RED STAR
WIRE SCREENS

紅星篩網

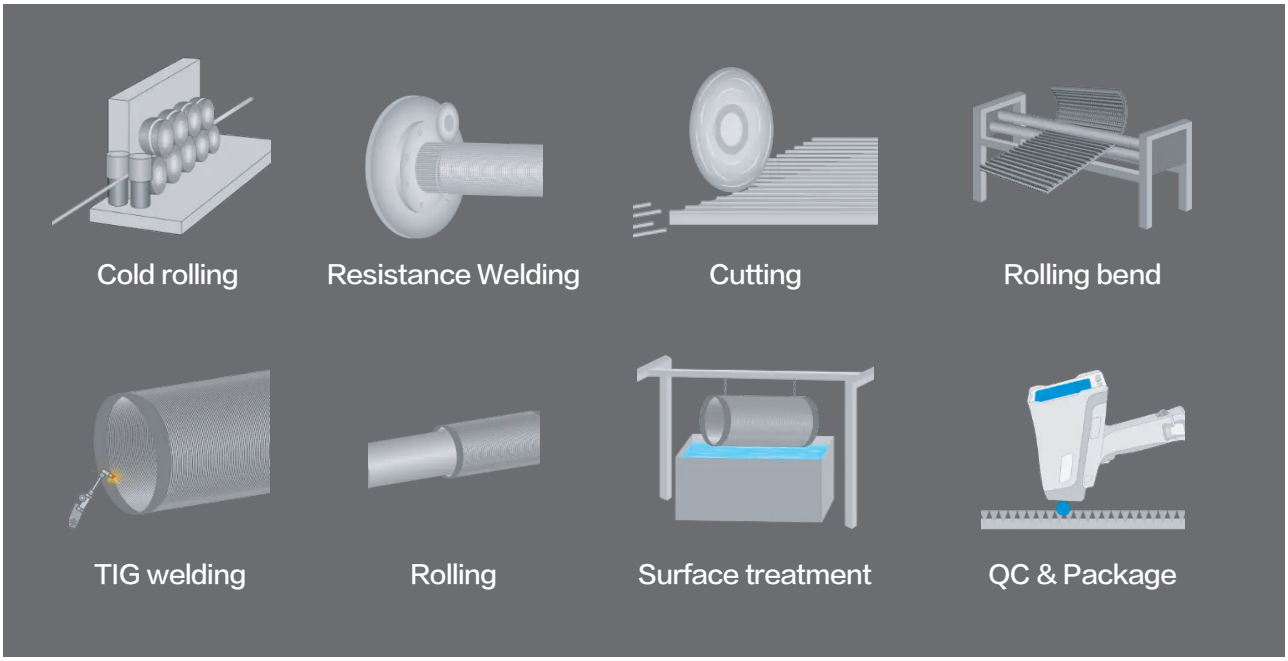
SINCE 1989

WEDGE WIRE SCREENS

• *Wedge Wire Screens*

- Wedge wire screens are made by precisely welding trapezoid-shaped steel wires (called wedge wires) onto support rods. Their unique V-shaped aperture structure prevents clogging efficiently and enables precise separation. These features make them widely used in screening and filtration applications across mining, coal processing, water treatment, and other industries.

• *Production Process of Wedge Wire Screens*



• *Select Right Surface & Support Profiles*

- Selecting the appropriate material grade for wedge-shaped wire mesh is crucial for achiev- ing optimal performance and service life in various industrial processes. Carefully consider- ing factors such as the working environment, wear resistance, chemical compatibility and cost helps ensure that the selected materials meet the specific require- ments of the custom- er's application. When choosing materials for making wedge-shaped wire screens, the follow- ing aspects need to be considered:

Temperature

Both the working temperature and media temperature should be taken into consideration.

Abrasion Resistance

Consider if the filter media contains abrasive particles and choose right material to withstand wear and erosion over time.

Chemical Compatibility

Determine if there is chem- ical corrosion and what type is it to choose the screen material compatible with the chemicals.

Strength and Durability

Depending on the application, choose material with required mechanical strength to withstand the loads and stresses it will encounter during operation.

Cost Considerations

Material costs can vary significantly, and it's essential to balance performance requirements with the avail- able budget.

