Galvalume® is a trade mark of BIEC International Inc (USA)
licensed to YP Enterprise Co. Ltd.
ColorLume® is a registered trade mark of
Yieh Phui Enterprise Co., Ltd

Formed with ColorLume® Galvalume®

Locally produced & custom-cut using modern machinery

Supply and fix service

FPC & ISO 9001-2015 Certified

We are aware of the importance of having shelter over our heads.
We also understand overheads.
Talk to us about our competitive pricing and services.
We are standing by to receive your call.

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You Inspire, **We Deliver.**

M-SEAM 300/320/ 530/505

SINGAPORE GREEN BUILDING PRODUCT SGBC LEADER

SGBP 2018-1364
SGBP 2018-1365

METAL

M Metal - a game changer

M Metal is a Singapore-based manufacturer of high quality steel and non-steel roofing and walling products.

We started the company in 2007 in response to what we saw was a growing industry need for a responsible supplier, which believes in the value of forging partnerships with stakeholders in order to deliver innovative, reliable and customized solutions. It is our breadth and depth of specialized knowledge, combined with our stakeholders' awareness of their client needs, which results in a win-win collaboration.

M-SEAM 300/320/ 530/505 Excellent roof system with cost and aesthetic appeals

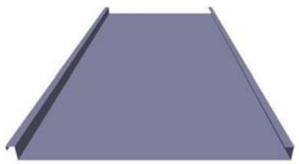
M-Seam 300 / 320 / 530 / 505 architectural standing seam roof and wall profile provides excellent watertightness, superior wind uplift resistance, structural integrity and sleek appearance. It is a profile highly regarded by designers, architects and building owners worldwide for its durability, flexibility and adaptability.

M-Seam 300 / 320 / 530 / 505 from M Metal Pte Ltd are engineered meticulously with German technology machinery ensuring that all profiles are accurately manufactured.

The profile comes in 25mm and 38mm seam heights which are mechanically seamed to form the locked seams.

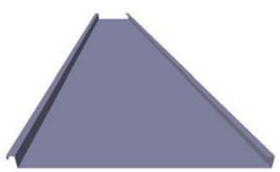
The 38mm seam height provides better water carrying capacity, however the lower 25mm seam height exudes modernity and an almost seamless appearance.

The profile is available in various materials such as pre-painted coated steel and non-ferrous metal adapting well to any roof geometry. The profile can also be rolled to form straight, curve, tapered and tapered curve panels.



Straight Panel

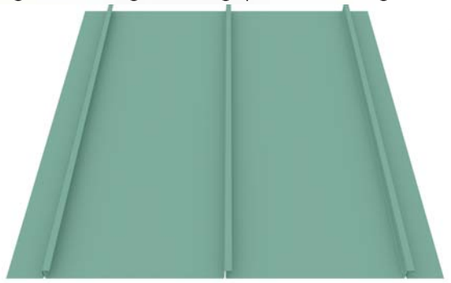
Convex Curve Panel

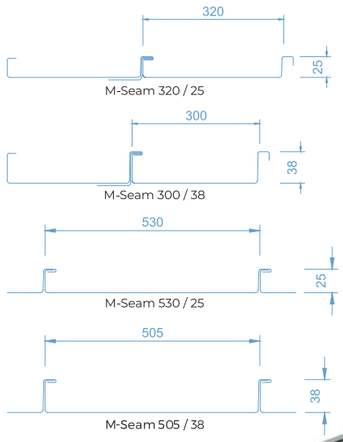


Tapered Panel

Our sense of responsibility extends to workplace safety. We strongly believe that good safety equates good business. Through regular training sessions, we make sure that our workers, and also those of our contractors, are able to do a good job safely.

Staffed by experienced professionals with an in-depth knowledge of the industry and who are motivated by the company's vision - to be the industry's preferred building solutions provider from concept to completion - we aim to be a game-changer in Singapore's building industry.





Benefits of M-SEAM 300 / 320 / 530 / 505

- M-Seam 300 / 320 / 530 / 505 inter-locking feature provides excellent watertightness.
- It conforms to International and Singapore Standards.
- Concealed fixing without exposed fasteners enhances aesthetic value.
- Versatile for both vertical and inclined applications.
- Quick and easy to install with locked seam fixing method.
- Lightweight, durable and weather-resistant.
- Effective acoustic insulation.
- It has good water-carrying capacity and is reliably watertight.
- Used for variety of applications including for roofs, building facade and even internal ceilings.
- ✔✔✔✔ **Leader** Green mark certified by Singapore Green Building Council (SGBC).

