26666, Sharjah, United Arab Emirates

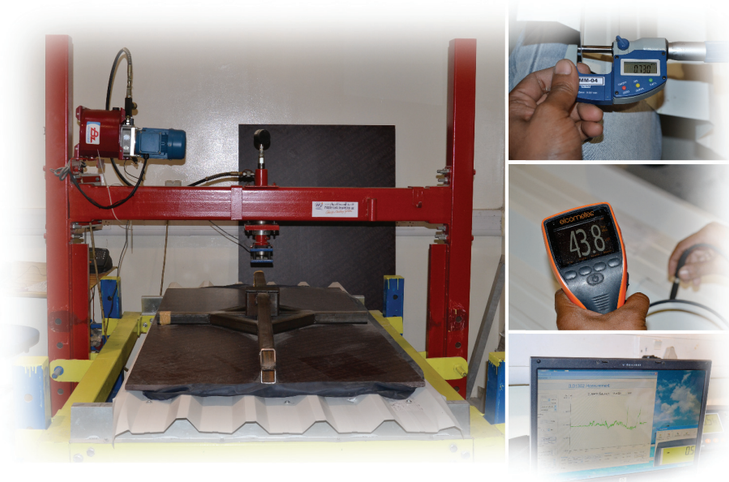
Load Deflection Curve



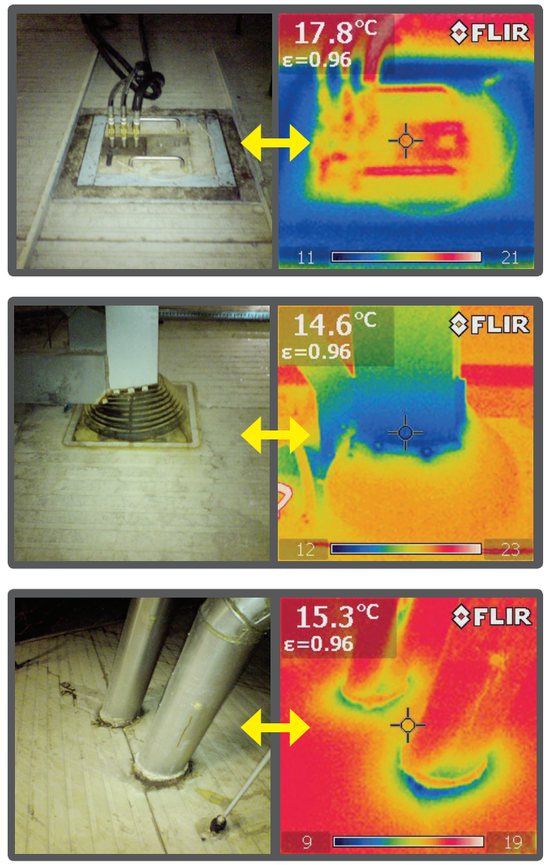
38-200 0.5GI+50+0.5
GI Sandwich panel



38-200 0.5
GI Single Skin



Thermal Imaging (Infrared Images)
Dubai Ski Centre



ISO 9001:2015 Certification

QEC CERTIFICATION

CERTIFICATION
Quality Management System
Certificate of Approval

This is to certify that the QMS of

Middle East Insulation LLC
P.O. Box 14225, Jebel Ali, Industrial Area-2,
Dubai, United Arab Emirates

Has been assessed and found to meet the requirements of

ISO 9001:2015

This certificate is valid for the following scope of operations:

DESIGN, MANUFACTURE & INSTALLATION OF POLYURETHANE & POLY ISOCYANURATE INJECTED PANELS, RELATED ACCESSORIES, EXPANDED POLYSTYRENE PRODUCTS, PHENOLIC INSULATION PRODUCTS, SUPERSEAM, FIRE RATED ROLLING SHUTTERS, FIRE RATED STEEL DOORS, FOLDABLE DOORS, FIRE RATED ACCESS DOORS, SECTIONAL OVERHEAD DOORS & RELATED IRON MONGERY

Authorised by: RN Cooke
Chief Executive

Date of Certificate Issue: 27 November 2016
Certificate Valid Until: 26 November 2019
Recertification audit before 25 October 2019. Certified since 15 September 2013.
This certificate is the property of QEC Certification and remains valid subject to satisfactory annual Surveillance audits.