• *Common Materials for Wedge Wire Screens*

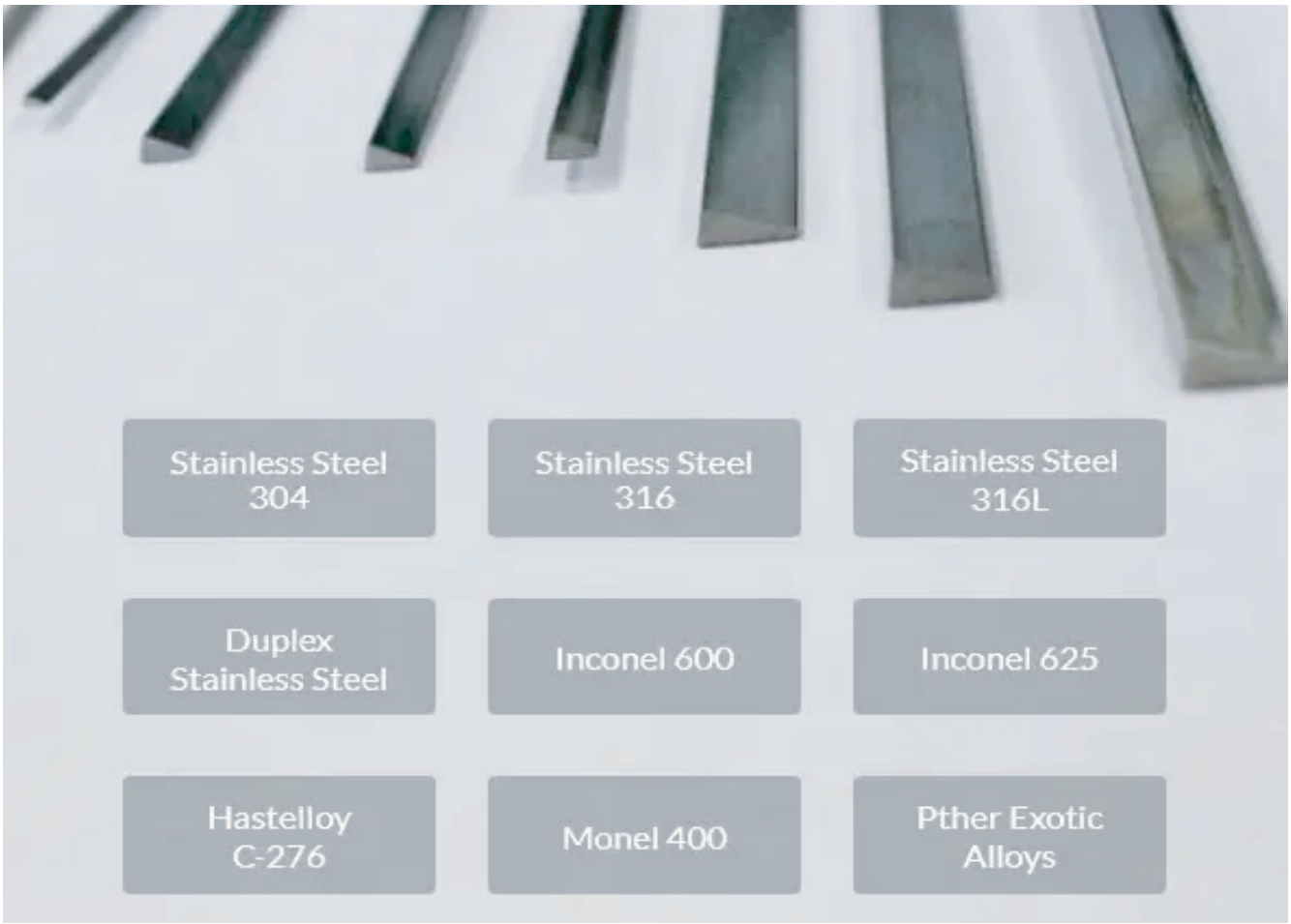
（1）**Stainless Steel:** Stainless steel is one of the most popular materials for wedge wire screens due to its excellent corrosion resistance, strength, and durability. It is available in various grades (e.g., 304, 316, 316L) to suit different applications, but it is not suitable for extremely high-temperature environments. And the cost can be higher than some alternative materi- als.

（2）**Duplex Stainless Steel:** Duplex stainless steels offer enhanced corrosion resistance and higher strength compared to austenitic stainless steel. They are often chosen for applica- tions where extreme corrosion resistance is required. But the cost is higher than standard stainless steel and it require specialized welding procedure.

（3）**Inconel alloy (e.g. Inconel 600, Inconel 625)**: Inconel alloys are known for their high-temperature resistance and excellent mechanical properties. They are suitable for applications involving elevated temperatures.

（4）**Hastelloy (e.g. Hastelloy C-276):** Hastelloy alloys are superior resistance to a wide range of corrosive chemi- cals that excel in harsh chemical environments. They are commonly used in chemical and petrochemical industries.

（5）Nickel Alloys (e.g. Monel 400) Monel alloys exhibit strong resistance to corrosion by acids and alkaline solutions. They are frequently used in marine and chemical processing applica- tions.

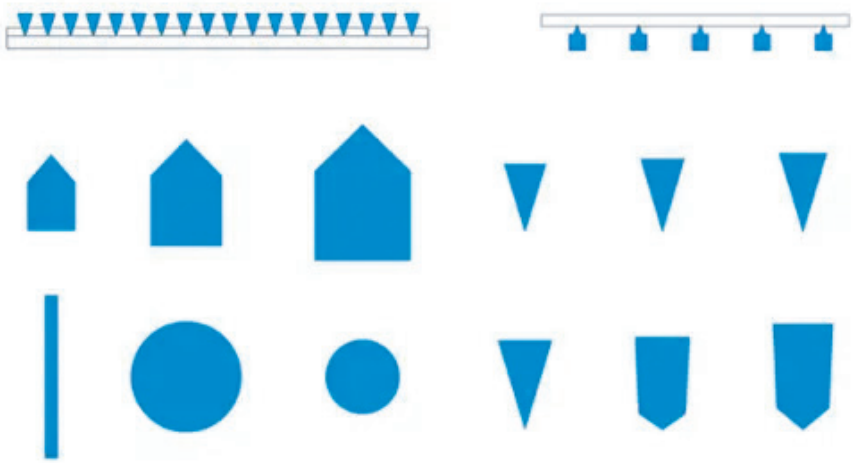


• Common Materials for Wedge Wire Screens

Commonly Used Material Grade						
Structure	DIN	AISI/ASTM	UN/DIN	BS	Anfor	Branding
Ferite	1.4016	430	X8Cr17	-	-	-
Austenite	1.4301	304	x5CrNi1810	304S15	Z6CN18.09	-
	1.4307	304L	X2CrNi1811	304S12	Z2CN18.10	-
	1.4373	202	X12CrMnNIN189 18 -5	-	-	-
	1.4401	316	X5CrNMo1712	316S16	Z6CND17.11	-
	1.4404	316L	X2CrNMo1712	316S12	Z2CND17.12	-
	1.4439	317IN	X2CrNIMoN17 -13 -5	-	-	-
	1.4539	904L	X1NCMoCuN25205	S31254	Z1NCOU25.20	SMO904
	1.4541	321	X6CrNT1811	321S12	Z6CNT18.10	-
	1.4571	316Ti	X6CNiIMoTi1712	320S31	Z6CNDT17.12	-
Duplex	1.4462	329IN	X2CrNiMoN2253	S32205	Z2CND22.05Az	SAF2205
	1.441	439	X2CrNIMoN2574	S32750	Z3CND25.07Az	SAF2507
Others	2.436	-	NiCu30FE	-	-	Monel400
	24610	-	NiMo16Cr16Ti	-	-	HastelloyC4
	2.4816	-	NO15Fe	-	-	Inconel600
Carbon Steel	1.0038	A570Gr30	-	Fe360BFU	E24-2NE	-
	1.057	A572G50	-	Fe510D1FF	E36-3	-

• Select Right Surface & Support Profiles

Selecting appropriate profile wire and support rods for wedge wire screens involves careful consideration of several factors, including the specific application, the materials being processed, desired filtration performance, and structural requirements.



