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YUN CHENG PLATE-MAKING GROUP.  
SHANGHAI CO.,LTD

**CERAMIC ANILOX CYLINDER**

上海运城制版有限公司 陶瓷网纹辊



## 公司介绍

**上海运城制版有限公司**，始建于1993年，正式投产是1994年10月，现由原来的一家公司，发展为上海运城制版总公司，下辖近二十家分公司。公司位于中国上海上海国际汽车城—嘉定区安亭镇，地处沪宁高速、312国道的交汇处、地理位置优越，交通便利，为企业的发展提供了有利的支持。

上海运城制版有限公司（简称“上运公司”）是一家专业生产各类凹印版辊的企业，多年来致力于为凹版印刷厂家提供高质量的版辊及完美的服务。产品涉及塑料包装、香烟酒类纸张包装、装饰纸、壁纸、木纹纸、地板革、皮革、胶囊、瓶盖等各个领域。

2000年上运公司在国内制版行业首家通过英国BSI国际认证公司“ISO9002”质量体系认证，使公司质量保证和质量管理再上了一个新档次。经过十多年的健康发展，已成为华东地区凹版印刷界屈指可数的优秀供货商之一。

为了适应印刷业的快速发展，我公司特成立了陶瓷辊生产部，主要生产陶瓷激光雕刻网纹辊，产品广泛用于瓦楞纸箱印刷、柔性版印刷、涂布、乃至胶印行业。公司引进当今世界上最先进的三阴极等离子喷涂系统和激光雕刻机等专用设备，公司拥有极其完善的配套加工设备和先进的进口质量检测设备。从辊胚下料到激光雕刻网纹辊及成品出厂，每道工艺都严格控制，确保每一件产品都臻于完美，最大限度地满足客户的需求。

我们的陶瓷激光雕刻网纹辊系列产品，采用国际先进的热喷涂工艺，以氧化铬等材料组合成结合强度高、致密且坚硬的陶瓷结构涂层，再通过先进的激光雕刻技术，可以制做出各种网孔形态及任意线数的陶瓷网纹辊。

我们拥有自己的跨国技术专家队伍、管理队伍。我们深信，在业界同仁的广泛支持下，我们的业务将不断向纵深发展，力争为各界用户提供更加完善、便捷的优质服务，我们真诚期待与您的合作。

**客户至上 质量为本 持续改进 寻求新的发展**





## Company Introduction

**Shanghai Yuncheng Plate-Making Co., Ltd** was founded in 1993 and put into production in October 1994. It develops from the original one company into current group corporation with over 20 filiales. The company locates in Shanghai International Automobile city, Anting Town, Jiading district, which adjoining the Shanghai-Nanjing Superhighway and 312 national road with advantageously geographical location and convenient transportation, all of which provide a strong backup for the development of the enterprise.

Shanghai Yuncheng Plate-Making Co., Ltd (shortened form "Shang Yun Company") is a specialized manufacturer of various kinds of rotogravure cylinders. It has been devoting in providing high quality rollers and perfect services for intaglio printing companies. The products mainly related to such kinds of field like plastic packing, paper packing on cigarette box and drink bottle, decorating paper, wall paper, decorating print of wood stripe, floor board, leather, capsule, bottle cap and so on.

In 2000, our company was awarded ISO9002 Quality System Certificate by Imperial Standard Association BSI International Certification Company. It made our quality guarantee and management upgrade. Trough over ten years' sound development, our company has become one of the limited outstanding suppliers in the field of concave plate-painting in Eastern China.

In order to adapt to the fast development in the printing industry, our company has established the Ceramic-roller Production Department especially, which mainly produces the ceramic laser-engraving anilox rollers. Our products are widely used in corrugated-paper-box printing, flexible printing, coating-cloth printing, and lithography-printing industry. The company introduced the most advanced three-negative-pole plasma spray system and the laser-engraving machine and other specialized equipment in the world. We have the extremely perfect processing equipment and the advanced import detection equipment. The roller from the embryo-treating to the laser-engraving to the finished product, each process is strictly controlled to guarantee that each product can perfectly meet the customer's requirements .

Our ceramic anilox laser engraving serial products are used the advanced thermal spraying technology, by combining chromium oxide and other materials to form high strength, dense and hard ceramic coating, and then through the advanced laser engraving technology to manufacture ceramic anilox rollers of which have each kind of cell shape and the random line number.

We have our own transnational technical experts and management team. We deeply believed that under the field colleague's widespread supporting, our business will continue to further develop in depth. We are trying our best to provide for the user of more perfect and more convenient service. We are sincerely looking forward to cooperate with you.

