

# CHINA CLEAN

## 中国清洁 (卷)

中国市场经济信息库系列丛书

中国清洁行业专业图书

2006 年 第 5 辑

*Photocatalyst Generates Hundreds of Billions*  
光触媒市场规模达上千亿美元

*Special Feature: Sweepers and Scrubbers*  
专题：洗地机与扫地车

*Cleanwill: Quality Builds Brand*  
金日：品质堆积品牌



The 5th edition

September/ October 2006



# Building Care Products

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# 打造清洁中国

## Build A Clean China

■ 金卿 —— 《中国清洁 (卷)》编辑

Jimmy King - Editor Of China Clean Publication

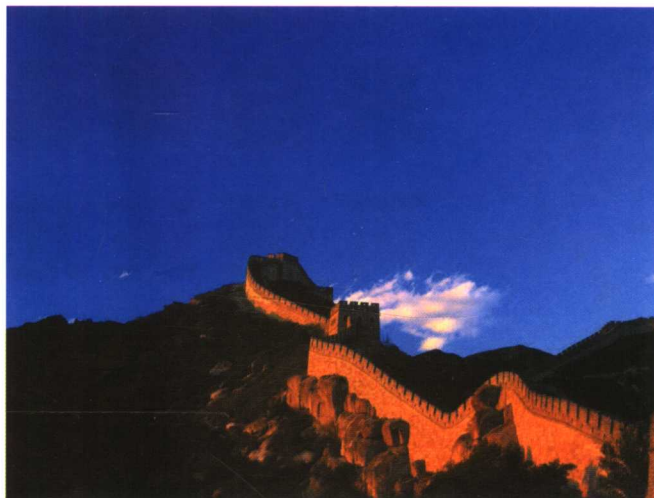
全国第一辆不喝油、不燃气的环保型、新能源高压道路冲洗车即日起在铁路上海南站(上海火车南站)启用。这无疑是一条令人振奋的消息,因为这样的产品正顺应了中国创建环境友好型社会的大趋势,我想中国清洁行业在这一点上应该可以大有作为。

环保意味着清洁,污染来源于不洁。要让人们自觉地做到清洁,自愿地实践环保,一切都要从改变观念开始。本辑《中国清洁 (卷)》访问了凯驰中国的马宏总经理,他认为只要人们注重了生活中各方面的清洁,就能延长寿命,从而提高了整个民族的身体素质。虽然改变观念并非一朝一夕所能实现,但只要形成良性循环,中国和世界各地的人们必将共同享有一片清洁的蓝天。

最近我访问了SCA在上海的工厂,给我留下深刻印象的是该公司将环保与创新相结合的经营理念。SCA是世界知名的纸制品集团,年销售额超过100亿欧元。造纸所消耗的木材必将引发环境问题。在欧洲,SCA有自己的森林,通过严格科学的管理,SCA实现了可持续生产。另一方面,虽然纸制品生产是一项传统产业,但SCA仍然通过不断研发,力求使用更少的原材料生产出更高品质的产品。我想中国企业从中可以看到,清洁产品的功能在于给人们洁净环保的生活工作环境,而实现这一功能还要依赖于产品本身不断的创新。

中国被称为“世界工厂”已经有很多年了,“中国制造”产品的产量居世界第一已经多达数百类,但中国品牌在世界“名牌录”中仍然难寻踪迹。反观中国清洁行业,目前仍然是经销商所代理的洋品牌的天下。同时,众多国际知名企业纷纷以品牌为旗帜,通过独资、合资等形式占领中国市场。没有自主品牌,或是自主品牌不够成熟,都使得中国清洁设备生产商缺乏较高的增值盈利能力。

中国清洁企业应当通过不断自主创新,走出有中国特色的清洁之路。此外,在产品不断求新求变的同时,更要注重对服务品质的提升。正如金日清洁设备(苏州)有限公司总经理沈钢告诉《中国清洁 (卷)》的,要以“我们出售的不仅仅是产品”为口号,花大力气提供优质售后服务,才能在客户中树立起良好形象。只有注重创新、注重清洁理念的传播,注重清洁品牌的树立才能让世界感受到一个清洁的中国!



The first eco-friendly new energy washer vehicle, consuming no oil or gas, was launched in Shanghai. This new exciting product meets the trend that China is building an eco-friendly society. I believe China's cleaning industry may thus have a lot to do to advance this trend.