• Understand Your Application

- Clearly define the purpose of the wedge wire screen. Determine whether it's for filtration, separation, sizing, dewatering, or another application.
- Identify the characteristics of the fluid or material you're dealing with, including particle size distribution, flow rate, temperature, and chemical compatibility.

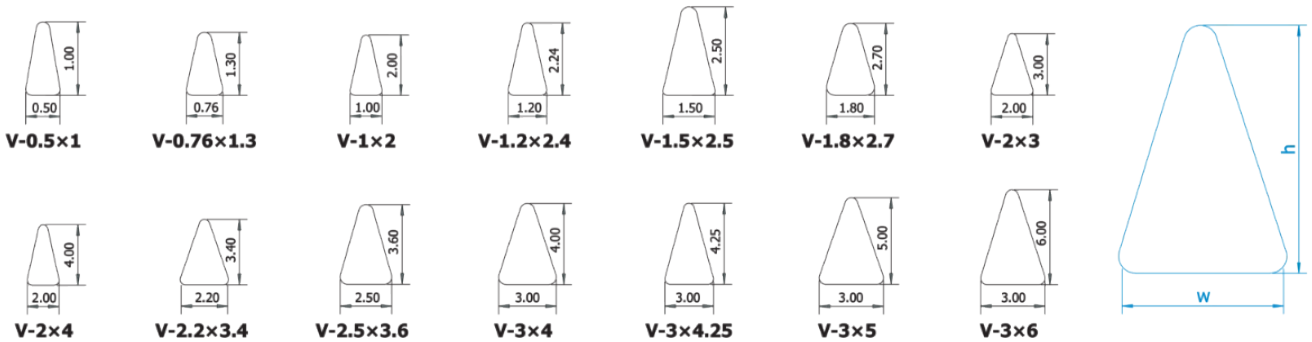
• Define Filtration Requirements

- Determine the desired filtration or separation efficiency. What size particles or solids do you need to retain, and what size must pass through?
- Consider any special requirements, such as high flow rates, high temperatures, or aggressive chemicals

• Select Surface Profile

- Function: Surface wires are the main filtering elements of wedge wire screens. They are V-shaped wires that run parallel to each other and are welded to the support rods.
- Design: The V-shaped profile of the wires creates slots between them, allowing liquids to pass through while retaining solids above a certain size. The size of these slots can be customized based on the specific application requirements.
- Materials: Surface wires are typically made of stainless steel or other corrosion-resistant alloys, ensuring durability and resistance to harsh environments.

Popular Surface Profile Specifications：



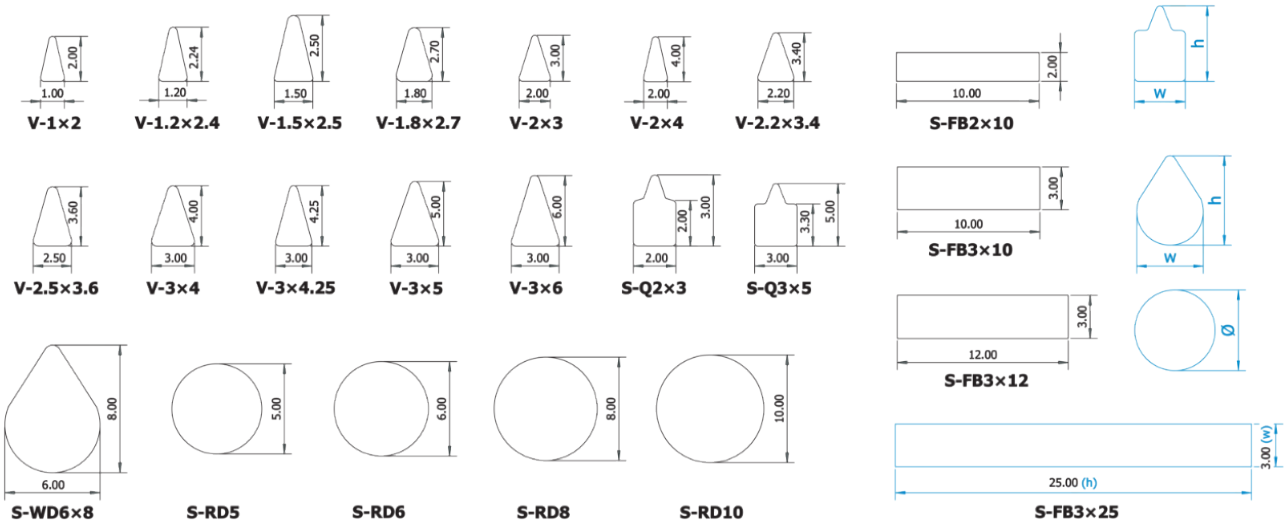
Type	Width (w)	Height (h)
V-0.5×1	0.5	1
V-0.76×1.3	0.76	1.3
V-1×2	1	2
V-1.2×2.24	1.2	2.24
V-1.5×2.5	1.5	2.5
V-1.8×2.7	1.8	2.7
V-2×3	2	3

Type	Width (w)	Height (h)
V-2×4	2	4
V-2.2×3.4	2.2	3.4
V-2.5×3.6	2.5	3.6
V-3×4	3	4
V-3×4.25	3	4.25
V-3×5	3	5
V-3×6	3	6

• *Choose Support Profile*

- Function: Support rods provide structural support to the wedge wire screen, holding the sur- face wires in place and maintaining the screen's integrity under pressure.
- Design: Support rods are usually positioned perpendicular to the surface wires, forming a grid-like pattern. They are attached to the surface wires through welding or other secure methods.
- Materials: Similar to surface wires, support rods are commonly made of stainless steel or other materials with high strength and corrosion resistance.