Regarding the customer as the god; Considering the quality as the basis;  
Persisting improvement; Exploring further development;



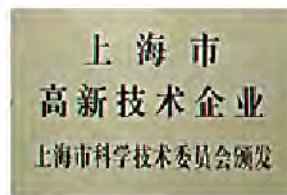
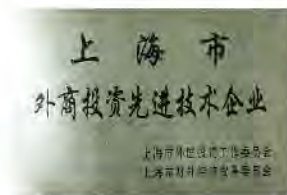
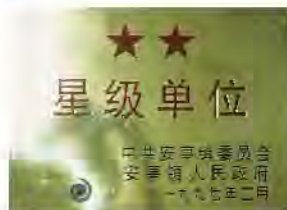
# 发展历程 Development Course

- ★ 1997年在上海市彩色桌面系统同原稿制作样张评比中得“优胜奖”；
- ★ 1997年被上海市人民政府协作办公室评为“国内协作优秀企业”；
- ★ 1998年被嘉定区授予两星级企业；
- ★ 1998年被评为“上海市外商投资先进技术企业”；
- ★ 1999年被嘉定区政府授予“文明单位”称号；
- ★ 2000年第四届“电信杯”嘉定区青少年技能大赛企事业形象展示赛“二等奖”；
- ★ 2002年被授予“上海市高新技术企业”称号；
- ★ 2003年烟特版分公司被授予嘉定区“2001-2003年度先进集体”称号；
- ★ 2005年荣获中国印刷集团举办的科印杯数码印刷作品大奖赛“数码打样与成品样”荣获优胜奖；
- ★ In 1997,obtained the winning prize at the rating of shanghai colored tabletop system with the original manuscript production.
- ★ In 1997,was appraised by the shanghai people's government cooperation office "the domestic cooperation outstanding enterprise".
- ★ In 1998,was awarded by jiading district as two-star level enterprise.
- ★ In 1998,was named as "Shanghai foreign-invested advanced technology enterprise."
- ★ In 1999,was awarded "the civilized work unit" by the Jiading District government.
- In 2000,awarded the "second prize" on the fourth session telecommunication cup,namely,the Youth Skills Competition
- ★ of Jiading to dispaly the image of enterprise.
- ★ In 2002,was awarded the "High-technology and New-technology Enterprise" in shanghai;
- ★ In 2003,the Cigarette-making Branch was awarded "the advanced collective title"of the year 2001to2003 by the Jiading District;
- ★ In 2005,Our works--"the Digital proofing and theFinished products" was awarded the winning prize on the "Science and Printing Cup",namely,the Digital Printing Works Grand Prix,which organized by the China Printing Group.

## 经过十多年的发展，上运公司在国内外共有十八家子公司

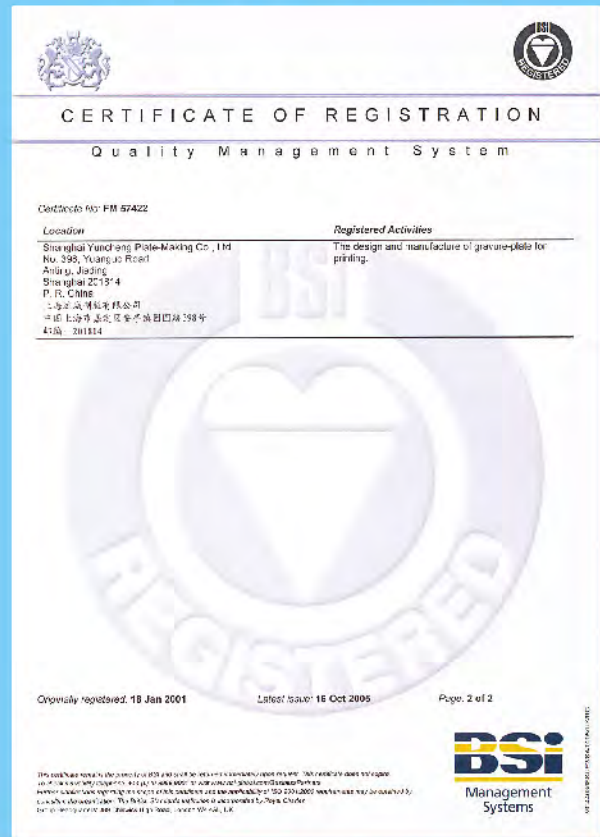
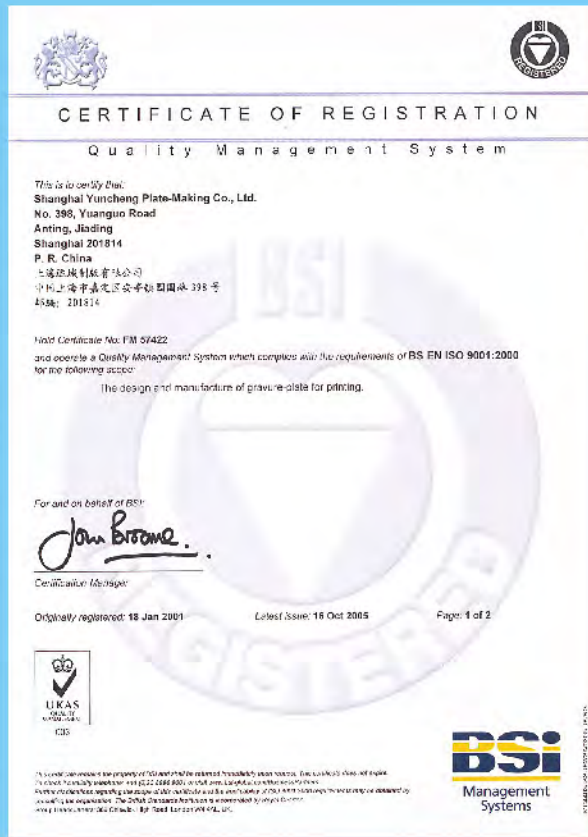
After more than 10 years development,ShanghaiYuncheng Plate-making Company has become a group,which has 18 subsidiaries at home and abroad

