TSS

บริษัท ไทยซินคอน แอนด์ ซัพพลาย จำกัด
THAI SYNCON & SUPPLIES CO., LTD.

PURLIN

Hi-PUR ไฮเพอร์

Hi-Tensile Galvanized Purlin System

LRQA CERTIFIED ISO 9001

UKAS MANAGEMENT SYSTEMS 0001

www.thaisyncon.com

Hi-Tensile Galvanized Purlin System

Philosophy & Engineering Rationale We believe that high-quality purlins and structural framing must possess sufficient structural integrity to support roofing loads and utilize corrosion-resistant materials for long-term durability. Conventional mild steel structural sections often fail this criterion due to susceptibility to rust and inconsistent quality control in on-site painting.

Consequently, **Thai Sincon & Supply Co., Ltd.** has developed the **“Hi-PUR”** manufacturing process. These are high-tensile steel purlins and frames with a Minimum Yield Strength of 450 MPa, processed through a continuous hot-dip galvanization method.

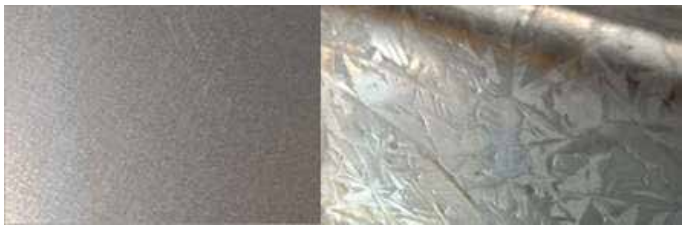
The **“Hi-PUR”** system offers a lightweight, highly efficient load-bearing solution that allows for rapid and easy installation. Its superior structural properties allow for wider column spans, accelerating construction timelines. The pre-coated corrosion resistance eliminates the need for on-site painting. Crucially, the **“Hi-PUR”** system optimizes overall construction costs, facilitating better budget control.

Material Properties: Hi-PUR

Thickness (BMT)	1.0 mm.	1.2 mm.	1.5 mm.	1.9 mm.	2.3 mm.	2.4 mm.	3.0 mm.
Yield Strength	550 MPa	500 MPa	450 MPa				
Coating	Galvanized Z275, Galvalume AZ150, Magnesium ZM180						

Surface Finish Differentiation:
Hi-PUR vs. Conventional Galvanized Purlins

Zero Spangle (Hi-PUR)



Normal Spangle

Application & Profiles

• **Hi-C (C-Section):** Suitable for both single simply supported spans and continuous spans without overlapping (butt joints). Primarily used for general building framing. Note: C-sections cannot be nested (overlapped).

• **Hi-Z (Z-Section):** Designed for single simply supported spans and continuous spans with overlapping capabilities. It is ideal for multi-span buildings. The lapping (nesting) of Z-sections at supports significantly increases structural strength.

Installation Advantages

• **Bolt & Nut System:** Easy, fast, and requires no welding.

• **Lightweight:** Reduces structural dead load and simplifies lifting.

• **Aesthetics:** "Zero Spangle" finish reduces dust accumulation and provides a superior appearance compared to standard galvanizing.

• **Environmental:** No on-site painting or welding fumes.

Hi-PUR Technical Specification

Comparative Analysis: Surface Finish, Cost, and Quality

1. Surface Finish Differentiation

FEATURE	HI-PUR (HIGH TENSILE)	CONVENTIONAL GALVANIZED
Spangle Technology	Zero Spangle (Smooth/Matte)	Regular Spangle (Crystalline/Uneven)
Dust Resistance	**High Resistance.** Smooth surface prevents dust adhesion.	**Low Resistance.** Texture traps dust and moisture.
Aesthetics	Modern, premium, and uniform appearance.	Traditional industrial look; can appear mottled.
Coating Uniformity	Continuous hot-dip **(Z275)** ensures consistent thickness.	Variable thickness due to batch processing.

