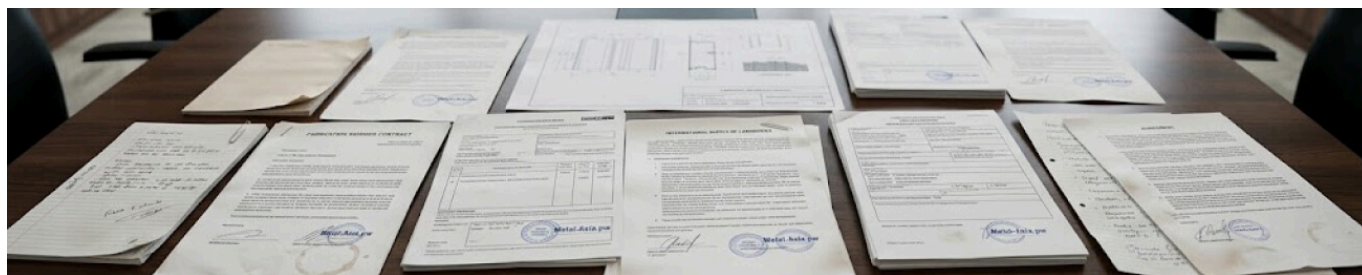


Metal-Asia

Overview of Original European Sheet Pile Profiles: ArcelorMittal ZU22 and PU600

Technical Reference Guide to Geometry, Steel Grades, and Global Market Availability

Metal-Asia.pw operates as a direct procurement partner with leading Chinese steel mills (Jinxi Steel, Grand Piling, Anshan Zizhu), delivering hot-rolled sheet pile sections without intermediary markups. Our engineering team maintains permanent presence at mill facilities, conducting ultrasonic testing (UT), non-destructive testing (NDT), and full chemical composition verification to ensure 100% lock compatibility with European standards. We speak the same technical language as our clients, understand international building codes (EN, ASTM, ISO), and guarantee full Supply Chain Compliance and legal transparency in every transaction. Lead technical expert: [Milos Kovacevic](#).



European hot-rolled sheet pile sections with high structural strength

Manufacturer Overview and Current Global Market Situation

ArcelorMittal is the world's largest steel producer and the sole manufacturer of hot-rolled sheet pile sections in Europe compliant with EN 10248-1:2023. Production facilities are located in Belgium (Ghent), France (Mardyck), and Luxembourg (Belval). Due to geopolitical restrictions and supply chain disruptions affecting European steel exports since 2022, direct procurement of original ArcelorMittal profiles has become increasingly constrained. Residual volumes are now sourced through third-country transshipment and secondary used-pile markets, creating supply shortages, price volatility, and delivery risks for international contractors and marine construction projects worldwide. In this environment, Metal-Asia.pw provides [Larssen Sheet Pile from China: B2B Supply and Engineering Selection](#), fully equivalent to European standards in strength and lock geometry.

ZU22 Series — Z-Section with Larssen Interlock

Geometric Parameters and Structural Features

Parameter	Value	Unit
Installation width	600	mm
Section height	420	mm

Parameter	Value	Unit
Web thickness	12.5	mm
Flange thickness	12.5	mm
Weight per meter	135.0	kg/m
Weight per square meter of wall	225.0	kg/m ²
Section modulus Wx	3200	cm ³ /m
Moment of inertia Ix	67200	cm ⁴ /m
Static moment	1840	cm ³ /m
Cross-sectional area per pile	180.0	cm ²
Theoretical lock rotation angle	5	degrees
Maximum bending angle	25	degrees

The ZU22 lock is manufactured according to the classic Larssen interlock configuration with double-hook connection. The lock geometry ensures tight joint sealing during vibro-driving without additional caulking, capability for 5-degree rotation to accommodate curved wall alignments, compatibility with AZ series profiles (ArcelorMittal) for combined wall systems, and wear tolerance of up to 1.5 mm without loss of watertightness. For projects requiring [multimodal logistics for industrial equipment from China](#), we arrange direct mill-to-port delivery through Vladivostok, Zabaykalsk, or Novorossiysk.