- 上海运城制版有限公司
- 上海运申制版模具有限公司
- 龙港运城制版有限公司
- 上海运青制版有限公司
- 南京运诚制版有限公司
- 捷克运城制版有限公司
  
- 上海运安制版有限公司
- 安徽桐城运城制版有限公司
- 浙江海宁运城制版有限公司
- 上海运盛制版有限公司
- 乌克兰运城制版有限公司
- 俄罗斯运城制版有限公司
  
- 江苏沪运制版有限公司
- 温州运城制版有限公司
- 台州运城制版有限公司
- 无锡运城制版有限公司
- 孟加拉运城制版有限公司
  
- 杭州运城制版有限公司



# ISO 体系认证

ISO quality system authentication



本公司于2002年7月荣获英国BSI国际质量体系认证机构颁发的ISO9001:2000质量体系认证证书。

In July of 2002, our company was awarded ISO9001:2000 Quality System Certificate by Imperial Standard Association BSI International Certification Company.

## 质量方针

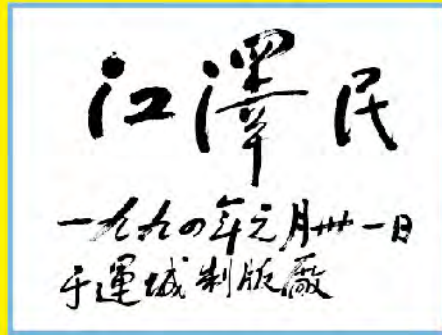
立足质量第一  
以服务赢得市场

追求改善创新  
创世界一流企业

### The policy of quality

Regarding the quality as the most important thing of all Tracing the continuous improvement and renovation  
Winning the market by good service Establishing the first class enterprise of the world





1994年，江泽民总书记在山西运城制版集团视察  
President Jiang Zemin inspected our company in 1994

## 集团公司

山西运城制版集团股份有限公司前身是山西运城地区制版厂，一九八四年引进国外先进制版设备，专业从事软包装凹印辊筒的制作。随着中国包装业的发展，运城地区制版厂也有了长足的进步，开始在全国各地组建分公司。1992年成立东莞运城制版有限公司，1993年成立大连运城制版有限公司，上海运城制版有限公司.....

山西运城制版集团股份有限公司成立于一九九六年。目前在全国各地共有六大制版总公司，控制着近七十家子公司。拥有电子雕刻机500余台和激光雕刻机20余台，具有年生产版辊950000支的能力，在国内市场占有70%以上的市场份额。

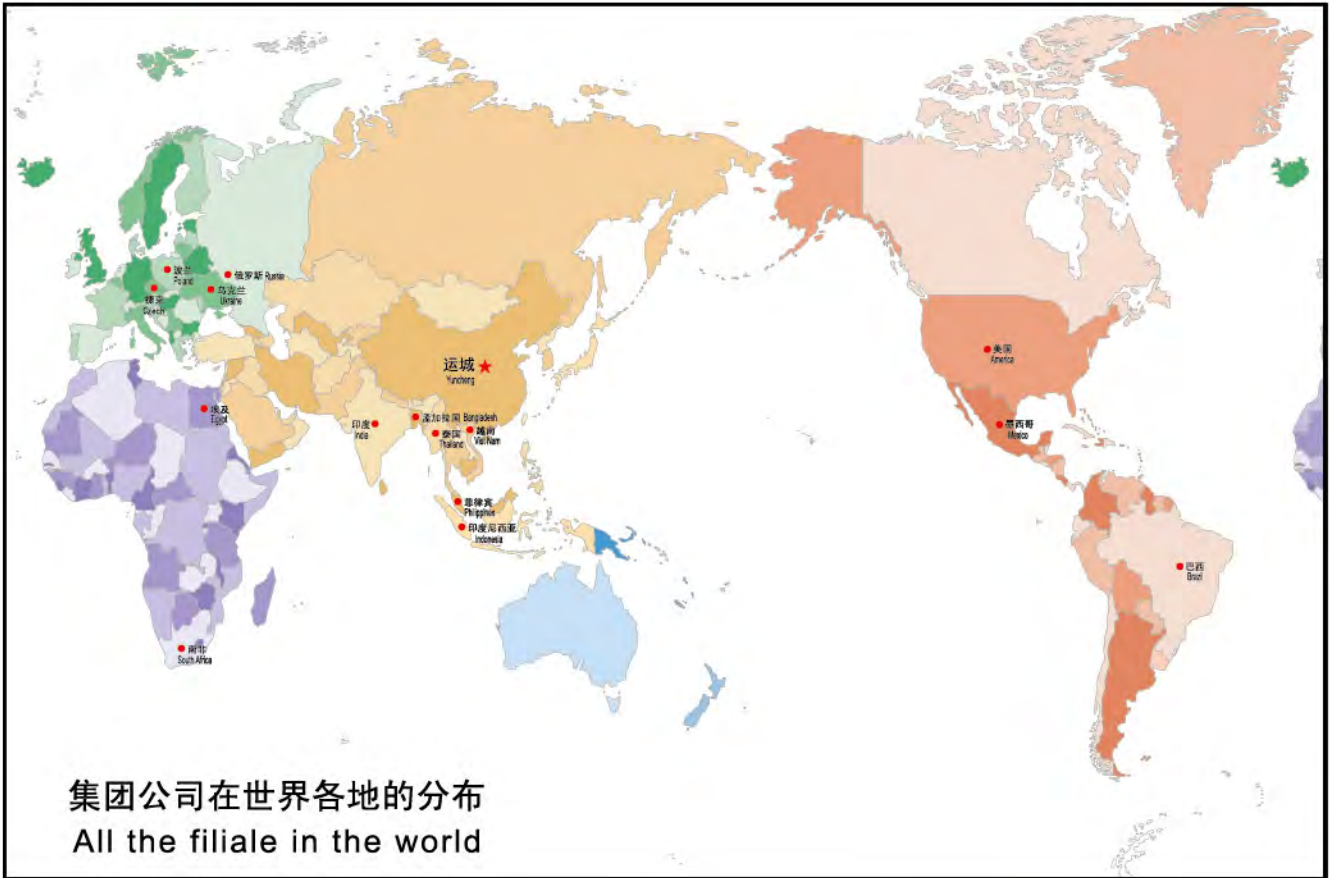
进入二十一世纪，集团公司开始在国外设立分公司，泰国、越南、菲律宾、乌克兰、印尼、孟加拉、埃及、捷克等地的分公司均已投产。同时，还有更多的分公司在紧锣密鼓的筹建之中。

