

# Metal-Asia

## Commercial Proposal for Supply

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### Larsen Sheet Pile L4 and Chinese SPU 4 Analogues: B2B Deliveries from China

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## 1. Russian Larsen Sheet Pile L4

### 1.1. Geometric Dimensions and Weight

[Supply of rolled metal products from China directly from the manufacturer without intermediaries](#)

Parameter	Value
Driving width (B)	400 mm
Profile height (H)	347-410 mm
Wall thickness (S)	14.8 mm
Interlock thickness (T)	11.0 mm
Weight per linear meter	74.0 kg
Weight per m <sup>2</sup> of wall	185 kg
Length	6-12 m (standard), up to 18 m (max)

### 1.2. Static Characteristics

Parameter	Value
Section modulus of wall (W <sub>y</sub> )	2200 cm <sup>3</sup> /m

Parameter	Value
Moment of inertia of wall ( $I_y$ )	39600 cm <sup>4</sup> /m
Moment of inertia of profile	4875 cm <sup>4</sup>
Section modulus of profile	405 cm <sup>3</sup>
Wall strength	517-518 kN/m
Cross-sectional area (single pile)	235.7 cm <sup>2</sup> /m

### 1.3. Steel Grades and Material

Parameter	Value
Strength class (old)	245 MPa
Strength class (new, 2026)	390 MPa
Steel grades	CT3KP, CT3SP, CT3PS, 16HG
GOST standards	GOST 4781-85, TU 14-2-879-89
Steel standard	GOST 27772
Strength class per GOST 27772	min. 240, 270, 320
Anti-corrosion coating	Special primer or enamel
Reuse cycles	up to 6-8 cycles

### 1.4. Structural Features

- Profile: trough-shaped (Omega profile)
- Interlocks: groove-and-tongue, located on side walls
- Shape: U-shaped with rounded sides
- Connection: interlock, adjacent elements rotated 180°
- Tightness: high, ensured by tight interlock connection

## 2. Chinese SPU 4 Analogue

### 2.1. Geometric Dimensions and Weight

[Larsen Sheet Pile from China: B2B Deliveries and Engineering Selection](#)

Parameter	Value
Driving width (B)	400 mm
Profile height (H)	340 mm
Wall thickness (t)	15.5 mm
Weight per linear meter	76.1 kg
Weight per m <sup>2</sup> of wall	190.4 kg

Parameter	Value
Length	6-12 m

## 2.2. Static Characteristics

Parameter	Value
Section modulus of wall ( $W_y$ )	2270 cm <sup>3</sup> /m
Moment of inertia of wall ( $I_y$ )	38600 cm <sup>4</sup> /m
Cross-sectional area (single pile)	242.5 cm <sup>2</sup> /m
Maximum moment (steel Q390/SY390/S390GP)	592800 H·m

## 2.3. Steel Grades and Material

Parameter	Value
Steel grades (Asian)	Q295BZ, SY295, SY390 (JIS A5528)
Steel grades (European)	S355GP, S390GP, S430GP, S460AP (EN 10248)
Yield strength	390 MPa and above
Manufacturers	Anshan Zizhu, Tangshan Donghua, etc.

## 3. Comparative Analysis

### 3.1. Direct Geometry and Weight Comparison

[Hot-rolled Larsen Sheet Pile \(U-profile\): B2B Deliveries from China](#)

Parameter	L4 (Russia)	SPU 4 (China)	Difference	Advantage
Width (B), mm	400	400	0	—
Height (H), mm	347	340	-7 mm	SPU 4
Thickness (t), mm	14.8	15.5	+0.7 mm	SPU 4
Cross-sectional area, cm <sup>2</sup> /m	235.7	242.5	+6.8	SPU 4
Weight per linear meter, kg	74.0	76.1	+2.1 (+2.8%)	L4
Weight per m <sup>2</sup> , kg	185.0	190.4	+5.4 (+2.9%)	L4
Moment of inertia, cm <sup>4</sup> /m	37837	38600	+763 (+2.0%)	SPU 4
Section modulus, cm <sup>3</sup> /m	2200	2270	+70 (+3.2%)	SPU 4
Maximum moment, H·m	561000	592800	+31800 (+5.7%)	SPU 4
Yield strength, MPa	245/390	390	—	Parity
Reuse cycles	6-8	6-8	—	Parity