Popular Support Profile Specifications



Type	Width (w)	Height (h)
V-1×2	1	2
V-1.2×2.24	1.2	2.24
V-1.5×2.5	1.5	2.5
V-1.8×2.7	1.8	2.7
V-2×3	2	3
V-2×4	2	4
V-2.2×3.4	2.2	3.4
V-2.5×3.6	2.5	3.6
V-3×4	3	4
V-3×4.25	3	4.25
V-3×5	3	5
V-3×6	3	6
S-Q2×3	2	3

Type	Width (w)	Height (h)	Diameter (ϕ)
S-Q3x5	3	5	-
S-FB2×10	2	10	-
S-FB3×10	3	10	-
S-FB3×12	3	12	-
S-FB3×25	3	25	-
S-WD6×8	6	8	-
S-RD5	-	-	5
S-RD6	-	-	6
S-RD7	-	-	7
S-RD8	-	-	8
S-RD9	-	-	9
S-RD10	-	-	10
S-RD12	-	-	12

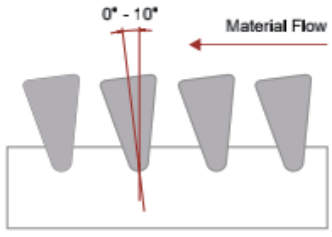
Standard Tolerances*:

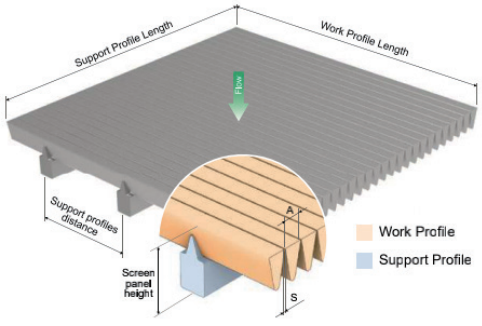
Length and Width	
≤ 500 mm	± 2 mm
> 500 mm y ≤ 2000 mm	± 3 mm
> 2000 mm	± 4 mm
Slot Aperture	
± 0,050 mm max. deviation ± 0,100 mm	
Screen Height	
± 0,3 mm	
Diagonal	
≤ 500 mm	± 2 mm
> 500 mm y ≤ 1000 mm	± 3 mm
> 1000 mm y ≤ 2000 mm	± 4 mm
> 2000 mm	± 5 mm
Screen Flatness	
4,00 mm/m	
Screen Straightness	
4,00 mm/m	

Slot: from 0,05 mm

Maximum Length: 3500 x 4000 mm

Working Profile Angle: 0° −10°





• *Effective Open Area*

- The most important parameter ofscreens is the Effective OpenArea. This area F% is a percentage ratio between the slottedarea (open area) and the total area of the screen. It is calcula. ted using the following formula:
- F0= S/(S+A)x 100 (%)
- A- The width of the Working Profile Wire (according to theprofile table) S-The Aperture Size (distance in between Working Profles)

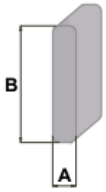
• *Technical parameters*

Support profiles

Type I

Description	A (mm)	B (mm)
I 10 x 3	3,00	10,00
I 10 x 2	2,00	10,00
I 12 x 3	3,00	12,00
I 15 x 3	3,00	15,00
I 18 x 2	2,00	18,00
I 20 x 2	2,00	20,00
I 30 x 2	2,00	30,00
I 38 x 3	3,00	38,00

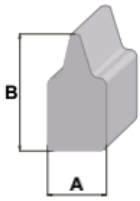
Other dimensions on request



Type Q

Description	A (mm)	B (mm)
Q 25	2,00	3,00
Q 35	3,00	5,00
Q 55	4,00	8,00

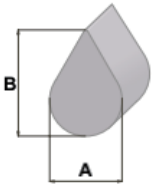
Other dimensions on request



Type D

Description	A (mm)	B (mm)
D 45	3,8	5,6

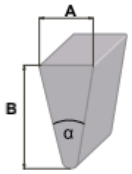
Other dimensions on request

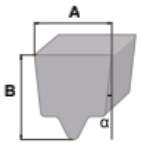


Type Sb

Description	A (mm)	B (mm)	α(°)
Sb 6	0,50	1,20	12
Sb 8	0,60	1,20	22
Sb 10	0,75	1,30	20
Sb 12	1,00	2,00	20
Sb 18	1,50	2,50	23
Sb 22	1,80	3,70	23
Sb 28	2,20	4,50	23
Sb 34	2,80	5,00	23
Sb 42	3,40	6,50	23
Sb 60	4,00	9,00	20
Sb 70	5,00	10,00	24
SbA 50	5,00	6,00	40
Sb 55*	5,00	5,50	6

Other dimensions on request



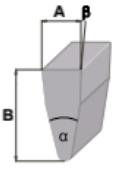


*Sb 55**

Type Sbb

Description	A (mm)	B (mm)	α(°)	ß(°)
Sbb 34	2,20	5,00	23	4
Sbb 38	2,50	4,00	40	5
Sbb 42	2,80	6,00	23	4
Sbb 48	3,40	6,00	70	4
Sbb 50	3,50	8,00	23	4
Sbb 76	5,00	10,00	23	5
2,4 x 5	2,40	5,00	23	0
3 x 6,5	3,00	6,00	23	0

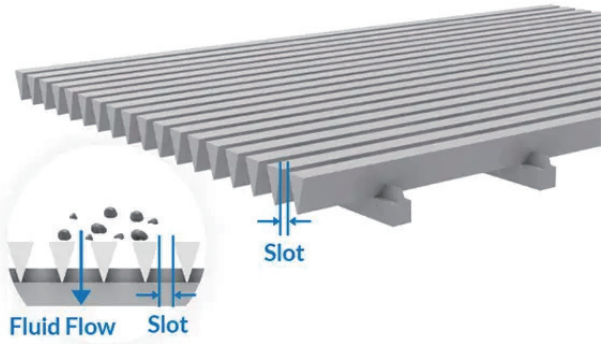
Other dimensions on request



- Special Working Profles
- Special Working Profle wires separale highly abrasive ma.terials. During their wear process, slot sizes do not have aconsiderable increase, this makes them ideal for cylinder andconical sieves used in vbrating centrifuges, extending theirdurability, reducing down fimes for mainienance and exlen.ding productivity.