## Group

Shanxi Yuncheng Plate-Making Group Joint-Stock Co., Ltd was originated from Shanxi Yuncheng Plate-Making Factory. It introduced advanced plate-making equipments from abroad in 1984 and then was specialized in making softy-packing concave rollers. With the development of packing business in China, the factory had made great progress and established many subsidiary corporations throughout the country. In 1992, Dongguan Yuncheng Plate-Making Co., Ltd was set up and in 1993 Dalian Yuncheng and Shanghai Yuncheng.....

Shanxi Yuncheng Plate-Making Group Joint-Stock Co., Ltd was established in 1996. At present, it totally has 70 holding companies of six group corporations in the whole nation. More than 500 advanced electrical carving machines and 20 laser carving machines with manufacturing capability of 950000 concave rollers per year, 70% or more occupying the national market of middle and high level concave roller.

Entering the 21st century, the Group has taken a new step towards the world: subsidiary corporations in Thailand , Vietnam, Philippines, Ukraine, Indonesia, Bangladesh, Czech,Egypt have put into production and more and more subsidiary corporations are under construction.





# CERAMIC ANILOX CYLINDER 陶瓷网纹辊

## 陶瓷网纹辊应用范围：

- 柔版印刷、胶印印刷、凹印印刷
- 软包装
- 标签、信封、表格纸、手提袋
- 瓦楞纸箱
- 薄膜、纸品涂布、上光
- 壁纸、木纹纸等

## Application of Ceramic Anilox:

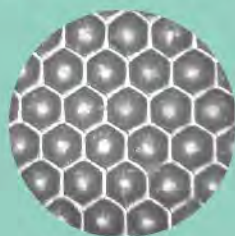
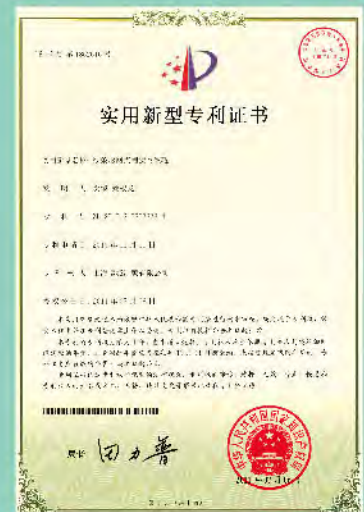
- Flexographic Printing、Lithography Printing、Gravure Printing
- Flexible Packing
- Label, Envelope ,Paper Forms, Handbag
- Corrugated Box
- Plastic Film ,Coated Paper Products ,Glazing
- Wallpapers, Wooden-patterned Paper ,etc.