2. Cost Efficiency Analysis

COST FACTOR	HI-PUR ADVANTAGE	CONVENTIONAL STEEL ISSUE
Cleaning & Painting	**None Required (Pre-Galvanized)**	Requires cleaning + primer + 2 topcoats (~35 Baht/sq.m)
Installation Method	Bolt & Nut System (Fast)	Welding required (Slow, needs touch-ups)
Work Efficiency	2.5x Faster (Immediate Install)	Slow (Waiting for paint/welding)
Est. Install Cost	**~3 Baht/kg**	~7 Baht/kg

3. Quality & Performance

Structural Strength

Hi-PUR:	**450 MPa (Min Yield)**
Mild Steel:	~245 MPa

Corrosion Protection

Hi-PUR: Z275 Standard (275 g/m²). Certified rust protection without on-site painting.

Mild Steel: Dependent on manual painting quality; lifespan 1-2 years if poorly applied.

Corrosion Protection & Material Compatibility

When selecting Hi-PUR High Tensile Purlins, consider the following environmental factors:

- Adverse Environments: Heavy industrial zones, agricultural settings, or severe marine environments.
- Incompatible Metals: Contact with lead or copper must be avoided.
- Moisture: Alternating wet/dry conditions or contact with high-moisture materials (e.g., green timber).
- Chemical Treatment: Contact with chemically treated wood (e.g., preservatives).

Definition of "Non-Severe Corrosion Area":

Areas located at least 1,000 meters from surf/rough seas or 750 metersfrom industrial exhaust/fuel combustion sources. Interior usage conditions must also be evaluated.

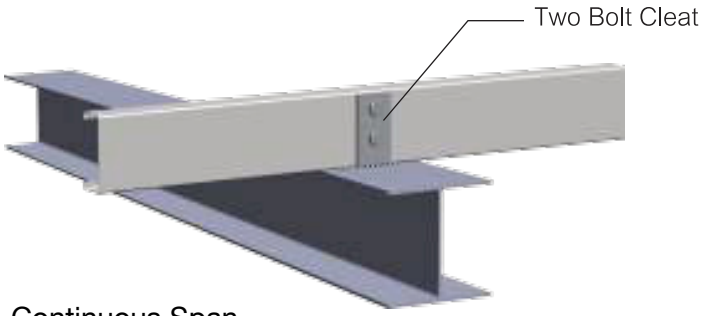
Design Factors Affecting Load

- Rafter Spacing
- Purlin Spacing
- Roof Slope

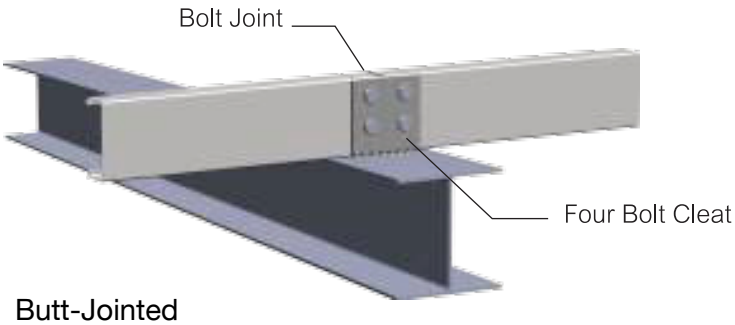
On-Site Storage

If not installed immediately, purlins should be stored off the ground on sleepers (dunnage) with a slight incline to facilitate drainage. Avoid prolonged outdoor exposure before installation.

Installation Bolt "Hi-C"