• Appropriate Slot Sizes Selection of • Wedge Wire Screens

- Selecting the appropriate wedge wire screen products based on slot size (also known as slot aspect ratio) is crucial for achieving the desired filtration or separation performance in your specific application. Here are some suggestions to help you select the right wedge wire products based on slots aspect:
- Understand your application requirements
- Define slot size
- Consider slot aspect ratio
- Consult with our specialists



• Understand Your Application Requirements

- Determine the specific requirements of your application. It affects the material and slot size selection and you should know the following conditions:
- What type of material or particles do you need to filter or separate?
- What is the desired flow rate?
- What are the temperature and pressure conditions?

• Define Slot Size

- The slot size refers to the width of the openings or slots between the V-shaped wires on the wedge wire screen. This parameter is crucial for filtration. It is typically measured in microns (μm) or millimeters (mm).
- To choose the appropriate slot size, consider the size of the particles you want to separate or filter. Select a slot size that is smaller than the particles you wish to retain.
- Here, we list the common used slot sizes for your reference, if you have drawings or detailed requirements, just contact us for additional information.

U.S. MESH	INCHES	MICRONS	MILLIMETERS
3	0.265	6730	6.73
3.5	0.223	5660	5.66
4	0.187	4760	4.76
5	0.157	4000	4
6	0.132	3360	3.36
7	0.111	2830	2.83
8	0.0937	2380	2.38
10	0.0787	2000	2
12	0.0661	1680	1.68
14	0.0555	1410	1.41

U.S. MESH	INCHES	MICRONS	MILLIMETERS
16	0.0469	1190	1.19
18	0.0394	1000	1
20	0.0331	841	0.841
25	0.028	707	0.707
30	0.0232	595	0.595
35	0.0197	500	0.5
40	0.0165	420	0.42
45	0.0138	354	0.354
50	0.0117	297	0.297
60	0.0098	250	0.25

U.S. MESH	INCHES	MICRONS	MILLIMETERS
70	0.0083	210	0.21
80	0.007	177	0.177
100	0.0059	149	0.149
120	0.0049	125	0.125
140	0.0041	105	0.105
170	0.0035	88	0.088
200	0.0029	74	0.074
230	0.0024	63	0.063
270	0.0021	53	0.053
325	0.0017	44	0.044

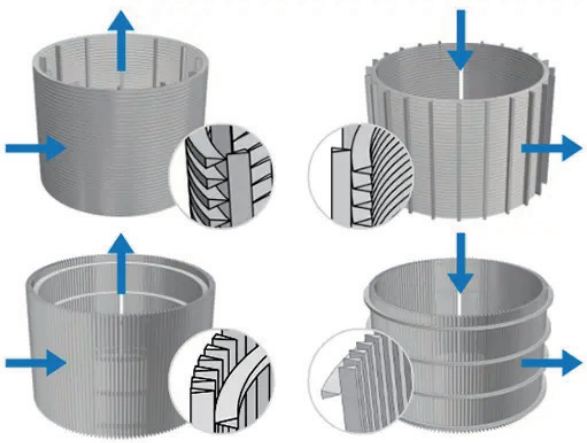
• *Consider Slot Aspect Ratio*

- Slot aspect ratio is the ratio of the slot width to the wire width. It affects the strength and rigidity of the wedge wire screen.
- Higher aspect ratios result in narrower slots and can provide better filtration efficiency for smaller particles. However, screens with very high aspect ratios may be less durable. Lower aspect ratios result in wider slots and are more robust but may not filter as finely.

• *How to Choose Appropriate Wedge wire*
• *Construction & Flow Direction?*

- Selecting the appropriate construction and flow direction for a wedge wire screen depends on the specific requirements of your application and the type of filtration or separation you need to achieve. We provide axial slots and radial slots in FOTI and FITO flow direction. Here are introduction and suggestion to help you make the right choices:

- Definition
- Radial External Type
- Radial Internal Type
- Axial External Type
- Axial Internal Type
- Reinforcement Type
- Consult with our specialists



• Definition

- Wedge wire construction/structure – The specific arrangement and design of surface wire and support rod
- Flow direction – The orientation or path of fluid flow through a wedge wire screen or filtration system
- FOTI – flowing direction is From Outside To Inside
- FITO – flowing direction is From Inside To Outside
- Radial Slots – The slot orient along the diameter of the screen in a parallel fashion
- Axial Slots – The slots orient along the length of the screen in a parallel fashion=

• Radial External Type

- Radial external wedge wire tubes are composed of axial support profile rods and radial surface Vee wires, which are wrapped around support wires and attached to each other by resistance welding.
- When the flow direction is from outside to inside (FOTI), the flat side of the surface wire is on the outside of the tube, shown as figure 1-1
- When the flow direction if from inside to outside (FITO), the flat side of the surface wire is on the inside of the tube, shown as figure 1-2. It is also called reverse wedge wire screen tube.

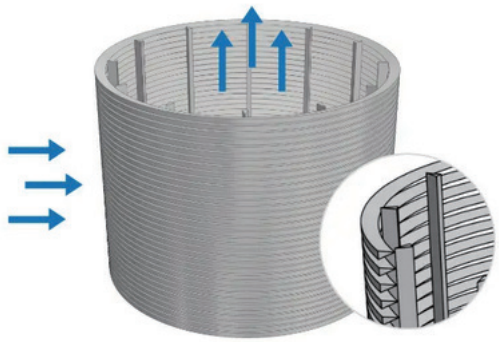


Figure 1-1 Radial External – FOTI Standard

Standard type for most applications

Precision openings

Economical production

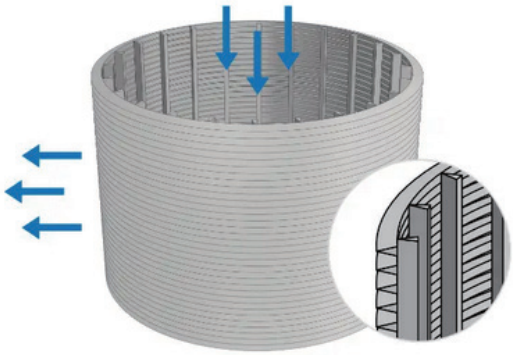


Figure 1-2 Radial External – FITO

Also named as reversed welding, which radial external surface screen wire' sharp point outside

Backwashing

Inverted circumferential external surface profiles

• *Radial Internal Type*

- Radial internal wedge wire types are rolled from flat wedge wire screen panels not continuously spirally wrapped around axial support profiles, that means there are many welding joining points and only flow in one direction (FITO), shown as figure 2.