## 陶瓷网纹辊加工规格及参数：

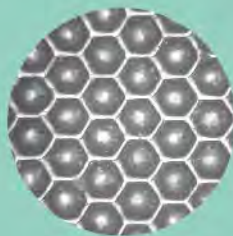
- 网线数范围：30-2000LPI
- 最大幅宽：4800mm 带轴5250mm
- 直径范围：25-600mm
- 网角范围：1-89度
- 网穴形状：六边形、四边形、斜线形等,也可根据客户需求提供多种形状

## Specifications and Parameters of Ceramic Anilox:

- Screen Count Range:30-2000Lpi
- Maximum width:4800mm 5250mm(with axis)
- Diameter Range:25-600mm
- Screen Angle:1-89degree
- Cell shape: hexagon, quadrangle and line, etc and the many more cell shapes may meet your requirement



60° 六边形网点  
60 Degree Hex



30° 六边形网点  
30 Degree Hex



四边形网点  
Quadrangle cell



通沟形网点  
Channel pattern



斜线形网点  
Line pattern



## 陶瓷网纹辊主要特点:

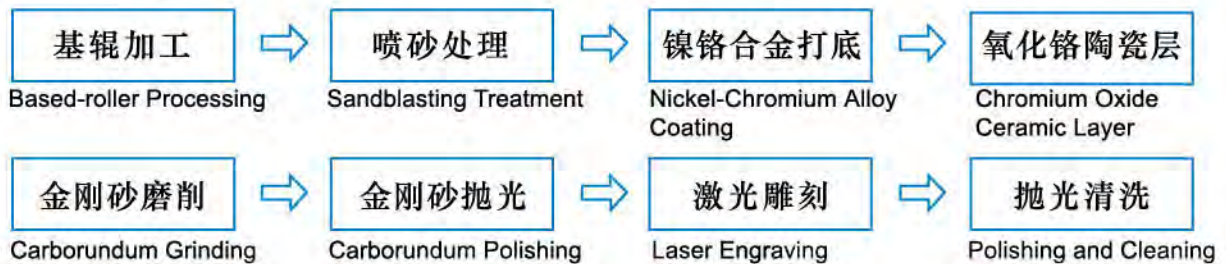
- 耐磨损、耐腐蚀、耐高温、使用寿命长、节省成本;
- ALE光纤激光雕刻, 传墨量大, 网孔规则, 网壁光滑, 网底平整, 快速释墨, 清洗容易;
- 采用严格的工艺进行陶瓷层等离子喷涂, 保证陶瓷层的孔隙度、厚度和均匀性;
- 采用超强不锈钢合金结合层保证陶瓷层与辊基牢固结合, 并可有效防止油墨中的腐蚀剂侵入辊基;
- 所有产品提供网孔容积检测报告, 保证载墨量的精确性;

## Main Features of Ceramic Anilox:

- Anti-fraying, Anti-corrosive, Thermostability, Long-life service and Cost-saving
- The cell engraved by ALE fiber laser engraving machine ,has a large quantity of Ink-containing. And the cell has a regular shape and a smooth cell-wall and cell-bottom. Thus, not only can the ink in the cell release quickly, but also it can easily to clean.
- Taking strict process of plasma-sprayed ceramic layer, guarantees the porosity, the thickness and the uniformity of the layer.
- Combined with the super-alloy stainless steel layer to ensure the solid combination of the ceramic layer and the roller base. So, it can present the corrosive substance of the printing ink to plug into the roller base effectively.
- Providing all the products the cell-volume detecting report to ensure the accuracy of the cell's ink-containing.

## 陶瓷网辊加工流程

### Processing Flow





## 激光雕刻设备 Laser Engraving Equipment



引进当今世界最先进的ALE 光纤激光雕刻设备多台，最大光率500W，采用“三束光”、“多次打击”、“MAD摇摆技术”，生成比普通激光雕刻更深更光滑的网点形状，有利于传墨的均匀性。

Taking the most advanced ALE optical fiber laser engraving three machines, and its max power reaches 500 watt, and using “three beams” and “multi-beating” to generate cell which is deeper and smooth than that generated by the ordinary one. So it is benefit for the ink transfer.

## 等离子喷涂设备 Plasma Spraying Equipment

采用瑞士SULZER三阴极等离子喷涂系统，涂层质量高、孔隙率低、微观硬度可达到1300HV-1450HV，涂层后采用精密级磨床加工，更好地保证了版辊精度。

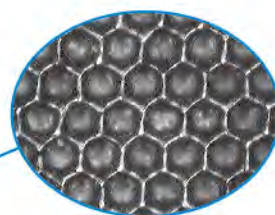
Using Swiss-made SULZER three-negative-pole plasma spraying system, the coating quality is high and the porosity is low, and the micro-hardness may reach 1300-1450HV. After coating, we take the precision grinding-machine to process coating roller to guarantee the accuracy of it.



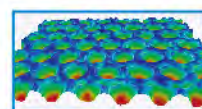
## 测试仪 Cell Tester

采用先进的英国进口测试仪，专为陶瓷网纹辊设计的一款测试仪，能准确的测量网穴的体积、网点大小、开口大小、网点深度、网孔截面角度以及生成三维图等。

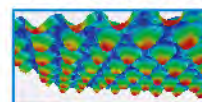
Adopting the advanced British-made tester, designed for Ceramic Anilox use, The cell tester can measure accurately the cell's volume, the cell size, the cell surface area, the cell depth, The cell cross-section angle and the cell's 3-D images