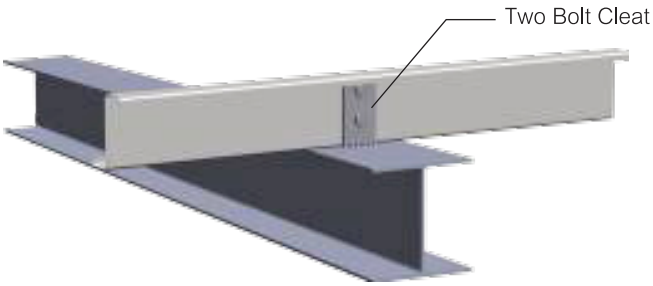


Continuous Span

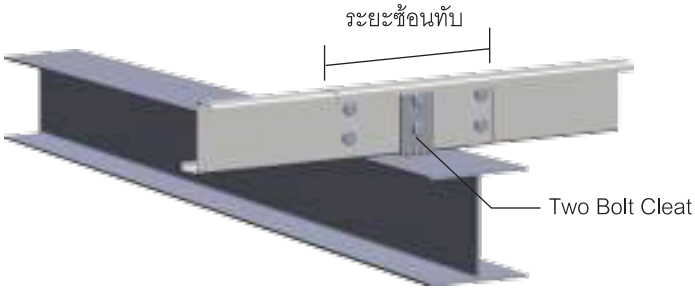


Butt-Jointed

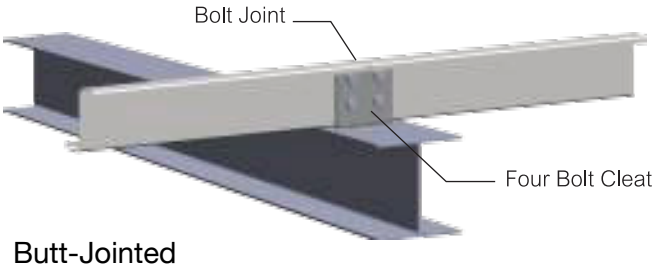
Installation Bolt "Hi-Z"



Continuous Span



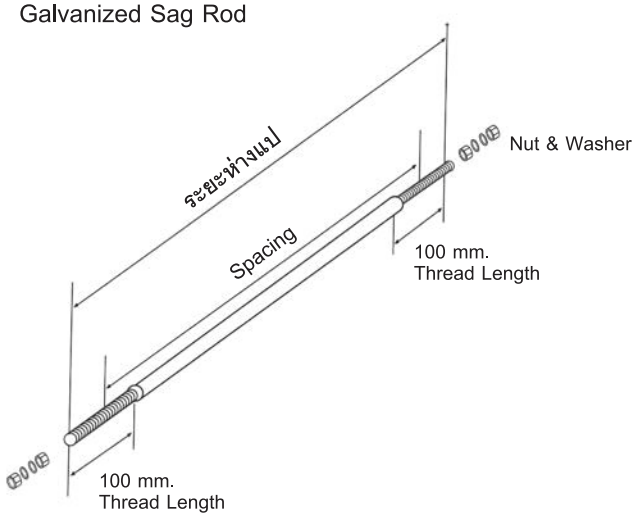
Overlapping



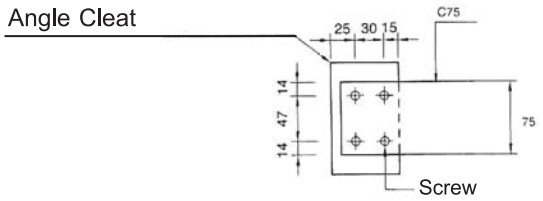
Butt-Jointed

Installation Accessories

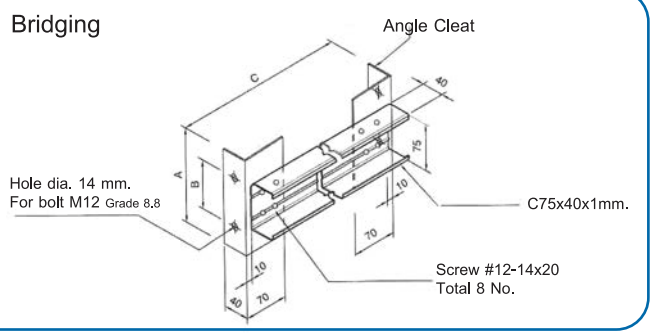
Galvanized Sag Rod



Angle Cleat



Bridging



Structural Details Cleating (Connections)

- Standard Connection: Hi-PUR connected via cleats (steel plates). The load is transferred through the web.
- Thickness: Cleat thickness generally equals purlin thickness.
- Overlapping: For nested connections (Hi-PUR), the connection thickness is double the purlin thickness.
- Fastening: Requires two bolts per cleat at each connection point.