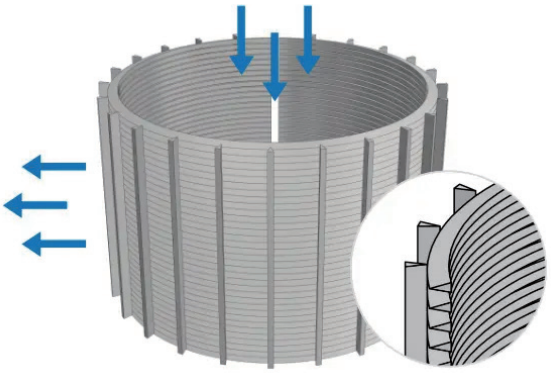


Figure 2 Radial Internal – FITO

Smooth internal screen surface

Facilitates cleaning with an internal axial-movement scraper

Economical easy for small quantity and any size production

• *Axial External Type*

- Axial external wedge wire screen tube or cylinder is rolled from flat wedge wire screen panels and is composed of radial support profile wires and axial surface screen profile wires, which are axial outside the support wire. Because of the flat side of surface screen Vee wires on the outside of the screen, the flow direction of this type is commonly from outside to inside (FOTI), shown as figure 3-1. We can produce specially designed wedge wire tubes, which the flow direction is from inside to outside (FITO), shown as figure 3-2..

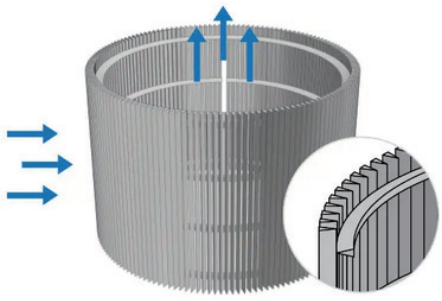


Figure 3-1 Axial External – FOTI

Standard type

Economical and easy production

Flat side of wedge wire outside

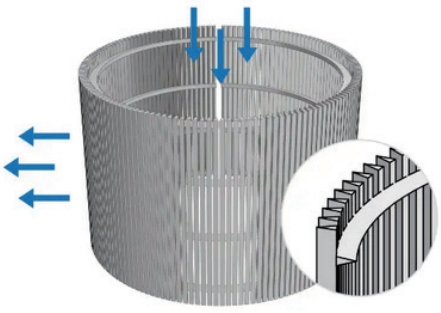


Figure 3-2 Axial External – FITO

Customized type

Not widely used

Flat side of wedge wire inside

• *Axial Internal Type*

- The axial wedge wire screen tube or cylinder is comprised of surface screen profile wires oriented axially inside of the screen tube and support profiles oriented radially outside of the tube. Because of screen Vee wires on the inside of the screen, the flow direction of this type is commonly from inside to outside (FITO).
- There are two types based on the slot and filter size: the first type is rolled from flat wedge wire screen panels, resulting in multiple welding joining points, shown as figure 4-1, while the second type involves the continuous spiral wrapping of support wires around axial surface wedge wires, shown as figure 4-2.

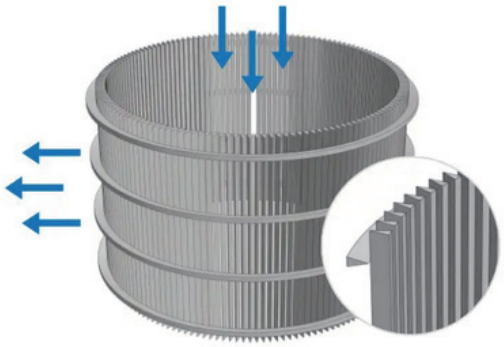


Figure 4-1 Axial Internal – FITO Joint Support

Smooth internal screen wire surface, ID can be processed, no welding molds limited.

Economical utility with several welding joining points

Facilitates cleaning with an internal axial-movement scraper

The flow moves across the wire edges for effective dewatering

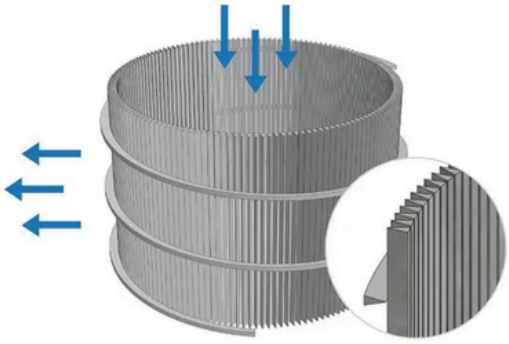


Figure 4-2 Axial Internal – FITO Continuous Support

Smooth internal screen wires surface, one welding molds suit for one screen ID, higher production costs.

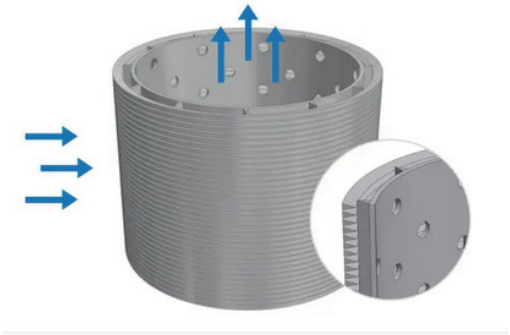
Without a welding seam, more stronger strength

Facilitates cleaning with an internal axial-movement scraper

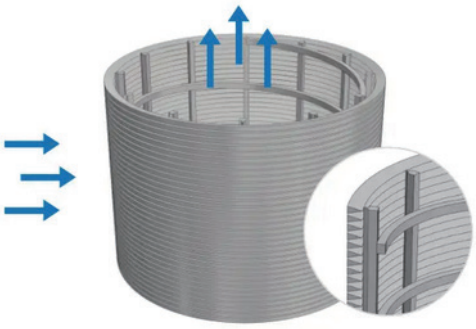
The flow moves across the wire edges for effective dewatering

• *Reinforcement Type*

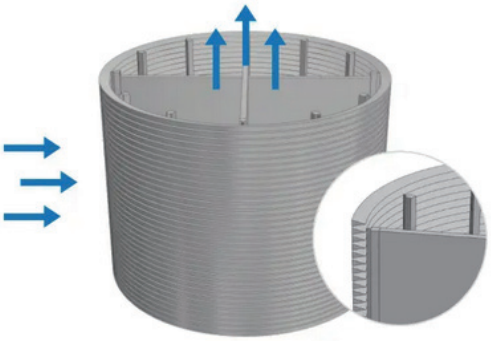
- Except of figure out the flow direction, structure of screen surface profile wires and support wires, there are also a few common strengthening forms for the wedge wire screen tubes or cylinders.