网点图形  
the cells shape



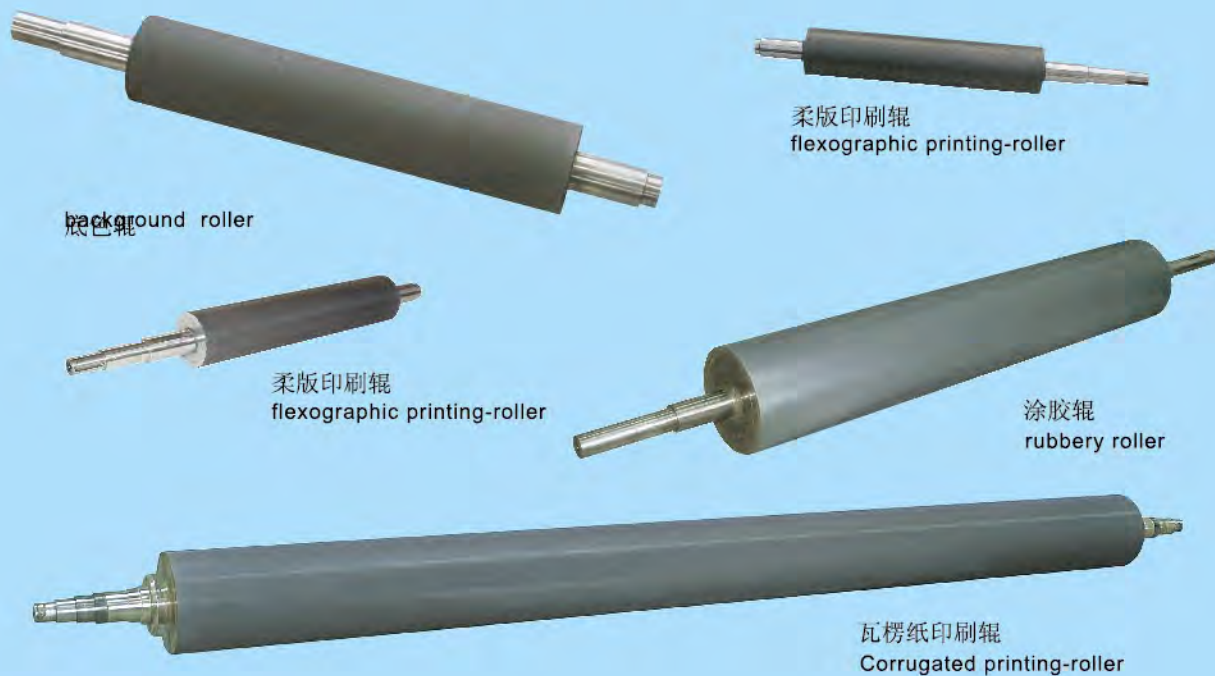
网点表面立体形态图  
the three-dimension pattern of the cell's surface



网点底部立体形态图  
the three-dimension pattern of the cell's bottom



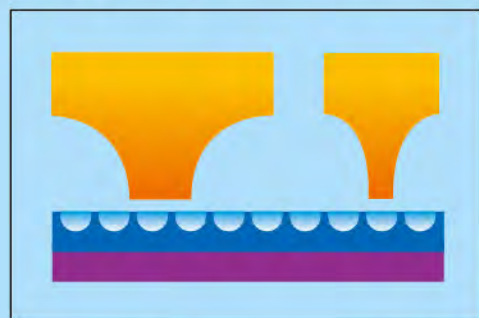
# CERAMIC ANILOX CYLINDER 陶瓷网纹辊



## 网纹辊线数的选择

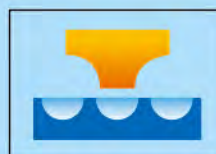
网纹辊的线数必须为柔印版线数的3.5-7倍，这样才能保证印版中的最小网点不会陷入网纹辊的网穴内而导致印刷时出现网点扩大、脏版等缺陷，影响印刷质量。所以网纹辊线数的正确选择应该是根据柔印版的最小网点直径，再计算选择小于最小网点直径的网纹辊网孔所对应的线数。

Anilox roller's screens must be 3.5-7 times of flexo rollers, Thus That can ensure the smallest holes will not fall into the Anilox-roller's holes, to Cause hole's enlargement or dirty rollers when printing, to destruct the roller's quality, so the correct method in selecting screens of Anilox is to refer to the size of the smallest holes of the flexo rollers. Then take the smallest one's diameter to select the corresponding



合适  
right

不合适  
wrong



不合适  
wrong



不合适  
wrong

(网点扩大)  
Dot gain

## 超声波清洗

我公司配有超声波清洗设备，清洗范围：版面长1800mm\*直径25-400mm以内。

Our company has Ultrasonic equipment of cleaning the Anilox roller surface. It can clean the following specifications roller: Maximum width: 1800mm \* Diameter range: 25-400mm







## 根据柔印项目选择合适的载墨量和网线规格

According to the type of flexographic printing roller ,you can choose the following volumes and lines