Deflection Criteria

While there is no single mandated code for purlin deflection, calculations should consider the specific structural application. Deflection checks are recommended under various load combinations for accuracy:

- Total Load: L/150 to L/240
- Combined Dead & Live Load: L/150 to L/240
- Live Load Only: L/150 to L/240

Axial Loads

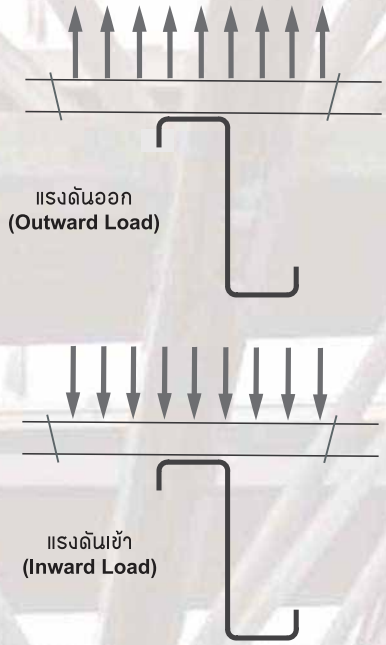
Unless subject to full torsional loading, the purlin system possesses inherent axial capacity. This allows the purlin system to transmit loads from wind pressure acting on walls or to function as compression/tension members in wall and roof bracing systems.

Overlap Assembly

Bolting is required at the lap joint to ensure structural continuity.

- Configuration: At each end of the lap, secure with two bolts—one near the bottom flange and one near the top flange.
- Lap Length: Measured between the two bolts securing the lap. This varies by span but must not be less than 10% of the span length.

Load Distribution on Purlins



Lap Lengths

Nominal Section Size (mm.)	Span (mm.)	Lap Length (mm.)
100	≤ 6000	600
	> 6000	900
150, 200, 250	≤ 9000	900
	> 9000 ≤ 12000	1200
	> 12000*	1800
300, 350	≤ 9000	900
	> 9000 ≤ 12000	1200
	> 12000 ≤ 18000	1800
	> 18000*	2400

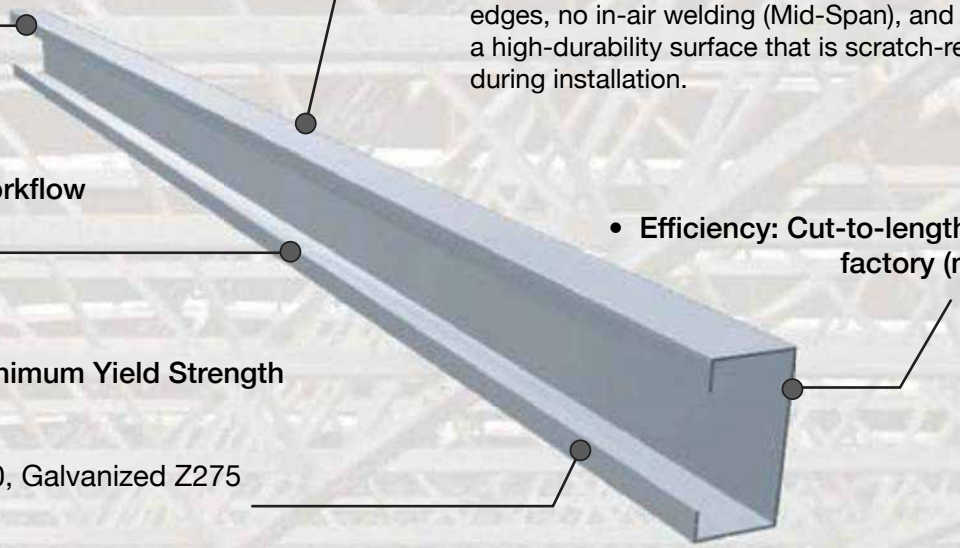
* Load capacities for these spans are beyond the scope of this publication

Key Features & Benefits Summary

- **Precision: Manufactured with modern machinery for exact thickness and quality.**

- **Fast and easy installation with our Lightweight Bolt & Nut System.**

Designed to save time and streamline your workflow: no touch-up painting required at cut edges, no in-air welding (Mid-Span), and featuring a high-durability surface that is scratch-resistant during installation.



