



Futai Machinery Co., Ltd.
弗太机械有限公司

**Porous metal filter media,
elements and systems**
多孔金属过滤媒介，元件及过滤系统



Your partner specialized in filter systems
过滤领域专业合作伙伴

High-performance molten chips and polymer filters 高性能熔融切片及聚合物过滤系统



A leader in designing and manufacturing a complete range of filter media, elements and systems for the industry of polymer and synthetic fiber

聚合物和化纤行业中过滤媒介，元件及过滤系统方面的设计和生产领导者。

Applications 应用范围

- Polymer
聚合物
- Synthetic fiber (PET, PA, PP, Spandex, Viscose, Vinylon, carbon, & more)
合成纤维（涤纶，尼龙，丙纶，氨纶，粘胶纤维，维尼纶，碳纤维及其他）
- PET bottle
聚酯瓶片
- Film (PP, PET, & more)
薄膜（丙纶，涤纶及其他）
- Non-woven (PP, PET, & more)
非织造物（丙纶，涤纶及其他）

Filter systems 过滤系统

Futai provides you both qualified standard and tailor-made systems to reach the highly requirements on your quality, production, use and maintenance. The best filter media and the most appropriate filter elements, which can be cleaned and reusable with long lifetime, will be used on our equipments.

弗太可提供高质量的标准过滤系统和客户定制过滤系统，以满足客户在质量，生产，使用和维护方面的高需求。弗太过滤系统由优质的过滤媒介，最合适的过滤元件组成，具有易清洗和使用寿命长的特点。



Horizontal continuous filtration
卧式连续型过滤系统



Vertical continuous filter system
立式连续型过滤系统

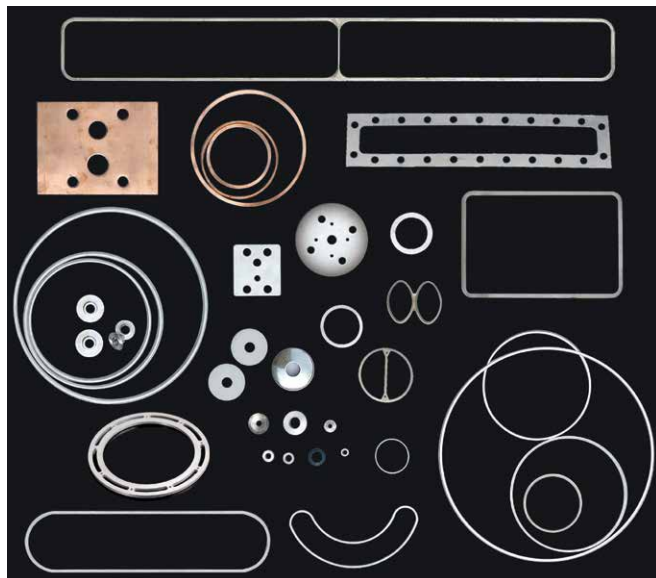


Polymer filter system
聚合物过滤系统

Filter elements- spin pack filters and gaskets 过滤元件 - 过滤网和垫圈

In the process of producing synthetic fibers, especially filament POY /FDY/ BCF/staple fiber/ nonwoven spinning, before polymer access to spinnerets, all the foreign substance has to be filtered. Meanwhile the polymer should be not leaked out of spin pack containers. Futai can offer you a complete set of elements used inside spin pack body, such as spin pack filters, wire mesh, gaskets, etched photo film and more.

在合成纤维生产过程中，尤其是 POY, FDY 长丝，地毯丝，短纤和无纺布生产中，在聚合物熔体经过喷丝板之前，必须过滤掉所有杂质。同时，确保熔融的聚合物不能溢出纺丝组件。弗太可提供用于纺丝组件中的全套过滤组件，如过滤网，过滤网片，垫圈，蚀刻网等。



Gaskets especially for POY /FDY/ BCF/ staple fiber/ nonwoven spinning

专用于纺 POY, FDY, 地毯丝，短纤，无纺布的垫圈

A variety of gaskets in different material and shapes are available for any type of applications, such as spin pack, spinning pump, extruder and more as seals and for any type of fiber process.

Alloys available: aluminum, copper, anti-rust aluminum, alloy aluminum, stainless steel, Teflon, PTFE and more.