SN Registrars (Holdings) Limited
Registration House, 22b Church Street, Rushden, Northamptonshire, NN10 9YT, UK
Tel: +44 (0) 1933 383261
Email: info@qec.co.uk
Web: www.qec.co.uk
Company number: 07659067

Certificate Number: QEC 74918553/23/Q

IAF · ISO 9001:2015 · UKAS MANAGEMENT SYSTEMS

Industrial License

GOVERNMENT OF DUBAI
اقتصادية دبي
DUBAI ECONOMY

رخصة صناعية
Industrial License

License Details / تفاصيل الرخصة

License No. 300675 — رقم الرخصة
Company Name: MIDDLE EAST INSULATION (L.L.C) — الشرق الاوسط للعوازل ش.ذ.م.م — اسم الشركة
Trade Name: MIDDLE EAST INSULATION (L.L.C) — الشرق الاوسط للعوازل ش.ذ.م.م — الإسم التجاري
Legal Type: Limited Liability Company(LLC) — ذات مسئولية محدودة — الشكل القانون
Expiry Date: 16/09/2018 — تاريخ الإنتهاء — Issue Date: 17/08/1992 — تاريخ الإصدار
D&B D-U-N-S ® No.: 561958857 — الرقم العالمي — Main License No.: 300675 — رقم الرخصة الام
Register No.: 40535 — رقم السجل التجاري — DCCI No.: 29547 — عضوية الغرفة

License Members / أطراف الرخصة

Share / حصص	Role / صفة	Nationality / جنسية	No / رقم الشخص	Name / إسم
	Manager / مدير	United Arab Emirates / الامارات	8543	HAMAD MAJID AHMAD MAJID ALGHURAIR / حمد ماجد احمد ماجد الغرير

License Activities / نشاط الرخصة التجارية

Insulation Materials Manufacturing — صناعة المواد العازلة
Building Metal Products Manufacturing — صناعة الاشكال المعدنية للمباني
Metal Doors & Windows Manufacturing — صناعة الابواب والنوافذ المعدنية
Fire Resistant Doors Manufacturing — صناعة الابواب المقاومة للحريق
Aluminium Rolling — درفلة الالمنيوم
Automatic Gates & Barriers Manufacturing — صناعة البوابات والحواجز الالية
Metal Parts & Erections Contracting — تركيب التجهيزات والاجزاء المعدنية
Insulation Contracting — تركيب المواد العازلة في الأبنية والمنشآت المدنية

Address / العنوان

Telephone: 971-4-8885600 — تليفون — P.O. Box: 14225 — صندوق البريد
Fax: 971-4-8801700 — فاكس — Parcel ID: 506-145 — رقم القطعة
Mobile No: 971-50-6252684 — الهاتف المتحرك — صنع ملك مؤسسة دبي للعقارات - جبل علي الصناعية الثانية

Remarks / الملاحظات
تم اضافة النشاط بتاريخ 2/4/2013

Print Date 26/09/2017 10:56 تاريخ الطباعة — Receipt No. 127095479 رقم الإيصال

يمكنك الآن تجديد رخصتك التجارية من خلال الرسائل النصية القصيرة أرسل رقم الرخصة إلى 6969 لتتلقى رسالة للحصول على الرقم السري
Now you can renew your trade license by sending a text message (SMS). Send your trade license number to 6969 (Dcci/ Etisalat) to receive payment
www.dubaided.gov.ae وثيقة إلكترونية معتمدة وسارية بدون توقيع من دائرة التنمية الاقتصادية لمراجعة صحة البيانات الواردة في الرخصة يرجاء زيارة الموقع
Approved electronic document issued without signature by the Department of Economic Development. To verify the license kindly visit

Attention Refer to remarks
تنبيه يرجى قراءة الملاحظات

Commercial License

GOVERNMENT OF DUBAI
اقتصادية دبي
DUBAI ECONOMY

شهادة شهر قيد شركة في السجل التجاري
Commercial Register

Register Details / تفاصيل القيد

Main License No. 300675 — رقم الرخصة الام — Register No. 40535 — رقم القيد
Company Name — الشرق الاوسط للعوازل ش.ذ.م.م — الاسم التجاري
MIDDLE EAST INSULATION (L.L.C)
Legal Type: Limited Liability Company(LLC) — ذات مسئولية محدودة — الشكل القانون
Expiry Date: 16/09/2018 — تاريخ الإنتهاء — Issue Date: 02/08/1992 — تاريخ الإصدار
D&B D-U-N-S ® No.: 561958857 — الرقم العالمي