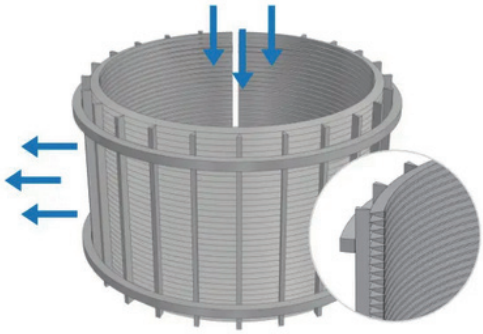
Reinforcement perforated tube



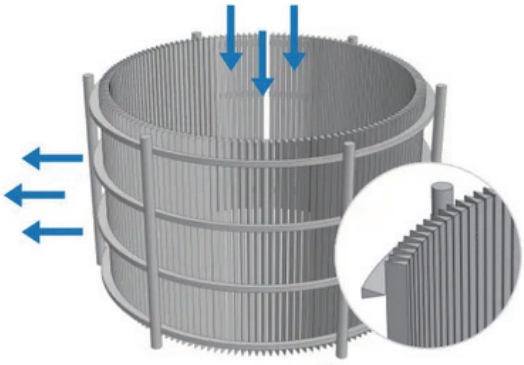
Reinforcement spiral ribs (flange ring, round steel & square steel)



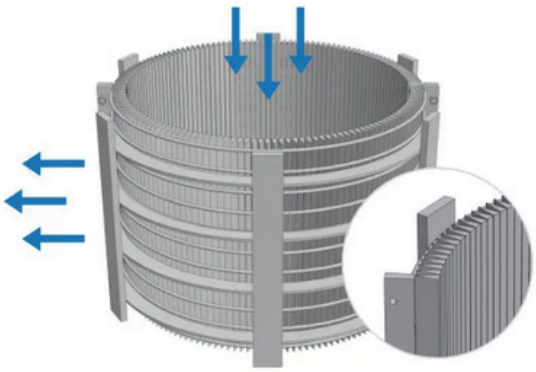
Reinforcement plates



Reinforcement external ring ribs



Reinforcement external vertical ribs



Reinforcement external ring ribs and vertical ribs

• *Application*

Gas and oil industries
Produclion ot fuel and lubncants
Desulphurization.
Dryting of natural gas.
Regeneraton of catalysis.
Calalyic reaclors.
Prolechon of finings and compressors.

Chemical industry
Processing of paint and coating
Processing of chemicals
Processing of polymers.
Purileaton of polassium.
umicanon of phosphates

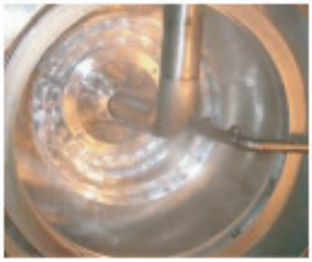
Mining
Coa ennchmen.

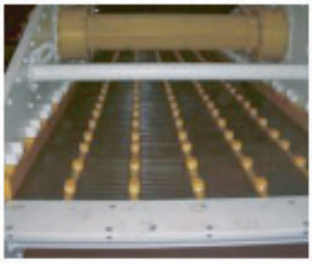
Food industry
Exracion.
Fuldi2ed beds.
Absorplion / Adsorpaon.
Soning.
Dnying.

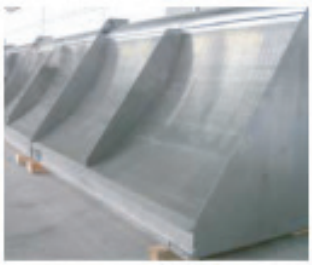
Paper
Coating.
Blending.
Dewalering.
Reinng.

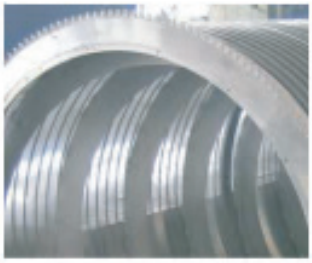
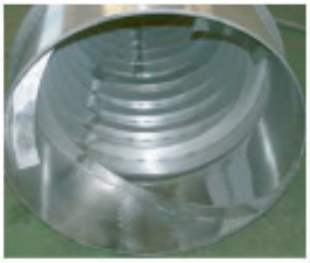
Water process
Municipal dnnking waler treatment
Waste water treaient.
Industnal water treatent.
Ion exchanger.
Desalinalion of seawaler
imgaton.

Mineral and aggregate processing
Exdoilanon of waler
Expicitaton of crude ol.
Expicitanon ofnatural gas.
Recycling.





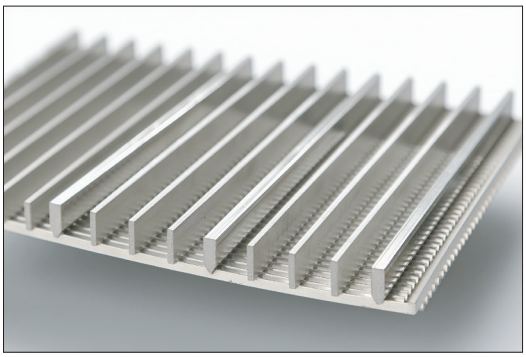




• High Structural Strength

The fully soldered manufacturing process ensures the screen mesh's overall structural integrity, making it ideal for heavy-duty, high-intensity screening operations in mining environments.
The crosswise wedge wires and longitudinal support rods can be customized to meet specific user requirements.