弗太提供不同材质和不同形状适用于各种用途的垫圈，适用于各类纺丝过滤程序中的密封件，如过滤组件，纺丝泵，螺杆等。

各类合金材质: 铝, 铜, 防锈铝, 铝合金, 不锈钢, 特氟龙, PTFE 等。

Spin pack filters especially for POY /FDY/ BCF/staple fiber/ nonwoven spinning

专用于纺 POY, FDY, 地毯丝，短纤，无纺布的过滤网

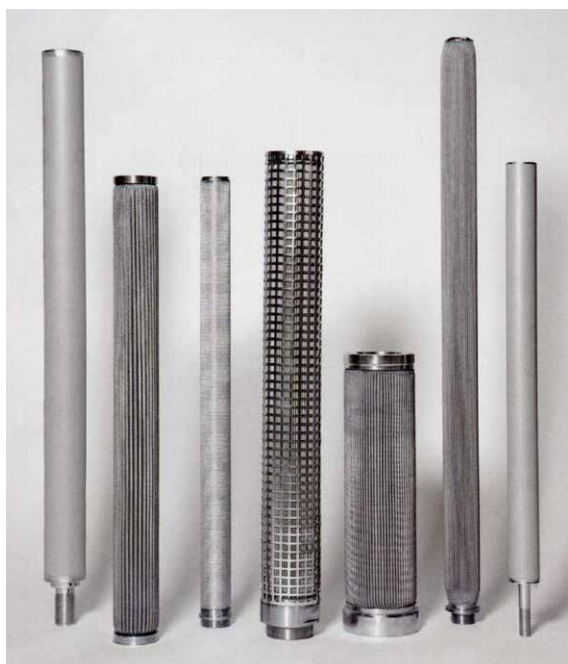
- any layers with different mesh
可提供不同目数，任何层数的过滤网组合
- any shapes with different frame alloys available
可提供形状各异，包边材质各异的过滤网
- spot weld pack available
可提供点焊网片
- different filter media
可提供不同的过滤媒介

Filter elements- candle filters, disc filters and others 过滤元件 - 滤芯，过滤碟片和其他



A large range of filter elements can be available. Our filter elements are designed to anti chemical and for multi-uses after easily handling for clean with same filter precision as new ones.

弗太生产各类过滤元件，具有抗腐蚀，易清洗，多次重复使用的特点。



Candle filters especially for POY /FDY/ BCF/ staple fiber/ nonwoven spinning

专用于纺 POY, FDY, 地毯丝，短纤，无纺布的
滤芯

Key advantages 主要优势：

- Assembly by welding
焊接组装
- Folding multi-layers
多层折叠
- Woven wire mesh or sintered fiber web with any mesh
不同目数的编织过滤网，任何过滤精度的纤维毡
- Different dimension available
可提供任何尺寸的滤芯
- Any type of joints
各类接头

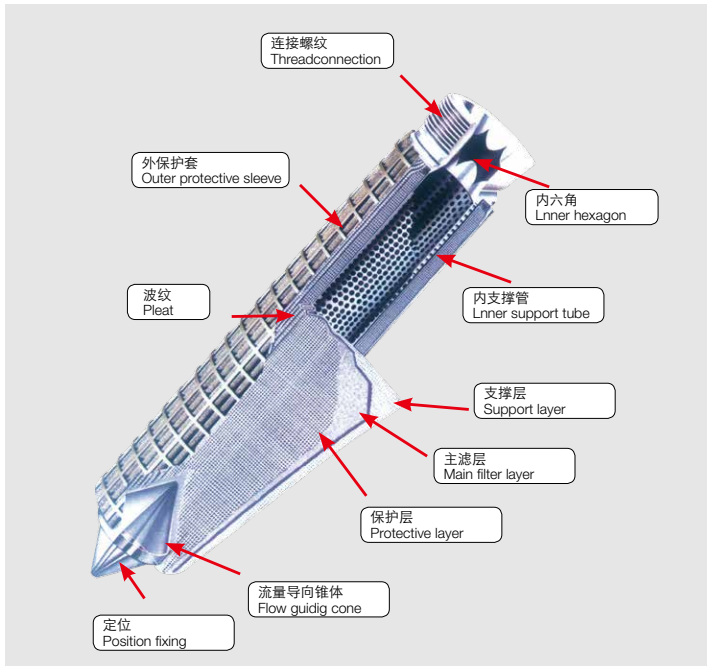


Disc filters 过滤碟片

It is widely used in the applications, such as BOPET film, tap and more, where the viscosity of molten polymers is high, hard foreign substance or gels exist. Most of these filter elements are using sintered metal fibers or sintered metal powder. Different size and shapes are available to reach your requirements.