Capital Details / تفاصيل راس المال

Nominated: 2,300,000 — الاسمي
Paid: 2,300,000 — المدفوع
No. of Shares — عدد الأسهم
Currency: UAE Dirhams — درهم اماراتي

License Address / عنوان الرخصة

مصنع ملك مؤسسة دبي للعقارات - جبل علي الصناعية الثانية

Commerce Registry Address / عنوان السجل التجاري

مصنع ملك مؤسسة دبي للعقارات - جبل علي الصناعية الثانية

Activities / أنشطة السجل

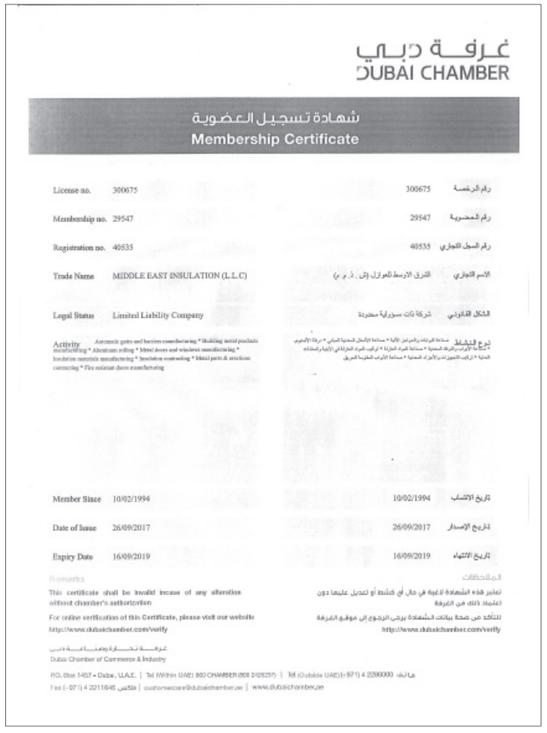
Metal Parts & Erections Contracting — تركيب التجهيزات والاجزاء المعدنية
Insulation Materials Manufacturing — صناعة المواد العازلة
Insulation & Protection Materials Trading — تجارة المواد العازلة والواقية
Insulation Contracting — تركيب المواد العازلة في الأبنية والمنشآت المدنية
Automatic Gates & Barriers Manufacturing — صناعة البوابات والحواجز الالية
Building Metal Products Manufacturing — صناعة الاشكال المعدنية للمباني
Aluminium Rolling — درفلة الالمنيوم
Metal Doors & Windows Manufacturing — صناعة الابواب والنوافذ المعدنية
Fire Resistant Doors Manufacturing — صناعة الابواب المقاومة للحريق

Attention Refer to remarks
تنبيه يرجى قراءة الملاحظات

Print Date 26/09/2017 10:56 تاريخ الطباعة — Receipt No. 127095479 رقم الإيصال

يمكنك الآن تجديد رخصتك التجارية من خلال الرسائل النصية القصيرة أرسل رقم الرخصة إلى 6969 لتتلقى رسالة للحصول على الرقم السري
Now you can renew your trade license by sending a text message (SMS). Send your trade license number to 6969 (Dcci/ Etisalat) to receive payment
www.dubaided.gov.ae وثيقة إلكترونية معتمدة وسارية بدون توقيع من دائرة التنمية الاقتصادية لمراجعة صحة البيانات الواردة في الرخصة يرجاء زيارة الموقع
Approved electronic document issued without signature by the Department of Economic Development. To verify the license kindly visit