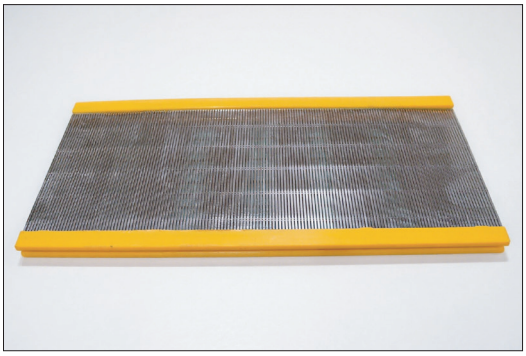


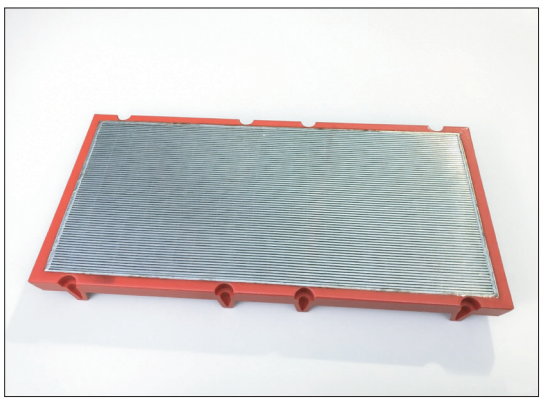
• Precise Control of Screen Wire Gaps

Gap tolerances can be maintained within ±0.05 mm.
This allows screening precision to be adjusted based on material properties.
Gap precision range: 0.1–25 mm

• Polyurethane Encapsulation on Both Sides

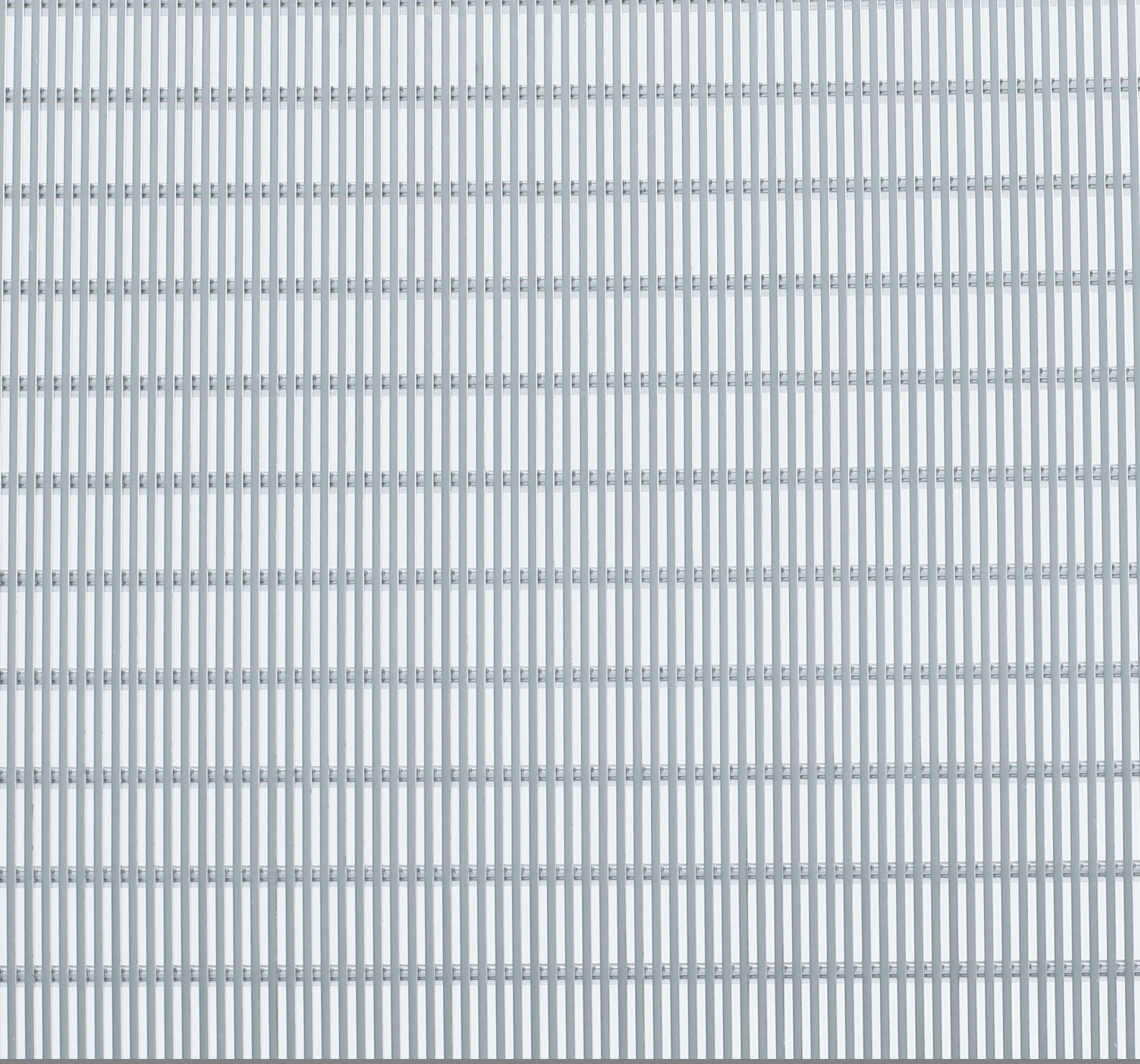
The modular installation method ensures an easy setup process and reduces long-term maintenance costs. Additionally, the polyurethane edging significantly improves the screen plate's wear resistance, extending its service life.





• Polyurethane Encapsulation on All Sides

It has customizable installation methods that are tailored to equipment and user requirements. It is widely applicable in ore screening, coal washing, environmental recycling, and other fields.



1 Hongxing Road, Anping County Hebei Province, China
+86 139 0318 7607/ +86 136 7323 7939 (Whatsapp)
hanfeng@redstarfactory.com
www.redstarscreens.com