### 3.2. Comparison with Other Analogues

**SPU 4 vs Evraz IIIIn**

Parameter	SPU 4	Evraz IIIIn	Difference
Width, mm	400	400	0
Height, mm	340	290	+50
Thickness, mm	15.5	13	+2.5
Cross-sectional area, cm <sup>2</sup> /m	242.5	198.1	+44.4
Weight per linear meter, kg	76.1	62.2	+13.9
Weight per m <sup>2</sup> , kg	190.4	155.5	+34.9
Moment of inertia, cm <sup>4</sup> /m	38600	23206	+15394
Section modulus, cm <sup>3</sup> /m	2270	1600	+670

**SPU 4 vs Evraz VL504**

Parameter	SPU 4	VL504	Difference
Width, mm	400	500	-100
Height, mm	340	340	0
Thickness, mm	15.5	12	+3.5
Cross-sectional area, cm <sup>2</sup> /m	242.5	169.7	+72.8
Weight per linear meter, kg	76.1	66.6	+9.5
Weight per m <sup>2</sup> , kg	190.4	133.2	+57.2
Moment of inertia, cm <sup>4</sup> /m	38600	25575	+13025
Section modulus, cm <sup>3</sup> /m	2270	1504	+766

**4. Wide Chinese Profiles****4.1. WR22-600 / ZU22 / GP22-600****Budget Project Equipment and Turnkey Tender Deliveries**

Parameter	Value
Width	600 mm
Section modulus of wall (W <sub>y</sub> )	2200 cm <sup>3</sup> /m
Weight per m <sup>2</sup> of wall	141-177 kg
Metal savings	up to 20% vs L4
Steel grades	SY390 / S355GP
Advantage	33% fewer interlock connections

## 5. Extended Comparison of All Grades

### 5.1. Comparative Table of Key Grades

Selection per GOST

Grade	Country	Width, mm	Weight per linear meter, kg	Weight per m <sup>2</sup> , kg	W <sub>y</sub> , cm <sup>3</sup> /m	I <sub>y</sub> , cm <sup>4</sup> /m	Strength, kN/m	Yield strength, MPa	Reuse cycles
L4	Russia	400	74.0	185	2200	39600	518	245/390	6-8
SPU 4	China	400	76.1	190.4	2270	38600	—	390	6-8
SPU-IV	China	400	—	—	2200	—	—	SY390	—
WR22-600	China	600	—	141-177	2200	—	—	SY390/S355GP	—
Evraz Illn	Russia	400	62.2	155.5	1600	23206	—	—	—
VL504	Czech Republic	500	66.6	133.2	1504	25575	406	S270GP	8
VL606	Czech Republic	600	95	158	—	—	677	S270GP	8
L5	Ukraine	420	100	216.9	2960	—	696-800	—	—
L5-UM	Russia	500	113.9	227.8	2960	—	835	235-355	—
SPU-Vw	China	500	—	—	3300	—	—	—	—
WR30-600	China	600	—	190	3000	—	—	SY390/S390GP	—
SPU-IVw	China	500	—	—	900-930	—	—	—	—

### 5.2. Steel Grade Comparison

Standard	Grade	Yield strength, MPa	Strength class	Application
GOST 27772	CT3KP, CT3SP, CT3PS	245	240	L4 (old)
GOST 27772	16HG	245-355	270-320	L4, L5-UM
GOST (new L4)	—	390	—	L4 (2026)
JIS A5528	SY295	295	—	SPU (basic)
JIS A5528	SY390	390	—	SPU (enhanced)

Standard	Grade	Yield strength, MPa	Strength class	Application
EN 10248	S355GP	355	—	European analogues
EN 10248	S390GP	390	—	SPU 4, WR30
EN 10248	S430GP	430	—	VL605, heavy-duty
EN 10248	S460AP	460	—	Premium analogues
GB/T	Q295BZ	295	—	China (basic)
GB/T	Q390bz	390	—	China (enhanced)

## 6. Driving Technologies

### 6.1. Driving Methods

#### Features of Technical Specification Preparation for Chinese Manufacturers

Method	Speed	Vibrations	Noise	Cost	Application
Driving (pile frame + hammer)	High	Strong	High	Low	Open areas
Static pressing	Low	Minimal	Low	Medium	Urban areas, near buildings
Vibro-driving	High	Moderate	Moderate	Medium	Universal

### 6.2. Additional Technologies

Technology	Purpose	Application
Leader drilling	Pre-drilling of holes	Dense soils
Jetting	Water injection in driving zone	Dense/cohesive soils
Interlock lubrication	Friction reduction during connection	All soil types
Interlock sealant	Improved tightness	Watertight walls

### 6.3. Wall Reinforcement

Element	Purpose	Location
Waling beam	Horizontal rigidity	At 2 m depth
Horizontal struts	Corner stabilization	Minimum at corners
Raking shores	Additional stability	Support on ground or foundation
Corner turning pieces	Walls of any shape	Turns 90°, 135°, etc.