Material Specification

Physical Properties

	M-Seam 300	M-Seam 320	M-Seam 530	M-Seam 505
Base Metal Thickness	0.55mm	0.55mm	0.55mm	0.55mm
Total Coated Thickness	0.61mm	0.61mm	0.61mm	0.61mm
Weight	6.10Kg/m^2	5.72Kg/m^2	5.23 Kg/m^2	5.49 Kg/m^2
Effective Cover Width	300mm	320mm	530mm	505mm
Rib Height	38mm	25mm	25mm	38mm

Recommended Roof Pitch

Sheet length without end lap	3° (approx 1 in 20)
Sheet length with end lap	5° (approx 1 in 12)

The base meterial of M-Seam 300 / 320 / 530 / 505 is a protected steel sheet with a minimum yield stress of 300MPa (Grade G300) finished with high color and gloss retention ColorLume® paint system. The substrate is coated with metallic hot-dipped zinc/aluminium alloy comprising 55% Aluminium, 43.5% Zinc and 1.5% Silicon for long-term performance against corrosion.

The minimum total coating mass for the zinc/aluminium alloy is 200 g/m^2 or AZ 200* coating class as determined by Australia Standard AS1397-2011.

* AZ 200 is widely known as Galvalume®, a registered trademark of BIEC International Inc (USA) licensed to YP Enterprise Co., Ltd.

Material Performance Test

Typical Properties	Test Standard (Method)	Correspond to Singapore Standard SS631:2017*
T-Bend Test	ASTM D 4145-10	AS/NZS 2728
Pencil Hardness	ASTM D 3363-05 (2011)	ASTM D 3363
Colour	ASTM D 2244-16	SS Part E3
Specular Gloss	ASTM D 523-14	SS 5 Part E1
Dry Film Thickness	ASTM D 7091-13	SS 5 Part B1
Impact Resistance	JIS K5600-5-3	ISO 6272
Humidity Resistance	JIS K5600-7-2 : 1999	SS 5 Part G6
Cross Cut Adhesion	JIS K5600-5-6 : 1999	ISO 2409

Corrosion and Weathering	Test Standard (Method)	Correspond to Singapore Standard SS631:2017*
Salt Spray Test	ASTM B 117-16	SS 5 Part G10
Weathering Test	ASTM G 154-16	SS 5 Part G9
Acid Resistance (10%v/v HCL)	JIS K5600-6-1 : 2016	ISO 2812

* Material performance for the manufacture of profiled roof and wall cladding conforms to Singapore Standard 631 : 2017 Specification for Metal Roofing.
* Fire Classification A1 in accordance to EN 13501-1 and Class 0 in BS 476 Part 6 & 7.

Finishes

M-Seam 300 / 320 / 530 / 505 is finished with ColorLume® PVDF (70/30) and SMP factory finished paint systems.

The detailed coating composition is as follows:

Finish Coat*
- **ColorLume® PVDF** : High performance Polyvinylidene Fluoride (abbreviated PVDF or called Fluorocarbon) with full strength 70% of KYNAR® 500 or HYLAR® 5000 premium resin is used. 20µm nominal dry film thickness.
- **ColorLume® SMP** : Custom formulated Silicon Modified Polyester (SMP) paint system. 20µm nominal dry film thickness.

Primer Coat
Anti-corrosion inhibitive polyurethane primer. 5µm nominal dry film thickness on both sides.

Pre-treatment
With proprietary conversion film to achieve excellent adhesion between the steel surface and paint finish on both sides.

Substrate
AZ 200 alloy coated steel. AZ comprises 55% Aluminium, 43.5% Zinc and 1.5% Silicon (by weight) in accordance to ASTM A792M. Minimum coating mass, 200 g/m^2 on both sides.

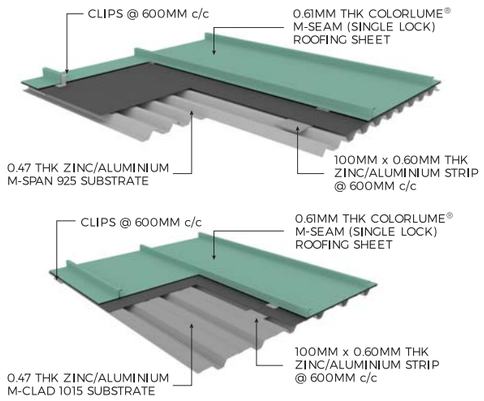
Backing Coat
Custom formulated polyester coating, Light Grey for PVDF and Egret White for SMP. 10µm nominal dry film thickness.