典型的印刷项目	网纹辊线数	容积
柔性包装（纸箱直接印刷）	线数/英寸	BCN/in <sup>2</sup>
柔版网点印刷（大于85LPI）	400-660	3.2-5.6
柔版网点印刷（小于85LPI）	300-550	4.1-7.9
柔版网点与实地混合版（刮刀刮墨）	330-550	4.1-7.4
柔版网点与实地混合版（橡胶辊刮墨）	250-400	4.0-6.9
线条与文字（刮刀刮墨）	300-500	4.7-7.9
线条与文字（橡胶辊刮墨）	250-360	4.5-6.9
线条与实地（刮刀刮墨）	300-400	5.6-7.9
线条与实地（橡胶辊刮墨）	220-300	5.5-7.7
满版实地与上光油（刮刀刮墨）	250-330	7.4-9.9
满版实地与上光油（橡胶辊刮墨）	180-250	6.9-9.6

典型的印刷项目	网纹辊线数	容积
柔性包装（纸）标签/商标	线数/英寸	BCN/in <sup>2</sup>
柔版网点印刷175-200LPI	900-1200	1.2-2.4
柔版网点印刷150LPI	800-900	1.4-2.5
柔版网点印刷120-133LPI	600-800	2.0-2.6
柔版网点与实地（混合版）	500-600	4.0-6.0
柔版网点与文字	500-700	3.0-4.0
线条与文字	440-550	3.5-4.5
线条与实地	360-500	4.0-5.5
实地	280-400	5.0-7.5
实地与上光油	250-400	5.0-8.0

典型的印刷项目	网纹辊线数	容积
柔性包装（薄膜和金属箔）	线数/英寸	BCN/in <sup>2</sup>
柔版网点印刷>150LPI	700-900	1.4-2.5
柔版网点印刷120-150LPI	500-800	2.0-2.6
柔版网点印刷85-120LPI	440-700	2.5-4.0
柔版网点与实地（混合版）	440-700	4.0-6.0
柔版网点与文字	360-500	3.5-5.0
线条与文字	300-440	4.0-6.0
线条与实地	250-400	5.5-7.8
实地	200-330	6.5-9.0
实地或白版	180-250	8.0-11.5



# CERAMIC ANILOX CYLINDER 陶瓷网纹辊

## 正常使用维护，以及非正常情况下可能出现的问题

对网纹辊进行及时正确的日常维护，是防止辊筒损坏、延长使用寿命和获得稳定的高质量印刷品的直接保证。

### 1、存储

- (1) 网纹辊包装储存在室内干燥的地方，防止因受潮、雨淋及直接日晒而损坏。
- (2) 更换网纹辊时要保护好网纹辊辊面，防止碰撞损伤，不要储存未清洁干净的网纹辊，存放时应用天然纤维制成的包装箔纸包裹辊筒。
- (3) 存储时将辊筒固定在专用支架上。不要将辊面倾斜地放置在地面上，否则容易导致辊筒表面的喷涂层损坏。

### 2、装卸

不要将吊装绳带直接固定在辊面上来吊运移动辊筒，以避免提升时将辊筒滑落摔坏。移动辊筒的正确方法是将带子或是其它的支持物固定在辊筒的两端轴头上，并避免接触到辊筒边缘或是陶瓷喷涂的其它部分。

### 3、印刷环境

印前去除印制品表面的灰尘杂质，保持印刷部的清洁。

### 4、油墨选用和过滤

拒用含有填充杂质的劣质油墨。在油墨槽中放置磁性过滤器，避免金属杂质划伤网纹辊。

### 5、及时清理

每次印刷之后必须及时彻底的清洁辊筒表面，避免剩余的油墨存留在网孔底部干固和堵塞网孔，难以有效清洁，引起容积的减小，油墨释放量降低，影响印刷质量。

### 6、检查

经常使用网孔显微镜检测网孔，如发现磨损和堵塞，应及时采取措施。

### 7、正确使用刮刀

- (1) 不要为了得到更多的色调而对刮墨刀过度加压，以增加网纹辊和刮刀磨损。
- (2) 不要将干燥的网纹辊对着刮墨刀旋转。
- (3) 每次更新刮刀，都需要重新设定压力。错误的压力设定就会产生刮刀碎片，损伤辊面。
- (4) 停止使用已超过最大磨损度的刮刀，建立监视刮刀磨损变化的日常流程，稳定地控制刮墨刀的磨损程度，避免损伤网纹辊。
- (5) 时刻保持辊筒与刮刀的平行，每15天就进行一次检查校准。

### 8、合理选用网孔类型

采用正确的网孔深度与开口比例。正确的比例意味着更平滑的表面和更慢的刮刀磨损。

### 9、正确的网纹辊日常清洁维护

- (1) 钢丝刷日常清洗  
先以溶剂擦净油墨，再以专用化学清洗剂，采用钢丝直径0.07毫米的专用不锈钢丝刷清洁网孔。
- (2) 化学清洗剂浸泡清洗  
使用专用的网纹辊网孔化学清洁剂浸泡辊筒，通过沿着辊筒轴向运动的高压喷淋装置，将溶液喷射至旋转的网纹辊，清洗掉网孔内的残留油墨，再以清水冲洗，空气吹干。
- (3) 碳酸氢钠（小苏打）干燥清洁系统  
采用向网纹辊低压喷射焙干的碳酸钠（小苏打）粉撞击网孔内的残留干固油墨的原理，可有效地清洁网纹辊。
- (4) 超声波清洗  
将辊筒浸在化学清洗溶液内缓慢旋转，超声波发生装置使溶液振动，产生出无数的微型气泡撞击网孔，气泡在压力作用下爆炸达到清除网孔内残留物，彻底清洁网孔的目的。必须注意采用合适的超声波强度、频率、时间和溶液温度，防止过度清洗损坏网纹辊的网孔。