Dubai Chamber Certificate



غرفة دبي
DUBAI CHAMBER

شهادة تسجيل العضوية
Membership Certificate

License no. 300675 — رقم الرخصة
Membership no. 29547 — رقم العضوية
Registration no. 40535 — رقم السجل التجاري
Trade Name: MIDDLE EAST INSULATION (L.L.C) — الاسم التجاري
Legal Status: Limited Liability Company — شركة ذات مسؤولية محدودة — الشكل القانوني
Activity: Automatic gates and barriers manufacturing * Building metal products manufacturing * Aluminium rolling * Metal doors and windows manufacturing * Insulation materials manufacturing * Insulation contracting * Metal parts & erections contracting * Fire resistant doors manufacturing — نوع النشاط
Member Since 10/02/1994 — تاريخ الانتساب
Date of Issue 26/09/2017 — تاريخ الإصدار
Expiry Date 16/09/2019 — تاريخ الانتهاء

Remarks / الملاحظات
This certificate shall be invalid incase of any alteration without chamber's authorization
تعتبر هذه الشهادة لاغية في حال أي كشط أو تعديل عليها دون اعتماد ذلك من الغرفة
For online verification of this Certificate, please visit our website http://www.dubaichamber.com/verify
للتأكد من صحة بيانات الشهادة يرجى الرجوع إلى موقع الغرفة http://www.dubaichamber.com/verify

غرفة تجارة وصناعة دبي
Dubai Chamber of Commerce & Industry
P.O. Box 1457 • Dubai, U.A.E. | Tel (Within UAE) 800 CHAMBER (800 2426237) | Tel (Outside UAE) (+971 4 2200000 هاتف
Fax (+971 4 2211645 فاكس | customercare@dubaichamber.ae | www.dubaichamber.com

Commercial License

مركز أبوظبي للأعمال
Abu Dhabi Business Center

دائرة التنمية الاقتصادية
DEPARTMENT OF ECONOMIC DEVELOPMENT

Commercial License — رخصة تجارية

License No : CN-1536324 — رقم الرخصة
Unified ID for ADCCI : 315769 — الرقم الموحد لغرفة ابوظبي
Legal Form : UAE Branch - Dubai — الشكل القانوني : فرع امارتية - دبي
Trade Name : Middle East Insulation (Llc) - Branch Of Abu Dhabi 1 — الإسم التجاري : الشرق الاوسط للعوازل (ش ذ م م) - فرع أبو ظبي 1
Establishment Date : 11/06/2013 — تاريخ تاسيس المنشأة
Issue Date : 27/07/2017 — تاريخ الإصدار
Expiry Date : 26/07/2018 — تاريخ الإنتهاء

نوع الشراكة Partner	الجنسية Nationality	الوصف Description	الرقم No.
Owner مالك	United Arab Emirates دولة الإمارات العربية المتحدة	MIDDLE EAST INSULATION (LLC) الشرق الاوسط للعوازل (ش ذ م م)	300675

Commercial Activities : الانشطة التجارية
- Wholesale Of Fire Resistant Doors Trading - تجارة الابواب المقاومة للحريق - بالجملة
- Importing - استيراد
- Wholesale Of Safety And Fire Fighting Equipment And Devices Trading - تجارة معدات واجهزة السلامة واطفاء الحريق - بالجملة
- Wholesale Of Insulating Material Trading - تجارة المواد العازلة - بالجملة

Address : مصفع الصناعية، م 43 - ق 117 - مكتب 3، المالك : احمد عبدالله عامر القلاسي & محمد بن راشد بن خلف عبدالله العتيبه العنوان

تشهد غرفة ابوظبي بموجب القانون رقم 27 لعام 2005 بأن المنشأة المذكورة أعلاه قد سجلت لدينا
Abu Dhabi Chamber certifies that the above mentioned establishment has been registered in accordance with the law No.27 of 2005
وثيقة معتمدة وصادرة بدون توقيع او ختم من دائرة التنمية الاقتصادية - ابوظبي للتحقق من صحة البيانات الواردة في الرخصة يرجاء زيارة الموقع http://www.ded.abudhabi.ae
Approved document issued without signature or stamp by the Department of Economic Development - Abu Dhabi. To verify the license kindly visit http://www.ded.abudhabi.ae
This Document is Considered As Commercial Register تعتبر هذه الوثيقة بمثابة سجل تجاري

غرفة أبوظبي
ABU DHABI CHAMBER

http://ded.abudhabi.ae

US Green Building Council Certification

Middle East Insulation L.L.C. have obtained Member Certification from US Green Building Council

U.S. GREEN BUILDING COUNCIL MEMBER
ORGANIZATIONAL

MIDDLE EAST INSULATION
MEMBER SINCE JULY THE 29TH 2015

The U.S. Green Building Council is the nation's foremost coalition of leaders working to transform the way buildings and communities are designed, built, and operated, enabling an environmentally and socially responsible, healthy, and prosperous environment that improves the quality of life.