Gloss
Nominal gloss level of 25 GU at 60° reflection angle.

* For colour selection, please refer to our color chart or the actual color plate sample. Maximum specular gloss allowed is 30 G.U. (Gloss Unit) as measured at 60° reflection angle in accordance to ASTM D 523 : 2008 / SS 5 Part E1 : 2003 / BS EN 13523-2 Performance Standards).

Substrate

M-Seam 300 / 320 / 530 / 505 roof profile requires solid surface such as M-Span 925 or M-Clad 1015 as substrate.



M-Seam 300 / 320 / 530 / 505 are also available in non-ferrous metal.

Design Performance

M-Seam 300/320/530/505 Limit State Wind Pressure Capacity - kPa

M-Seam 300 / 320 / 530 / 505 have been tested against high wind pressure and cyclonic load. The test was carried out complying with ASTM E330 for Structural Adequacy Test under Static Pressure, were also undertaken on Structural Adequacy test under BD PNAP 106 cyclic. No disengagement, failure or gross permanent deformation observed when testing was performed.

The simulation and tests were conducted at HOKLAS (Hong Kong Laboratory Accreditation Scheme) specially designed prefabricated steel chamber.

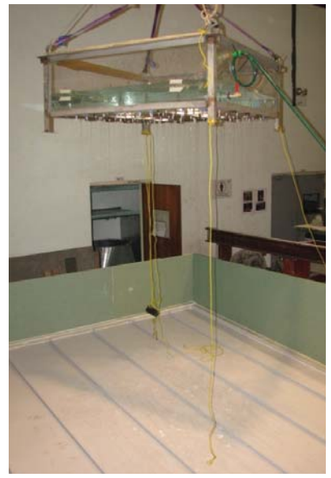
Test & Compliance	Wind Pressure (kPa)	Observation	Comment
Structural Adequacy (ASTM E330)	+1.82/ -4.004	No failure	Satisfactory
Structural Adequacy (Cyclic to BD PNAP 106)	+1.82/ -4.004	Deflection satisfactory	Satisfactory
	Safety up to +2.275/ -5.005	Recovery satisfactory No damage	

	Min Radius (mm)	Max Radius (mm)
0.55mm BMT / 0.61mm TCT	600	5000

Rain Impact Noise Test

M Metal Pte Ltd is the first company in Singapore who has done Rain Impact Noise test in accordance to ISO 140-18:2006 (E) "Laboratory measurement of sound generated by rainfall on building elements". The test was done at TUV SUD PSB Pte Ltd laboratory in September 2011.

Test results showed that M Metal Pte Ltd roof system has overall A-weighted Sound Intensity level of 42.2 (dBA).



Site Rolling

One of the most valuable services M Metal offers is site rolling, whereby cladding – in particular, long-length cladding can be roll-formed on site itself with a roll-former.

Benefits:

- Greater convenience for projects where roof length is over transportable limits
- Better watertightness, as there is no need to compromise by resorting to having several end-laps over the whole roof length
- Versatility, as the roll former can be placed at the ground level or roof level, whichever suits the site conditions
- Time savings, as the roll former can be quickly re-positioned to where the cladding is required
- Self-sufficient production reduces on-site labour and packing requirements

M Metal can manufacture all its roof and wall cladding profiles, including M-Seam 300 / 320 / 530 / 505 on-site.

Fixing

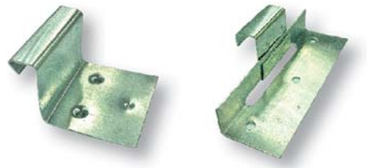
Fasteners

It is important that the correct fasteners are used so that it is compatible with the cladding material selected and matches with the cladding's life expectancy.

The fasteners used for installation of M-Seam 300 / 320 / 530 / 505 sheeting to the purlin and structural support should conform to AS3566:2002 – Class 3 or Class 4, and should be self-drilling with a wafer head.

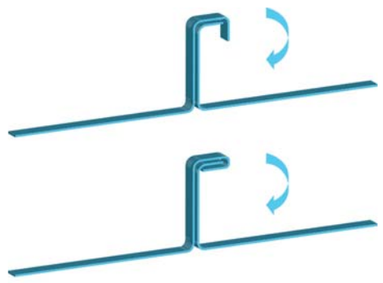
Fixed Clips

Concealed clips are used for M-Seam 300/ 320 / 530 / 505 roof profile. It comprises of fixed & sliding clips. Sliding clips are normally used for non-ferrous metal to accommodate panel increased movement (contrattion and expansion).