Being environmental means being clean while pollution comes from uncleanness. The first step to make people do cleaning and be environmental is to change their mind. In this edition, China Clean interviewed Mr. Ma Hong, general manager of KARCHER China. Mr. Ma thinks that as long as people pay much attention to the cleaning in all aspects of their life, they can live longer and the health of the whole nation is improved. It may take a long time to change people's mind, yet once a virtuous circle is formed, people from China and other parts of the world can all share a clean blue sky.

When I recently visited SCA, I was really impressed by its concept of combining environmental protection with innovation. SCA is a world-renowned paper manufacturer with an annual sales volume of more than 10 billion euros. Paper manufacturing consumes wood and may cause environmental problem. SCA owns forest in Europe and makes sustainable manufacturing. Meanwhile, SCA never stops research and development, trying to produce better quality with fewer raw materials. I think what our Chinese enterprises can draw from SCA's case is that cleaning product provides people with clean environment and it is innovation that makes it happen.

China has been named "The world factory" for many years. More than 100 categories of products are made in China, but none of the brands is listed world-famous. We may discover that so far China's cleaning market is still full of overseas brands. Many overseas companies are expanding their market share in China by setting up joint ventures. Chinese manufacturers lack their own brand. Even if they have some, these brands are still fledgling. This scarcity deprives Chinese manufacturers of gaining big profit or being value-added.

Chinese enterprises should make their own way by continuous innovation. More attention should also be paid to service when a product is being optimized. As Mr. Shen Gang, general manager of Cleanwill said to China Clean, we should make "We sell more than product" our slogan and work very hard on after-sale service. We will build a clean China only by innovation, the promotion of cleaning ideas and the establishment of a cleaning brand.



## 中国城市环境卫生协会华东地区第十四届年会在上海召开

### CAUES Held its 14th Annual Meeting in Shanghai

由中国城市环境协会华东地区联络组主办,上海市市容环境卫生行业协会承办,上海环境集团有限公司协办的中国城市环境卫生协会华东地区第十四届年会近日在上海新梅华东大酒店举办。为期3天的本届年会以“前进中的市容环境卫生事业”为主题,通过展示一年来华东地区市容环境卫生各企事业单位

在改革、发展、管理等工作中的成就、风采,以突出效果,相互借鉴。会上,上海市市容环卫管理局副局级巡视员冯肃伟作了《共同推进中国城乡环境卫生体系建设》的主题报告,来自华东六省一市的相关代表在会上进行了交流。会上,业内优秀企业还受到了表彰。大会决定明年的年会将在浙江省举办。

China Association of Urban Environmental Sanitation held its 14th annual meeting in Xinmei East China Hotel. With the theme "The City Appearance and Sanitation in Progress", the 3-day meeting displays the achievements made by the regarding companies and organizations during the reform, development and management. Mr. Feng

Suwei, inspector from Shanghai City Appearance and Environmental Sanitation Administration Bureau, made the keynote speech Push Forward the Construction of China's Urban Environmental Sanitation. Some excellent companies were awarded on the meeting. Next year's annually meeting will be held in Zhejiang Province.



图为大会现场



图为获奖企业上台领奖



图为冯肃伟巡视员在作报告

## 艺康化工全球销售额上升 16%

### Ecolab's Global Sales Send Earnings Up 16 %

艺康化工在北美、拉丁美洲和亚太地区的销售势头持续保持强劲,至6月30日,其第二季度销售额已创出新高。

艺康化工二季度总销售额增长了6%,达到了创纪录的12亿美元,净收入增长至9300万美元,每股收益增长16%,达到0.36美元。

由于Institutional业务和Kay业务实现了两位数增长,艺康化工美国清洁和卫生的二季度销售增长10%,达到5.44亿美元,其运营收入增长19%,达到8600万美元。按固定汇率计算,艺康化工国际销售额在二季度增长了5%,达到5.62亿美元。拉

丁美洲和加拿大呈现了两位数增长,亚太区也有不错的增长,欧洲各大市场在增长缓慢的前提下仍然取得了相对温和的销售额。固定汇率运营收入增长5%,达到5500万美元。随着销售的增长,价格和成本策略可以抵消不断增长的运输成本和投资费用。按公开汇率计算,国际销售额和运营收入都有2%的增长。

公司透露,当前的财政状况要归功于2005年4季度开始采用的SFAS 123(R)会计标准。

Continued strong sales trends in its North American, Latin American and Asia Pacific businesses led

Ecolab's second quarter results to record levels for the period ended June 30, 2006, according to a company press release.

Ecolab's consolidated sales increased 6 percent to a record US\$1.2 billion in the second quarter while net income increased to a record \$93 million. Earnings per diluted share grew 16 percent to \$0.36.