- **Time-saving / Streamline workflow**

- **Efficiency: Cut-to-length from the factory (no waste).**

- **High Tensile Strength: Minimum Yield Strength 450 MPa.**

Durability: Zinc Coated G450, Galvanized Z275 (Corrosion Resistant).

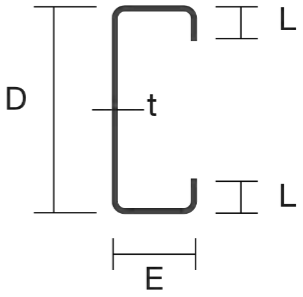
ตามเงื่อนไข และมาตรฐานของบริษัทไทยซินคอน แอนด์ ซัพพลาย จำกัด

The section profiles are designated by the profile of Z or C followed by the depth in millimeters (e.g., Z250, C100).

"Hi-C"

Features equal flanges and Ideal for simple structural framing.

Size	Dimensions				Section Area	Mass	Ix	Iy	Zx	Zy	Rx	Ry
	D	E	L	t								
	mm	mm	mm	mm	cm^2	kg/m	cm^4	cm^4	cm^3	cm^3	cm	cm
7510	75	45	12	1.00	1.76	1.44	16.34	4.91	4.36	3.05	3.05	1.67
7512	75	45	13	1.20	2.12	1.72	19.53	5.98	5.21	3.64	3.04	1.68
7515	75	45	13	1.50	2.63	2.13	23.99	7.29	6.40	4.44	3.02	1.67
7519	75	45	13	1.90	3.29	2.68	29.68	8.92	7.91	5.44	3.00	1.65
10010	102	51	15	1.00	2.21	1.80	37.08	8.11	7.27	4.68	4.10	1.92
10012	102	51	15	1.20	2.64	2.15	44.08	9.60	8.64	5.53	4.09	1.91
10015	102	51	15	1.50	3.27	2.67	54.34	11.74	10.66	6.77	4.08	1.89
10019	102	51	15	1.90	4.11	3.36	67.57	14.44	13.25	8.34	4.06	1.88
12510	127	53	15	1.00	2.50	2.03	63.16	9.59	9.95	5.85	5.03	1.96
12512	127	53	15	1.20	2.98	2.43	75.19	11.36	11.84	6.93	5.02	1.95
12515	127	53	15	1.50	3.70	3.03	92.86	13.90	14.62	8.48	5.00	1.94
12519	127	53	15	1.90	4.66	3.81	115.73	17.13	18.22	10.45	4.98	1.91
15012	152	65	15	1.20	3.57	2.91	130.77	19.78	17.21	10.19	6.05	2.35
15015	152	65	17	1.50	4.50	3.65	163.98	25.49	21.58	12.73	6.04	2.38
15019	152	65	17	1.90	5.67	4.63	204.96	31.56	26.97	15.77	6.01	2.36
15024	152	65	18	2.40	7.15	5.84	256.23	39.65	33.71	19.53	5.99	2.36



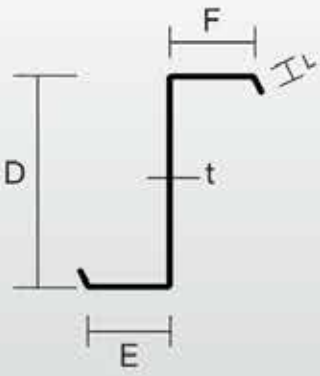
"Hi-Z"

Features one flange slightly wider than the other to allow for nesting.