过滤碟片被广泛应用于高粘度熔体过滤装置，如双向拉伸聚酯薄膜，胶片等行业。

材料大多采用不锈钢烧结毡和不锈钢烧结粉末。可提供不同尺寸，各种形状的过滤碟片以满足客户需求。



The candle filter can be designed to be fixed or removable, where mesh pack layers can be dismantled and replaced by a new one. It will save you money and time because you only need to replace mesh pack layers after the filter can't be used any more.

滤芯设计为不可拆卸和可拆卸式。滤芯中的过滤网拆卸后，可用新的过滤网替代。当过滤网无法继续使用的时候，只需替换掉过滤网即可，以节约成本和时间。

Metal filter media 金属过滤媒介



We can acquire a complete variety of metal filter media, which are resistant to chemicals and mechanical wear. They can be cleaned and re-used, therefore have a long lifespan.

可以提供各种金属过滤媒介，具有抗腐蚀和抗磨损的特点。可清洗重复使用，使用寿命长。

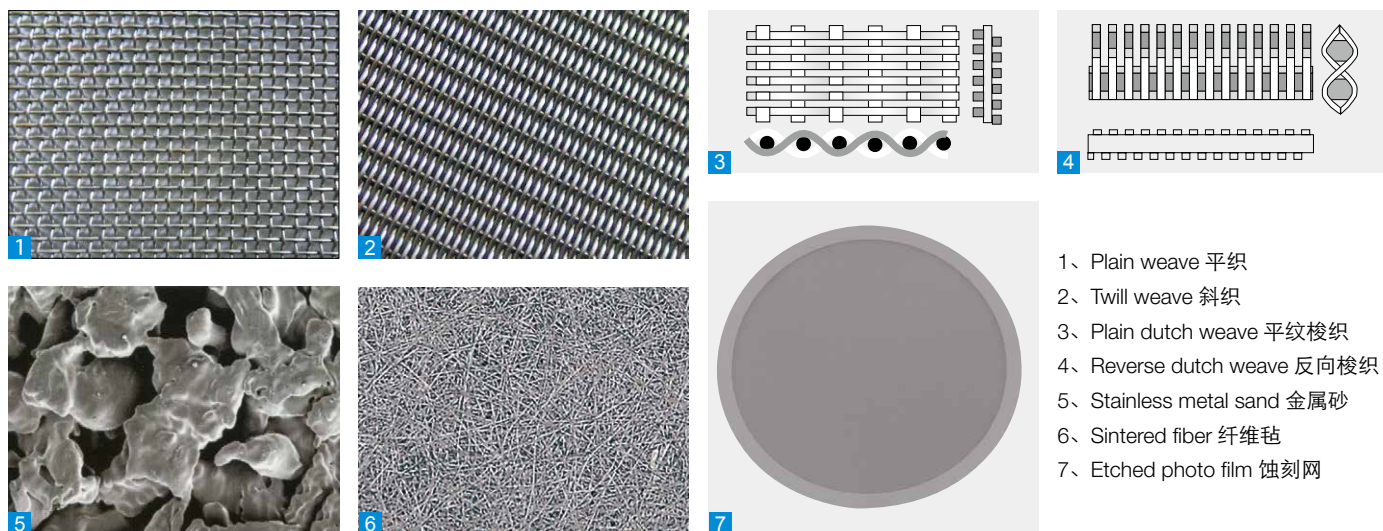
Based on our rich experience and knowledge, we can select filtering media and its structure, which is suitable for your application.

凭借我们在过滤领域丰富的经验和专业知识，我们可以为客户挑选适合您需求的过滤媒介及组件。

- Polymer flow through filter media easily
聚合物易于通过过滤媒介
- Long lifespan
更长的使用寿命
- Facilitate handling and maintenance
便利的安装和维护