Second quarter sales for Ecolab's United States Cleaning & Sanitizing operations increased 10 percent to \$544 million, as Institutional and Kay led the growth with double-digit gains while its operating income rose 19 percent to \$86 million.

Sales of Ecolab's international operations, when measured at fixed currency rates, rose 5 percent to

\$562 million in the second quarter. Latin America and Canada showed double-digit sales gains, and Asia Pacific sales also showed good increases; Europe recorded a moderate sales gain as markets in our major central countries continued to slow results. Fixed currency operating income rose 5 percent to \$55 million, as sales growth, pricing initiatives and cost efficiencies offset higher delivered product costs and business investments. At public currency rates, international sales and operating income both grew 2 percent.

The release notes that the company's financial results include the impact of Ecolab's adoption of SFAS 123(R), the accounting standard for expensing stock options, in the fourth quarter of 2005.



## 环保总局国家统计局发布绿色国民经济核算研究成果

### SEPA & SSB Releases Green GDP

国家环保总局和国家统计局于9月7日向媒体联合发布了《中国绿色国民经济核算研究报告2004》。这是中国第一份经环境污染调整的GDP核算研究报告,标志着中国的绿色国民经济核算研究取得了阶段性成果。研究结果表明,2004年全国因环境污染造成的经济损失为5118亿元,占当年GDP的3.05%。虚拟治理成本为2874亿元,占当年GDP的1.80%。环保总局副局长潘岳与国家统计局局长邱晓华指出,由于部门局限和技术限制,已计算出的损失成本只是实际资源环境成本的一部分,一个完整的绿色GDP还需要更为艰苦的工作。

绿色国民经济核算(简称绿色GDP核算)是指从传统GDP中扣除自然资源耗减成本和环境退化成本的核算体系,能够更为真实地衡量经济发展成果。

The State Environmental Protection Administration (SEPA) and the State Statistical Bureau (SSB) jointly released The 2004 Report on the Calculation of China's Green GDP on

Sept 7. This report is the first of its kind in China that counts pollution to the calculation of GDP, marking a temporary achievement of Green GDP calculation. The research shows that the national loss caused by pollution was 511.8 billion Yuan, accounting for 3.05% of that year's GDP. The cost for virtual treatment was 287.4 billion Yuan, accounting for 1.80% of that year's GDP. Pan Yue, vice-director of the SEPA, and Qiu Xiaohua, director of the SEPA, both indicated that because of the technological limitation, the result of loss is only a part of the actual environmental cost and a complete Green GDP still takes greater efforts to finish.

Green Gross Domestic Product (abbreviated: Green GDP) calculation deducts the cost of environmental damage and resources consumption from the traditional gross domestic product. It assesses the result of economic development in a more accurate way.

## 巴斯夫提高丙烯酸酯在亚洲的价格

### BASF Increases Price of Acrylic Esters in Asia

(2006年8月21日)巴斯夫今天宣布,在现在的合同允许情况下即日起提高丙烯酸丁酯和丙烯酸2-异辛酯的价格,以抵消近日主要原材料成本的提升。

丙烯酸单体的聚合物用途广泛,例如:纸张涂布用的分散体和胶乳、粘合剂和涂料、高吸水性材料、水处理化学品、纺织和皮革助剂、无纺布、洗涤剂、塑料以及纤维。

巴斯夫是全球领先的化工公司——The Chemical Company。公司的产品范围包括化学品、塑料、特性化学品、农用产品、精细化学品以及原油和天然气。作为各行各业值得信赖的合作伙伴,巴斯夫的智能解决方案和高价值产品帮助客户取得更大成功。公司开发并利用新技术开拓更多

的市场商机,同时有机结合经济发展、环境保护和社会责任三大支柱,实现和谐美好的未来。2005年,巴斯夫全球约94,000员工,销售额超过427亿欧元。

Hong Kong, China, August 21, 2006 - BASF today announced that it is increasing the price of Butyl acrylate and 2-Ethylhexyl acrylate in Asia Pacific with immediate effect, as far as existing contracts permit, to offset the recent increase in major raw material costs.