Steel Grades and Mechanical Properties per EN 10248

Steel Grade	Yield Strength ReH, MPa	Tensile Strength Rm, MPa	Elongation A5, %	Impact Test
S355GP	355	470-630	22	KV 27 J at +20°C
S355GP+J2	355	470-630	22	KV 27 J at -20°C
S390GP	390	490-650	20	KV 27 J at +20°C
S390GP+J2	390	490-650	20	KV 27 J at -20°C
S430GP	430	510-670	19	KV 27 J at +20°C

EN 10248-1:2023 mandates mandatory control of carbon equivalent (CEV) to ensure weldability. For S355GP, the maximum CEV value is 0.43%. For complex international logistics, we recommend [cargo insurance and VED risk management](#) to minimize financial exposure under force majeure conditions.

Chemical Composition of Standard S355GP Grade

Element	Content, %
C (Carbon)	0.18-0.22
Mn (Manganese)	1.30-1.50
Si (Silicon)	0.30-0.50
P (Phosphorus)	0.030 (max)
S (Sulfur)	0.025 (max)
Cu (Copper)	0.25-0.35 (for AMLoCor)
Nb (Niobium)	0.015-0.025
V (Vanadium)	0.08-0.12

PU600 Series — U-Section with Larssen Interlock

PU18 Modification

Parameter	Value	Unit
Installation width	600	mm
Section height	380	mm
Web thickness	10.5	mm
Flange thickness	10.5	mm
Weight per meter	74.6	kg/m
Weight per square meter of wall	124.3	kg/m ²
Section modulus W _x	1800	cm ³ /m
Moment of inertia I _x	34200	cm ⁴ /m
Cross-sectional area	99.5	cm ²

PU22 Modification

Parameter	Value	Unit
Installation width	600	mm
Section height	420	mm
Web thickness	12.0	mm
Flange thickness	12.0	mm
Weight per meter	95.0	kg/m
Weight per square meter of wall	158.3	kg/m ²

Parameter	Value	Unit
Section modulus Wx	2200	cm ³ /m
Moment of inertia Ix	46200	cm ⁴ /m
Cross-sectional area	126.7	cm ²

PU profiles differ from Z-series by their symmetrical cross-section, providing equal strength under load from both sides, simplified anchor tie and waling attachment, capability for factory assembly into double and triple pairs, and improved resistance to longitudinal bending at deep embedment depths. All PU600 profiles are lock-compatible with AU and GU-N series (excluding GU-400 range). For clients requiring [multimodal transport from China: Sea + Rail and white customs clearance](#), we offer optimized routing with minimal transit times and guaranteed customs passage.

Production Standards and Certification

Applicable Standards and Cold-Weather Requirements

- EN 10248-1:2023 — Hot-rolled sheet piling of non alloy steels. Part 1: Technical delivery conditions
- EN 10248-2:1996 — Part 2: Tolerances on shape and dimensions
- EN 10025-2:2019 — Technical delivery conditions for structural steels
- EN 10025-5:2019 — Steels with improved atmospheric corrosion resistance (Corten)

For northern European applications (Scandinavia, Baltic states), ArcelorMittal supplies +J2 modifications tested for impact toughness at -20°C. For extreme arctic conditions, +K2 modifications with testing at -40°C are available. Equivalent modifications are available in our [black metal product range](#) from Chinese partners, ensuring full climate compliance for any global region.