S. RICHARD FEDRIZZI
President, CEO, & Founding Chair

Dubai Civil Defence Certificate

إدارة السلامة الوقائية - إدارة إعتماد الشركات

رقم الترخيص: M57
سنة الترخيص: 2017
عدد الترخيص: (4 – 3)
اسم المصنع: الشرق الأوسط للعوازل

أبواب مقاومة حراية مقاومة للحريق
Fire Rated Shutter Door
• Rolling Steel Fire Doors:
Fire Rated Steel Rolling Shutter
Max. Opening Size: 8000 mm Width × 6100 mm High,
Opening Size, Meter Squre, Should be as per UAE CoC Certificate No. CF 5154
Integrity:- 60, 120 Min,
Insulation: 0 Min.

أبواب مقاومة للحريق
Fire Rated Steel Doorset
• Steel Doorset:
Fort – Single Leaf Single Swing (Honeycomb) Steel Doorset, without Vision Panel,
Max. Leaf Size: 1125 mm High × 870 mm Wide,
Overall Dimensions: 2200 mm High × 970 mm Wide,
Integrity: 240 Min,
Insulation: 0 Min.

ملاحظة :
يعتمد، عن مدير الإدارة العامة للدفاع المدني

United Arab Emirates
Ministry of Interior
Civil Defense G.H.Q.
General Directorate of Civil Defense Dubai

دولة الإمارات العربية المتحدة
وزارة الداخلية
القيادة العامة لإدارة المجتمع
الإدارة العامة للدفاع المدني - دبي

Tel.: 009714 2611111
Fax : 009714 2612449
P.O. Box 11372 Dubai
United Arab Emirates

للطوارئ
Emergency
997
www.dcd.gov.ae

أن تكون دولة الإمارات العربية المتحدة من أفضل دول العالم أمناً وسلامة

DCL Product Conformity Certification

Middle East Insulation L.L.C. have obtained Certification for Product Conformity from Dubai Central Laboratory (DCL) of Dubai Municipality.

GOVERNMENT OF DUBAI
DUBAI MUNICIPALITY

CERTIFICATE OF PRODUCT CONFORMITY

Dubai Central Laboratory Department (DCL) of Dubai Municipality, hereby attests that the product(s):

FACTORY MADE RIGID POLYURETHANE FOAM
(Details as per the attached Scope of Certification)

manufactured by:
MIDDLE EAST INSULATION LLC
P.O. Box 14225, Jebel Ali Industrial 2, Dubai, U.A.E.

have been assessed in accordance with DCLD Document Ref. No. RD-DP21-2001 (C) "General Rules for DM third party product certification system through factory assessment" and the relevant Specific Rules, and were found in conformity with the standard specification:

BS EN 13165: 2012

Accordingly, DCLD hereby authorizes the above manufacturer to affix the DCL Product Conformity Mark to the above-mentioned product(s).

for / ENGR. AMIN AHMED AMIN
Director, Dubai Central Laboratory Department
Dubai Municipality

Verify:
Certificate No: CL13020161
Valid Until: 02 April 2018
CB-003-PRD
PRODUCT CONFORMITY
Current Issue Date: 02 April 2017
Original Issue Date: 02 April 2012
The attached Scope of Certification bearing the same Certificate No. forms an integral part of this certificate.
This certificate is subject to the Terms and Conditions of the Product Certification System and shall not be reproduced except in full.
F-IC-2031 REV 10

MEIAJI 0303-2016

الشـرق الأوسـط للعـوازل ذ.م.م.

Middle East Insulation LLC

Quality Cladding Systems

Jebel Ali Industrial Area 2, P.O. Box: 14225, Dubai - UAE
Tel:+9714-8801600 | Fax:+9714-8801700
E-mail : contact@mei-uae.com | Website : www.mei-uae.com