### 10、严禁错误的清洗方式：

- (1) 蒸汽喷洗  
它会损坏网纹辊雕刻表面，导致钢体变形和腐蚀。
- (2) 火烧  
高温喷射的火焰会严重损坏陶瓷表面，导致网纹辊受热变形以及在陶瓷上留下痕迹。
- (3) 酸及其化学替代物  
这是尝试清洁辊筒最坏的方式。许多酸的化合物会严重影响陶瓷喷涂，并会腐蚀轴头和钢体，而且，酸也会影响操作者的健康。



钢丝刷



## Right maintenance of Ceramic Anilox roller and problem by non-normal use:

The right and timely maintenance of the roller is to avoid damaging the roller and extend the roller service life and ensure stable quality of printing.

### 1. Storage:

- (1) The ceramic Anilox shall be stored in a dry place indoors, to prevent from moisture, rain and direct sunlight.
- (2) When replace the Ceramic Anilox roller, this roller's surface must be protected, to prevent collision damage. When store the roller, it must be cleaned and be wrapped with package paper that made by natural fibers.
- (3) When store the roller, it should be fixed in the special roller bracket. Do not directly place the roller on the ground, or damage easily the coating layer of the roller.

### 2. Handling:

When handing the roller, do not directly fix the hoisting rope to the roller's surface, because that is easy to fall break. To fix the hoisting rope or other supporting material in both ends of the roller shaft, this will not damage the roller edges or other parts of ceramic coating.

### 3. Printing environment

To clean dust and impurities on the surface of printed material before printing, sure that it is clean.

### 4. Ink selection and filtering

Refused to fill inferior ink that contain impurities. To place the magnetic filters in ink tank, that can avoid the metal impurities scratching the ceramic coating.

### 5. Timely cleaning

The roller surface must be cleaned timely and thoroughly after each print, to prevent the ink remaining in the cell bottom and running dry to block up the cell, and it is difficult to be cleaned, to avoid causing the cell volume decreases and reducing the print ink, affecting the printing quality.

### 6. Check

Microscopic detection instrument is commonly used, to take timely measure the cell, to find the wear and clogging.

### 7. the scraper used method

- (1) Do not in order to get more tone, do not pressure excessive on the scraper, it's easy to speed up the roller and scraper wear.
- (2) Do not use the dry roller against the scraper rotating.
- (3) Each time replace the scraper, you need to re-set pressure. The wrong pressure of the scraper will produce scraper debris, that will damage the roller surface.
- (4) Stop using the most wear scraper, set up the daily process of scraper wear to monitor scraper changes, to avoid Anilox roller damage.
- (5) Keep the roller and the scraper paralleling, every 15 days to check the calibration.

### 8. The right selection of cell types

Cell with the correct depth and the opening ratio, the correct ratio means more smooth surface and slower scraper wear.

### 9. The correct routine cleaning and maintenance roller

#### (1) Daily cleaning with wire brush

First to wipe the ink with solvent, and then cleanout the cell with special chemical cleaning detergents and 0.07 mm diameter stainless steel wire brush to clean cell.

#### (2) Immersion cleaning with chemical cleaning detergents

To soak Anilox roller with a dedicated chemical cleaning detergents, then to spray the Anilox roller along the roller axial with the high-pressure spray equipment, spraying the chemical cleaning detergents to the rotating roller, the residue ink in the cell will be cleaned out, then to rinse with water, to dry with air.

#### (3) Sodium bicarbonate (baking soda) Dry Cleaning System

Low-pressure spray the drying sodium carbonate (baking soda) powder to the roller, to impact the residual dried ink in cell, which can effectively clean the roller.

#### (4) Ultrasonic Cleaning

Dip the slow rotation roller in chemical cleaning solution, the ultrasonic generating device vibrate the solution to produce a myriad of micro-bubble collision cell, the blowing up bubble by pressure to clear the residue ink in cell hole, to achieve the purpose of thoroughly cleaning the cell. Must pay attention to apply appropriate ultrasound intensity, frequency, Time and solution temperature, to prevent excessive cleaning from damaging the cell of the Anilox roller.

### 10. the wrong cleaning method:

#### (1) Steam spray

It will damage the Anilox roll surface, leading to deformation and corrosion of steel.

#### (2) Fire

High-temperature jet of flame would seriously damage the ceramic surface, resulting in thermal deformation and marks on the ceramic Anilox roller.

#### (3) Acid and other chemical substitutes

This is the worst means to clean the roller. Much acid compounds will seriously affect the ceramic coating, and will corrode the shaft head and steel body, and the acid will also affect the operator's health.





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