Acrylic monomers are important building blocks for the polymers used in a wide number of applications. For example, they are used in dispersions

## 全国首辆环保高压道路冲洗车在沪问世 China's First Environmental Friendly Washer Vehicle



全国第一辆由电容、电池混合而成的环保型、新能源高压道路冲洗车由上海瑞华集团开发研制成功,即日起首先在铁路上海南站启用。该车不用汽油、不用燃气,时速可达70公里,一次充电行程达100公里。

据介绍,这种“混合电能”道路冲洗车,不仅功率大、无污染、无噪音,而且单位公里耗电费用仅为同类车的1/4。同时,该车一次装水2吨半,兼具冲洗和喷洒等多种功能,能根据路面的整洁情况及人流密度采用雾状喷水,洒水宽度达2.4米,可连续作业近2小时。到2010年世博会前,上海将有100辆新能源环卫作业车投入使用。

The first environmental friendly washer vehicle with green energy has been put into use in

Shanghai South Railway Station. The battery-propelled vehicle is developed by Shanghai Ruihua Group and consumes no gasoline or liquefied petroleum gas. With a full battery, the vehicle can run 100 kilometers and the top speed is 70 km/hr.

The new mixed electrical vehicle is said to have great power with no pollution and noise. Its electricity charge is only 1/4 of the other similar vehicles. The vehicle can store 2.5 tons of water once and is able to both rinse and spray. It can spray at the width of 2.4m consistently for 2 hours, according to the road condition and traffic flow. 100 more vehicles with new energy will be on site before the 2010 Shanghai Expo.

and emulsions for paper coating, adhesives and coatings, super-absorbent products, water treatment chemicals, textile and leather auxiliaries, non-woven fabrics, detergent builders, plastics and fibers.

BASF is the world's leading chemical company: The Chemical Company. Its portfolio ranges from chemicals, plastics, performance products, agricultural products and fine chemicals to crude oil and natural gas. As a reliable partner

to virtually all industries, BASF's intelligent system solutions and high-value products help its customers to be more successful. BASF develops new technologies and uses them to open up additional market opportunities. It combines economic success with environmental protection and social responsibility, thus contributing to a better future. BASF has approximately 94,000 employees and posted sales of more than Ä42.7 billion in 2005.



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## 光触媒市场规模达上千亿美元

### Photocatalyst Generates Hundreds of Billions

2006年8月26日上午,首届中日光触媒技术推广报告会在北京召开。来自日本、中国和中国香港的专家、学者和企业界代表一百多人参加了交流和研讨。

光触媒是利用二氧化钛光催化剂的强大氧化能力进行杀菌、消毒、除臭和去污。光触媒对于温度没有严格的限制,常温条件下就可以发生氧化还原反应。在室内环境净化治理应用上主要有抑制浴室和厨房的污垢、减少室内的污浊空气、过滤空气等功效。

随着光触媒技术应用与研究的不断发展,全球迎来了光触媒产业化的时代。目前,中国、美国、德国、法国和韩国等对光催化剂氧化钛的研究开发正在迅速展开,它的应用范围在进一步扩大,氧化钛作为光功能材料的性能在不断提高。

据统计,2004年底全球光触媒相关产品市场规模达五百亿美元,到2005年底则翻了一番。中国室内环境委员会主任宋广生预测,光触媒在中国至少有二百亿元以上市场规模。



新闻和图片来源:中国室内装饰协会室内环境监测工作委员会

(August 26, 2006) The first Sino-Japan Conference on the promotion of photocatalyst was held in Beijing. More than 100 participants, including experts, scholars and entrepreneurs from Japan and China, attended the meeting and exchanged their views.

Photocatalyst utilizes the strong oxidation power of titanium dioxide to disinfect, kill bacteria, and remove odor and dirt. There is no strict temperature requirement for photocatalyst and the oxidation-reduction reaction can take

place at normal temperature. When applied to indoor air quality control, photocatalyst is capable of removing dirt in bathroom and kitchen, reducing polluted air and purifying air.

Photocatalyst is growing into an industry around the world with the advancement of its research and application. Currently many countries are working on the R&D of titanium dioxide, including China, USA, Germany, France and Korea. The application of titanium dioxide is being expanded and its performance as a photocatalyst is being improved.

According to statistics, the market volume of photocatalyst products by the year 2004 was USD \$50 billion and the figure was doubled by 2005. Song Guangsheng, director of China's Indoor Environment Committee, expected the market volume of photocatalyst in China to reach at least RMB 20 billion.

## 乔治亚·太平洋任命新总裁兼首席运营官 Georgia-Pacific Names President/ COO and Realigns Leadership



乔治亚·太平洋是一家世界领先的卫生纸、包装纸、纸浆、建筑产品和相关化学品生产商,总部位于亚特兰大。公司在北美、南美以及欧洲的300多个地区拥有约55,000名雇员。

ATLANTA, GA. August 01, 2006 -- Georgia-Pacific Corp. today announced that it has named James Hannan, 40, executive vice president - chief administrative officer, as the company's new president and chief operating officer, effective immediately. In addition, two new members have been elected to Georgia-Pacific's board of directors: Hannan and Michael C. Burandt, 62, executive vice president - North American consumer products.