Metal filter media

金属过滤媒介



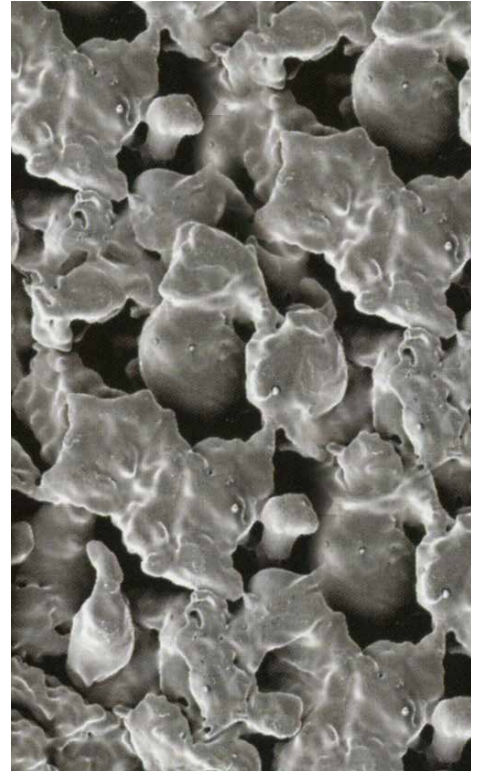
- 1、Plain weave 平织
- 2、Twill weave 斜织
- 3、Plain dutch weave 平纹梭织
- 4、Reverse dutch weave 反向梭织
- 5、Stainless metal sand 金属砂
- 6、Sintered fiber 纤维毡
- 7、Etched photo film 蚀刻网

Futai can provide a serial of wires according to the end applications in different types of raw material, such as 304, 304L, 316, 316L, 430, 317L, 904L, N6, copper, etc., made in any kind of weave, such as plain weave, twill weave, plain dutch weave, reverse dutch weave. Hereafter we list the commonly used mesh size of metal wire. If any special requirement, please contact us.

根据最终用途，弗太提供 304, 304L, 316, 316L, 430, 317L, 904L, N6, 铜等材质，按不同编织方式，如平织、斜织、平纹梭织、反向梭织等的各类丝网。如下表格为常用丝网的规格参数。如有特殊要求，请与我们联系。

Mesh 目数	Material 材质	Weave 编织方式	Wire Dia. 丝径 (mm)	Opening Width 开孔宽度 (mm)	Opening area percent 开孔率 (%)	Theoretical weight 理论重量 (KG/m ²)
20	304	平纹 Plain weave	0.4	0.87	46.9	1.6
24	304	平纹 Plain weave	0.3	0.758	51	1.08
30	304	平纹 Plain weave	0.3	0.546	41.5	1.35
40	304	平纹 Plain weave	0.2	0.435	47	0.8
50	304	平纹 Plain weave	0.2	0.308	36.7	1
60	304	平纹 Plain weave	0.19	0.233	30.38	1.08
80	304	平纹 Plain weave	0.12	0.1975	38	0.576
100	304	平纹 Plain weave	0.1	0.15	36	0.5
120	304	平纹 Plain weave	0.08	0.13	31	0.38
150	304	平纹 Plain weave	0.06	0.1	37.5	0.27
180	304	平纹 Plain weave	0.051	0.09	40.7	0.234
200	304	平纹 Plain weave	0.05	0.74	34	0.25
250	304	斜纹 Twill weave	0.04	0.0616	36	0.2
325	304	斜纹 Twill weave	0.035	0.04315	30	0.199
400	316	斜纹 Twill weave	0.029	0.0385	36	0.125
450	316	斜纹 Twill weave	0.0275	0.0289	26.8	0.16
500	316	斜纹 Twill weave	0.025	0.0258	25	0.156

Stainless Metal Sand for Filament Spinning 不锈钢金属砂



Achieving the highest quality fibers and filament with superior dye ability, strength, denier uniformity requires selecting the right filtering medium in the spin pack. Futai Stainless Metal Sand are the right spin pack filtering medium solution for outstanding continuity, fiber quality and volume performance. The irregular shapes of powder are extremely effective at shearing polymer micro gels, as well as trapping foreign materials in the polymer melt without any chemical reaction with polymer. The greater active surface-to-volume ratio of metal powder particles results in superior filtering capabilities and long filtration cycle. Exact control of polymer temperature is critical to avoiding capillary breakage and dyeing differences.

为了生产出优异的染色性能，强力和细度一致性好的化纤长丝，需要选用合适组件过滤媒介，而弗太金属砂是你最佳的选择。不规则的，尖锐的端缘等多突起形状有利于分割聚合物，能有效的捕捉熔体中的杂质，且不与熔体发生化学反应。孔隙率高，比表面积大，因而过滤杂质的数量多，延长组件使用周期。导热系数高，导热效果好，可使组件内部温度均衡，提高熔体的均匀性和可纺性。

The stream of melt metal liquid is atomized by high pressure water, shattered by water nozzles from different angles and levels into small grains, which have an extremely irregular shape. The filtration effectiveness mainly depends on porosity volume and particles surface area, which vary with the shape and size of the powder particles. Larger grains tend to have a higher porosity, but a lower active surface area. Fine particles gain a larger active surface area, but a lower porosity volume. The high active surface area is provided with good cleaning effective during filtration. Meanwhile, during the continuous production, it should contain more porosity in order to keep the spin pack pressure constant as longer as possible or minimize the pressure increase in longer period.