Global Market Price Analysis

Average Market Pricing for Original European Profiles (2026)

Profile	Condition	Average Price, USD/ton	Price Formation Source
ZU22	New (transshipment)	1850-2200	Supply via Kazakhstan, Uzbekistan, Turkey
ZU22	Used (1-2 cycles)	1200-1500	Secondary market, rent-to-own
PU18	New (transshipment)	1200-1450	Limited volumes, shortage
PU22	New (transshipment)	1400-1700	Shortage, premium margin
PU18	Used	750-950	Secondary market, lower liquidity than ZU22

Supply Shortage and Price Escalation Factors

Complete cessation of direct ArcelorMittal contracts since 2022 has driven transshipment logistics costs up 40-60% compared to direct supply. Limited secondary market volumes (used sheet pile) are driven by high turnover in construction. Extended delivery timelines from 4-6 weeks to 12-16 weeks through third countries create project schedule risks. Additional certification and origin verification requirements complicate documentation for international customs clearance. In this environment, [selection per GOST standards](#) of Chinese equivalents becomes the optimal solution for maintaining project timelines and budgets.

Residual Value and Asset Turnover

European ZU22 and PU600 profiles demonstrate high liquidity in secondary global markets. After 1 cycle (12-18 months): 65-70% value retention. After 2 cycles: 45-55% value retention. After 3 cycles: 30-35% value retention (provided no mechanical lock damage). Average service life for marine structures: 25-40 years without corrosion protection, 50-70 years with protective coating. To ensure quality for reuse, we recommend conducting [NDT quality control](#) on every batch of used sheet pile.

Replacement Recommendations

Under conditions of original European profile shortage and 120-180% price increase compared to pre-crisis levels, Metal-Asia.pw recommends considering direct Chinese equivalents from WR (Jinxi Steel) and GP (Grand Piling) series, providing full technical equivalence with up to 60% material cost savings. Before procurement, we recommend conducting [NDT metal inspection before purchase](#) to verify declared parameters. Detailed comparison is available in our Chinese equivalents catalog, with [pre-shipment inspection](#) available at manufacturing facilities with photo reports and protocols.

FAQ: Frequently Asked Questions About European Profiles

1. What are the acceptable lock geometry tolerances for original ZU22 sheet pile? Per EN 10248-2, lock width tolerance is +/- 0.5 mm, depth +/- 0.3 mm, angle +/- 0.5 degrees. Exceeding 0.8 mm creates vibro-driving jamming risk.
2. Which steel grade is recommended for cold-climate regions? For temperatures down to -20°C: S355GP+J2 with KV 27 J impact test at -20°C. For Arctic conditions: S355GP+K2 tested at -40°C.
3. Does Chinese WR22-600 equivalent require re-approval for engineering projects? At 600 mm width, a technical letter with MTC attachment is sufficient. At 400 mm, mandatory axis recalculation is required.
4. What is the resale value of used ZU22 sheet pile on global markets? After 1 cycle: 65-70% value, after 2 cycles: 45-55%, after 3: 30-35%. High liquidity due to standard 600 mm width.
5. What are the customs valuation adjustment risks when importing sheet pile? Risk arises when price deviates >20% from market average. Metal-Asia.pw provides full documentation package: contract, invoice, MTC, payment confirmation.
6. What port charges are included in delivery costs? Port charges include loading/unloading, terminal storage, documentation. Included in Metal-Asia.pw logistics rates at 28% discount.
7. Is winter installation of sheet pile walls possible? Yes, with +J2/+K2 modifications and ground temperature not below -15°C for vibro-driving.
8. How to control lock wear before reuse? Template inspection of 100% locks, width measurement with caliper, visual crack and deformation check. Acceptable wear: up to 1.5 mm.

NOTICE: LEGAL DISCLAIMER ON PRICING

All cost calculations, logistics tariffs, and customs clearance fees presented in this material are preliminary and for informational purposes only. Final and accurate cost calculation for supplied products is performed strictly at the time of signing an addendum to the general foreign trade contract by mutual agreement of parties. Final commercial and legal cost is formed individually and directly depends on shipment volume (tonnage), contract specifics, financing schedule, selected Incoterms 2020 delivery terms, and agreed payment form. Metal-Asia.pw guarantees price fixation only after specification signing by both parties.



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