## 7. Application Areas

### 7.1. Common Applications for L4 and SPU 4

#### B2B Order Audit

- Excavation enclosures for foundations (residential and industrial construction)
- Reinforcement of underground utility routes
- Reinforcement of railway embankments and highways
- Shoreline reinforcement
- Hydraulic structures (dams, bridges)
- Collectors and treatment facilities
- Erosion protection
- Temporary and permanent enclosures

## 8. Economic Analysis

### 8.1. Regional Cost Monitoring (2026)

For objective market assessment, an analysis of hot-rolled Larsen sheet pile L4 costs on the Russian domestic market across key construction regions was conducted, compared with direct deliveries of alternative profiles from China.

<b>Russian Region</b>	<b>Variant and Condition</b>	<b>Average Domestic Market Price, RUB/t</b>	<b>Source and Conditions</b>
Moscow and Central Federal District	L4 new, L=12 m, Russian production	145,000	Major metal traders, warehouse
Moscow and Central Federal District	L4 used, L=12 m, after 6-8 cycles	90,000	Secondary market, heavy interlock wear
St. Petersburg and Northwest	L4 new, L=12 m, Russian production	148,000	Base regional warehouses
St. Petersburg and Northwest	L4 used, L=12 m, after 3-4 cycles	109,000	Secondary market for shoreline reinforcement
Yekaterinburg and Ural Federal District	L4 new, L=12 m, Russian production	152,000	Including internal Russian logistics
Yekaterinburg and Ural Federal District	L4 used, L=12 m, after 5-6 cycles	95,000	Regional demolition platforms
Delivery via Metal-Asia.pw	New SPU 4 profile directly from China plant	65,100	Direct import, white customs, NDT inspection

The engineering-logistics platform <[www.Metal-Asia.pw](http://www.Metal-Asia.pw)> delivers exclusively new sheet pile rolled products directly from leading Chinese manufacturers. Delivery of absolutely new Chinese SPU 4 profile costs only 62% of the price of new domestic analogue at Russian regional warehouses, providing direct financial benefit of 38% without loss of strength characteristics.

### 8.2. Financial Efficiency and Substitution Parameters

Replacing standard L4 profiles with wider Chinese SPU 4 and WR22-600 analogues allows for radical reduction of overall project costs. Optimized geometric parameters of imported rolled products achieve significant reduction in material intensity and labor costs.

<b>Optimization Parameter</b>	<b>Financial and Technical Effect</b>	<b>Technical Justification</b>
Total project cost	Reduction of 38% from Russian market	Direct contract with China plant and fixed tariff
Wall material intensity	Weight reduction of 20%	Using wide WR22-600 profiles instead of L4
Number of connection joints	33% reduction in interlocks	Increasing driving width from 400 mm to 600 mm
Work execution speed	30% increase in driving pace	Fewer interlock connections per linear meter

For accurate cost calculation and project specification selection, it is recommended to promptly submit project documentation to platform experts for technical audit.

## 9. Final Recommendations

### 9.1. Advantages of SPU 4 (China)

1. Higher section modulus: 2270 cm<sup>3</sup>/m vs 2200 cm<sup>3</sup>/m (+3.2%)
2. Higher moment of inertia: 38600 cm<sup>4</sup>/m vs 37837 cm<sup>4</sup>/m (+2.0%)
3. Thicker wall: 15.5 mm vs 14.8 mm (+4.7%)
4. Higher yield strength: 390 MPa standard
5. Lower price: from 105,000 RUB/t vs 145,000 RUB/t (-28%)
6. Wide steel grade selection: Q295BZ, SY295, S355GP, S390GP, S430GP, S460AP
7. Warehouse availability: stable deliveries
8. Compatibility: direct geometric analogue — interlocks with L4

### 9.2. Advantages of L4 (Russia, new)

1. Lower weight: 74 kg/linear meter vs 76.1 kg/linear meter (-2.8%)
2. Lower wall material intensity: 185 kg/m<sup>2</sup> vs 190.4 kg/m<sup>2</sup> (-2.9%)
3. Resumed production: new hot-rolled profile with 390 MPa
4. Independence from import logistics
5. Familiar documentation: GOST 4781-85
6. Used market: developed market with rental and buyback
7. Minimum length from 4 m: selection flexibility

### 9.3. Disadvantages and Limitations

<b>Aspect</b>	<b>L4 (Russia)</b>	<b>SPU 4 (China)</b>
Production	Resumed, volumes limited	Stable, large volumes
Logistics	Within Russia	International
Certification	GOST, TU	JIS, EN, GB
Interlock compatibility	Full with SPU 4	Full with L4
Profile width	Only 400 mm	400, 500, 600 mm