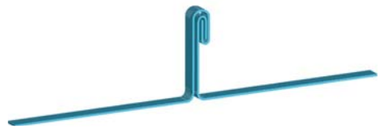


Fixed clips Sliding clips

Seamless Process



Single lock recommended for pre-painted steel

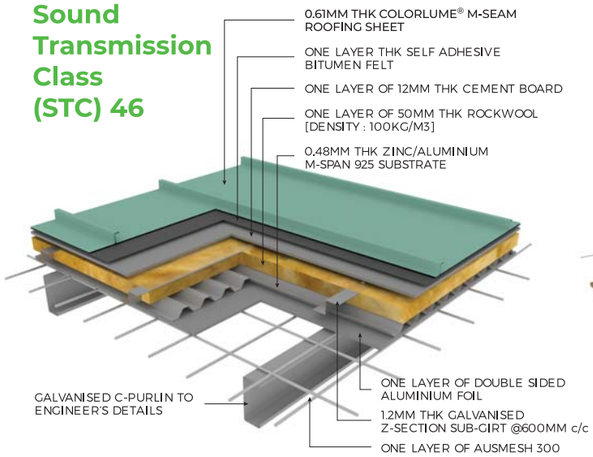


Double lock recommended for non-ferrous metal

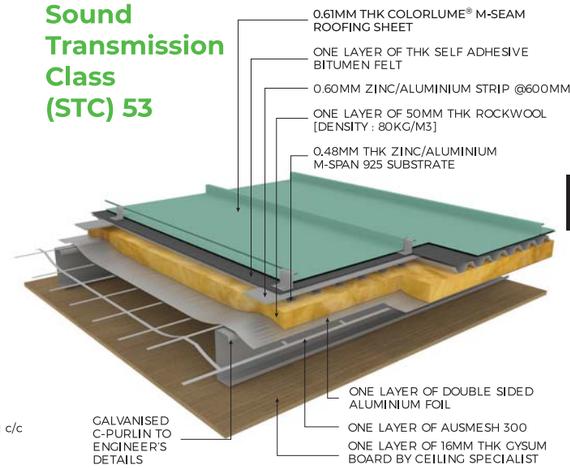
Acoustic Roof System

M-Seam 300 / 320 / 530 / 505 typical roof build-up which is commonly used for institutional, commercial and residential projects segment has been tested for its acoustic performance in accordance with ASTM E90-04 at TUV SUB PSB Pte Ltd.

Sound Transmission Class (STC) 46



Sound Transmission Class (STC) 53



* Ausmesh 300 safety mesh is designed to support insulation and to help prevent construction roof workers from falling.

Please contact M Metal Pte Ltd, Technical Department for all technical matters and assistance with your roof design

Compatibility

All products should be checked for compatibility with adjacent materials before installation. It is important to check the implications of direct contact between materials, and water runs from one material to another.

Galvalume®/ColorLume® SMP/ColorLume® VF-20L (70/30) PVDF coated steel sheets should not be placed in direct contact with copper, lead, green or treated timber, stainless steel, mortar or concrete.

Delivery / Unloading

M Metal provides a shorter lead-time than other manufacturers because its manufacturing facility is located in Singapore. Delivery can be made within 3 working days subject to the delivery location, quantity and material availability.

Please ensure that suitable arrangements have been made for truck unloading. When lifting M-Seam 300 / 320 / 530 / 505, care should be taken to ensure that the load is spread evenly to prevent damage.

Length

M-Seam 300 / 320 / 530 / 505 roof and wall claddings are supplied cut-to-length. Regulatory limits for transporting long products by the local transport authority should be verified. The manufacturing tolerance on the length of product supplied is ±0-15mm.

Handling / Storage

M-Seam 300 / 320 / 530 / 505 should be handled with care at all times to preserve the quality of its finish and product capabilities. M-Seam 300 / 320 / 530 / 505 packs should be stored above ground level while on-site and kept dry.

Oil Canning

Oil canning describes how flat surfaces tend to show variations in reflectivity (waviness). The level of oil canning depends on the ability of the metal sheet to distribute stresses caused by temperature change across the surface. Oil canning is inherent in flat sheets; it is a characteristic, not a defect, and it should not be used as the basis for panel rejection.