Structural Benefit: When overlapped (nested) over supports, the double thickness significantly increases resistance to shear forces and bending moments. This allows the system to support higher loads.

Continuous Span: Hi-Z allows for continuous spans, saving cost and time. For shorter multi-span runs, Hi-Z can also be used without nesting to reduce deflection compared to single-span systems.

Size	Dimensions					Section Area	Mass	Ix	Iy	Zx	Zy	Rx	Ry
	D	E	F	L	t								
	mm	mm	mm	mm	mm	cm^2	kg/m	cm^4	cm^4	cm^3	cm^3	cm	cm
7510	75	45	40	14	1.00	1.79	1.44	16.71	10.46	4.58	2.13	3.05	2.41
7512	75	45	40	14	1.20	2.14	1.72	19.85	12.41	5.44	2.53	3.04	2.41
7515	75	45	40	14	1.50	2.66	2.13	24.45	15.25	6.71	3.12	3.03	2.39
7519	75	45	40	14	1.90	3.35	2.68	30.36	18.88	8.32	3.89	3.01	2.38
10010	102	53	49	14	1.00	2.23	1.80	38.27	16.32	7.64	2.83	4.14	2.70
10012	102	53	49	14	1.20	2.67	2.15	45.57	19.40	9.10	3.37	4.13	2.69
10015	102	53	49	14	1.50	3.32	2.67	56.31	23.89	11.24	4.16	4.12	2.68
10019	102	53	49	14	1.90	4.18	3.36	70.24	29.67	14.02	5.19	4.10	2.66
12510	127	53	49	16	1.00	2.52	2.03	64.38	17.71	10.29	3.02	5.05	2.65
12512	127	53	49	16	1.20	3.02	2.43	76.70	21.05	12.27	3.59	5.04	2.64
12515	127	53	49	16	1.50	3.76	3.03	94.93	25.94	15.19	4.44	5.03	2.63
12519	127	53	49	16	1.90	4.73	3.81	118.67	32.23	18.99	5.53	5.00	2.61
15012	152	65	61	16	1.20	3.61	2.91	132.93	35.47	17.73	5.02	6.07	3.14
15015	152	65	61	17	1.50	4.52	3.65	165.96	45.32	22.13	6.38	6.06	3.16
15019	152	65	61	18	1.90	5.66	4.63	209.34	58.44	26.59	7.45	5.98	3.12
15024	152	65	61	19	2.40	7.26	5.84	262.57	74.82	35.00	10.43	6.02	3.21
20012	203	79	74	16	1.50	4.54	3.67	293.32	58.16	29.28	6.94	8.04	3.58
20015	203	79	74	17	1.50	5.69	4.60	366.60	74.10	36.60	8.80	8.02	3.61
20019	203	79	74	20	1.90	7.30	5.82	468.77	100.91	46.79	11.77	8.01	3.72
20023	203	79	74	20	2.30	8.75	7.20	555.33	110.23	**54.01**	**13.76**	**7.97**	**3.55**
20024	203	79	74	20	2.40	9.18	7.41	585.87	125.38	58.48	14.67	7.99	3.70
25015	254	79	74	17	1.50	6.46	5.23	618.36	74.12	49.26	8.82	9.78	3.39
25019	254	79	74	17	1.90	8.27	6.59	791.53	100.93	63.04	11.79	9.78	3.49
25024	254	79	74	20	2.40	10.43	8.41	995.10	125.70	79.26	14.72	9.77	3.47
30019	300	100	93	27	1.90	10.14	7.98	1,380.48	195.52	107.75	26.33	11.66	4.38
30024	300	100	93	26	2.40	12.75	10.32	1,732.60	260.83	117.04	24.09	11.66	4.52



*For alternative sizes, please inquire with our staff.

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TSP Metal Works: Ban Bung, Chonburi

TPARK DG13: Bangna, KM.13

TPARK W4: Rojana Prachinburi

WHA Mega Logistic Center: Samutprakarn

Central Embassy: Chidlom, BKK

TSN Wire: Rayong

TSASE: Eastern Seaboard, Rayong

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