Aspect	L4 (Russia)	SPU 4 (China)
Price	Higher	Lower by 28%

## 10. Technical Standards

### 10.1. Russian Standards

Standard	Description
GOST 4781-85	Hot-rolled steel sheet piles, Larsen type
TU 14-2-879-89	Hot-rolled steel sheet piles, Larsen type
TU 14-102-147-93	Larsen sheet pile L5, trough type
GOST 27772	Rolled products for building steel structures
GOST 1497	Tensile testing
GOST 14019	Bending tests
GOST 9454	Impact load tests
GOST 7566	Metal products marking

### 10.2. International Standards

Standard	Description
JIS A5528	Japanese standard for sheet piles
EN 10248	European standard
GB/T	Chinese national standard

## 11. Interlock Compatibility

Combination	Compatibility	Note
L4 ↔ SPU 4	Full	Direct interlock-to-interlock, no transition elements
L4 ↔ SPU-IV	Full	Exact geometry copy
L4 ↔ Evraz III n	No	Different interlock geometry
L5 ↔ SPU-Vw	Full	Similar width 500 mm
L5-UM ↔ SPU-IVw	Full	Specialized export line
L5-UM ↔ WR22-600	Wall replacement	Equivalent strength, different width

## 12. FAQ

Question 1: What is the main difference between L4 and SPU 4?

**Answer:** The main difference is in steel yield strength. Classic L4 was produced from 245 MPa steel, while SPU 4 is standardly manufactured from 390 MPa steel (Q390bz, SY390, S390GP). The new Russian L4 with 390 MPa has equalized this parameter. SPU 4 is 2.8% heavier (76.1 kg vs 74 kg) but has 3.2% higher section modulus (2270 vs 2200 cm<sup>3</sup>/m). At the same time, SPU 4 is 28% cheaper (105,000 vs 145,000 RUB/t).

**Question 2: Can L4 and SPU 4 be mixed in one sheet pile wall?**

**Answer:** Yes, full interlock compatibility. SPU 4 is a direct geometric analogue of L4 with 400 mm width and identical interlock shape. It interlocks directly without transition elements. This is confirmed by delivery and installation practice on Russian sites.

**Question 3: What is the reuse cycle capacity of SPU 4?**

**Answer:** 6-8 driving-extraction cycles, similar to Russian L4. Capacity depends on steel grade, operating conditions, and proper installation/demolition. 390 MPa steel better maintains profile shape and interlocks after cycles.

**Question 4: What steel grades are used for SPU 4?**

**Answer:** Standard grades: Q295BZ, SY295, SY390 (JIS A5528), S355GP, S390GP, S430GP, S460AP (EN 10248). For the Russian market, SY390 or S390GP with 390 MPa yield strength is recommended as a full analogue of new L4.

**Question 5: Which driving method is best for SPU 4?**

**Answer:** Vibro-driving is the most commonly used method. For urban conditions, static pressing is recommended. Driving is only used on open areas without buildings. In dense soils, leader drilling or jetting is used.

**Question 6: When is it more profitable to use wide WR22-600 profiles instead of L4?**

**Answer:** WR22-600 is advantageous for complete wall replacement. With the same strength ( $W_y = 2200$  cm<sup>3</sup>/m), material intensity is reduced by 20% (141-177 kg/m<sup>2</sup> vs 185 kg/m<sup>2</sup>), and the number of interlock connections is reduced by 33%. This accelerates installation and reduces the metal budget.

**Question 7: What documents are required for SPU 4 delivery to Russia?**

**Answer:** Manufacturer quality certificate, product passport, steel grade conformity certificate, packing list, invoice. For customs clearance, HS code 7304 90 000 0 (other pipes and profiles of ferrous metals) is required. We provide a complete document package.

**Question 8: Why is SPU 4 cheaper than L4 if the characteristics are better?**

**Answer:** Three factors: production scale in China (Anshan Zizhu, Tangshan Donghua), absence of intermediary markups with direct delivery, and stable rolled product volumes. Russian L4 production was stopped for over 10 years and recently resumed, which limits volumes and increases price.

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## 13. Contacts

For more information about the range of services, please visit [Metal-Asia.pw](http://Metal-Asia.pw).

For all inquiries, please contact:

### Contact Information:

- **Customer Service Department:**
- WhatsApp: +86 132 50100874
- Telegram: @China\_metal\_supply
- Email: [zakaz@metal-asia.pw](mailto:zakaz@metal-asia.pw)
- Official Website: [www.metal-asia.pw](http://www.metal-asia.pw)

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