不锈钢金属流在受到来自不同方向，角度的高压水流冲击下雾化分散成不规则形状。过滤效果主要取决于孔隙率和颗粒的表面积，而这些随颗粒的大小和形状不同而波动。大颗粒具有较多的孔隙率，但较少的比表面积，而小颗粒反之。较多的比表面积提供更有效的过滤效果。同时，在连续生产过程中，更多的孔隙率能够在较长时间内保持组件压力的稳定。

Stainless Metal Sand for Filament Spinning

不锈钢金属砂

The metal sand filled in spin pack for filament and staple fiber spinning should contain two or three layers with different powder particle sizes and quantity. The best combination of particle sizes mainly depends on the type of polymer used in the spinning process, its viscosity and purity, melt temperature and extrusion velocity. The filtration grains are made of stainless metal alloys which are specially developed for hot polymer filtration. Iron, as basic element, is used to provide good strength in order to avoid brittleness of these particles during filtration under the condition of high pressure and hot environment, therefore decrease the risk of spinnerets capillary clogged. But other alloy elements such as chromium, nickel, silicon and Mn are added necessarily for improving strength and high porosity.

用于长丝和短纤纺丝组件中的金属砂最好由2或3种不同目数和数量配比组成。最佳的配比起决于聚合物种类，粘度，含杂量，熔体温度，螺杆挤出速度等。这种颗粒是由不锈钢合金制成。铁作为基本元素，其特有强度确保颗粒在高温高压下不易碎，从而减少喷丝孔的堵塞。其他合金元素如铬，镍，硅和锰有助于提高不锈钢颗粒的强度和孔隙率。

Technical Specification 技术参数

We can supply any type of particles size combination as requested. The common used mesh size is as the follow. 可以按要求提供各种目数及其配比。常用目数表如下。

Size Mesh 目数	Size Micron 微米	Density 堆积密度 (g/cm ³)	Porosity 孔隙率 %
10-20	2000-850	1.5	75
20-40	850-350	1.7	73
40-60	350-250	1.8	71
60-80	250-180	2.0	64
80-100	180-145	2.1	63
100-120	145-125	2.3	60

Main composition & its data 主要元素及含量

Item 元素	Data 含量	Item 元素	Data 含量
Ni 镍	8-11%	Si 硅	0.8-1.0%
Cr 铬	14-18%	C 碳	<0.07%
Mn 锰	1.2-2.0%	Fe 铁	Balance 基本

Porous metallic fiber web- high filtering precision

多孔金属纤维毡 - 高过滤精度



A web is a composition of fine micron metal fibers, which have metal tenacity and its strength, by uniformly lapping, laminating and sintering in high temperature to form a porous 3-dimensional non-woven web. It is combined with woven mesh at one or both sides to increase the strength, protect the fibers. This extremely porous metallic fiber fabric is also available with single layer formation, or multi-layers structure with coarse fibers to fine ones or the reverse, which allows high dirt holding capacity.

金属纤维毡是采用直径为微米级的金属纤维经无纺铺制，叠配，高温烧结制成的，具有3维多孔类似无纺布的金属网，具有金属的韧性和强度。为了增强金属网的强度，保护纤维毡，它通常一边或者两边与编织金属网配合使用。特别是多孔金属纤维毡可与单层过滤网配合使用，或多层过滤网与由粗到细的金属纤维网，或者反过来形成孔径梯度，从而使整个过滤网具有高纳污能力。

Product Type 型号	Filtration Rating 过滤精度 (μm)	Bubble Point Pressure 气泡点压力 (Pa) ±8%	Air Permeability 透气度 (L/min.dm ²)	Porosity 孔隙率 ±5%	
Normal Pressure Series 常压系列	BZ3D	3	12300	≥10	68
	BZ5D	5	5000	≥35	75
	BZ10D	10	3700	≥100	77
	BZ15D	15	2600	≥130	78
	BZ20D	20	1890	≥230	75
	BZ25D	25	1560	≥330	80
	BZ30D	30	1300	≥450	80
	BZ40D	40	975	≥580	78
	BZ60D	60	690	≥1100	85
BZ100D	100	630	≥1220	88	
High Dirt Holding Capacity Series 高纳污系列	CZ15D	15	2600	≥150	82
	CZ20D	20	1890	≥300	84
	CZ25D	25	1540	≥400	75
	CZ40D	40	1020	≥550	75
High Pressure Series 高压系列	DZ5D	5	6000	≥35	62
	DZ10D	10	3700	≥70	70
	DZ15D	15	2600	≥110	74
	DZ20D	20	1890	≥230	74
	DZ25D	25	1560	≥300	76
	DZ30D	30	1300	≥500	80
Economical series 经济系列	FZ15D	15	2400	≥200	75
	FZ20D	20	1800	≥250	70

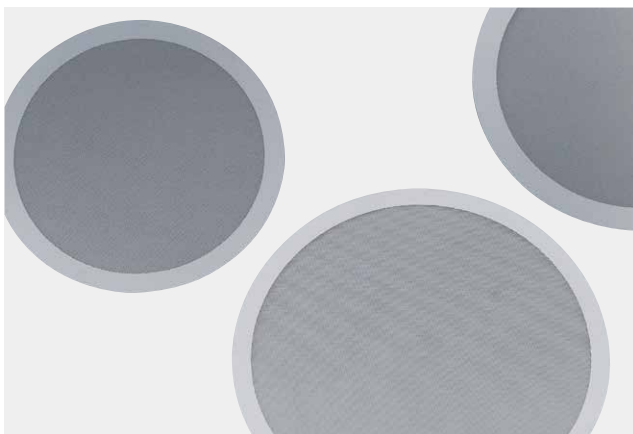
Note 注:

- ▶ Bubble Point Pressure is tested according to ISO4003. 气泡点压力按国际标准 ISO4003 检测
- ▶ Air Permeability is tested according to ISO4022. 透气度按国际标准 ISO4022 检测
- ▶ Air Permeability is tested at 200Pa, in the medium of air. 透气度是在 200Pa 压力下测定的值，介质为空气
- ▶ Specification as shown is just for reference. 过滤性能为参考数据，订货以检验合格证为准
- ▶ We can supply tailored products, with mesh on one side or both sides. The maximum size is 1200×1500mm. 可以根据客户需求订做单、双面护网毡，最大尺寸为 1200×1500mm

Porous metallic fiber web- high filtering precision 多孔金属纤维毡 - 高过滤精度

Product Application 不锈钢纤维毡用途：

- ▶ High-polymer filtration 高分子聚合物过滤
- ▶ Viscose rayon filtration 粘胶过滤
- ▶ Dust-collecting from high temperature gas 高温气体除尘
- ▶ Oil refining filtration 炼油过程的过滤
- ▶ Chemical catalyst filtration 化工催化剂过滤



Etched photo film especially for POY FDY spinning 专用于纺 POY,FDY 长丝的蚀刻网

This allows polymer to flow even to every hole of spinnerets and improve quality of filtration by holding fine particles. This product can extend the cleaning period of spinneret and increase its lifespan. We can offer you a wide range of diameter by different shapes.

蚀刻网拦截微细杂质，让流经的聚合物均匀流入喷丝板的各微孔，提高过滤效果。该产品可以延长喷丝板的清洗周期，使用寿命延长。可以提供各种尺寸，各种形状的蚀刻网

Metal pipe- framework of candle filters 金属管 - 滤芯支架

We can provide you with the complete specifications in the material of stainless steel 304 and 316.

我们可以提供材质为不锈钢 304 和 316 各种规格的金属管。

Product equipments 生产设备



◀ Numerical control sculpturing machine
数控雕刻机



Ultrasonic cleaning machine
超声波清洗机 ▶



◀ Laser punch
激光打孔机



Grinding machine
磨床

▶ Stamping workshop
冲压车间



▶ Fold wave machine
折波机




Bubble tester
冒泡试验台 ▶



◀ Computer check instrument
电脑检测设备

Extrusion
挤压机 ▶





Futai offers you the solutions in the field of filtration applications of polymer and molten chips. Futai is more than a source of standard quality filtering system, as well a reliable and specialized partner in the innovation, design and custom made partner to reach your highest specifications, provide you high-performance filtration media and systems, facilitate you handling and maintenance in your daily operation, also with the goals of saving your time and money.

弗太为您在聚合物和熔融切片过滤领域内提供解决方案。弗太不仅提供高质量的标准化的过滤系统，同时进行创新，设计，为客户提供专业，可信赖的服务，以满足客户高标准的需求。为您提供高性能过滤网媒介和过滤系统，为您在日常操作和维修中提供便利，同时为您节约成本和时间。

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