In his expanded role as president and COO, Hannan will continue reporting to Joseph W. Moeller, 62, chairman and chief executive officer. Hannan will add significant business group responsibilities and continue leading several major capability and functional areas for the company.

乔治亚·太平洋集团于8月1日宣布任命40岁的执行副总裁兼首席执行官詹姆斯·汉纳为其新任总裁兼首席运营官。此外还选举了汉纳以及62岁的执行副总裁迈克尔·布兰德为公司董事。

汉纳身兼总裁和首席运营官,将继续向62岁的公司主席、首席执行官约瑟夫·穆勒汇报工作。汉纳将担负起更多责任并继续指挥公司主要生产职能部门。

## 嘉得力成立北方嘉得力(北京)环保设备有限公司 Gadlee Opens its Office in Beijing

作为意大利IPC与Dulevo在国内唯一正式的战略合作伙伴,为配合国内市场的快速成长,Gadlee已相继在成都、南京、上海、深圳、武汉、沈阳等各大城市成立办事处,并于今年8月在北京正式成立北方嘉得力(北京)环保设备有限公司,以此进一步扩大Gadlee在中国的营销网络和售后服务中心。

As the official sole strategic partner with Italian IPC and Dulevo in mainland China, Gadlee has opened its offices consecutively in Chengdu, Nanjing, Shanghai,

Headquartered at Atlanta, Georgia-Pacific is one of the world's leading manufacturers and marketers of tissue,



图为公司办公室一角

Shenzhen, Wuhan and Shenyang in order to better coordinate its business with the rapid development. In August 2006, Gadlee opened Northern Gadlee (Beijing) Environmental Protection Equipment Co., Ltd., aiming at further expanding its marketing network and after-sale service centers in China.

packaging, paper, pulp, and building products and related chemicals. The company employs approximately 55,000 people at more than 300 locations in North America, South America and Europe.





## 上海市室内环境净化协会成立

上海市民家庭装修后需要室内空气质量检测,如果不满意装潢公司介绍的检测单位,自己又不了解这方面的信息怎么办;检测后有毒气体超标如果需要净化治理,也不知道哪家公司的产品货真价实,又怎么办,这些问题长期困扰着广大家装消费者。现在,市民们有了一个可以咨询和投诉的权威性机构。日前,国内第一家室内环保协会——上海市室内环境净化协会正式成立,协会并已开通市民咨询投诉热线 65122179和上海室内环境净化网www.iaq.gov.cn。

自2001年下半年起,我国相继出台了一系列室内空气质量标准,室内环境净化行业在相关政策的催化和市场的需求中得以快速发展。据统计,上海从事室内环境治理净化的相关企业已近200家,2006年总产值将达10亿元。上海已经成为全国室内环境净化行业发展的中心。



图为大会现场

### 上海市室内环境净化协会筹备背景

随着我国国民经济的发展,人民生活水平的不断提高,人们对室内空气质量开始认识、关心。2001年下半年,国务院两位副总理针对室内环境污染的危害,连续做出两次批示,指出:“室内环境问题关系人民身体健康,必须引起高度重视,有关部门要加大研究。”接着,国家连续颁布了《室内空气质量标准》和《装修材料有害有毒物质限量十项标准》。2002年,经上海市社团管理局审核批准,上海市环境保护产业协会室内环境治理分会正式成立。

2005年2月,经过自愿协商,分会中11家企业愿意作为发起单位,向上海市经委、上海市社会服务局、上海市社会团体管理局申请筹备成立上海市室内环境净化协会。至2006年8月,上海市室内环境净化协会筹备组接到了政府各行政主管部门下达的准予筹备的批文。8月22日,上海市室内环境净化协会成立大会暨第一届会员大会正式召开。



与会代表热烈祝贺协会成立

## 第四届上海国际室内环境净化技术与产品展览会全新出击

上海国际室内环境净化技术与产品展览会即日起正式与中国著名展览业巨头——上海博华国际展览有限公司建立战略合作关系。从2007年4月起,上海博华国际展览有限公司和上海市室内环境净化协会每年将共同主办“室内环境净化技术与产品展览会”。

“博华国际”的高层表示,室内环境净化是我国的朝阳行业,是关系到千百万老百姓身体健康的大事。“博华”一定会和上海市室内环境净化协会合作好,充分发挥“博华”在

展览界的优势,全力培养,精心呵护这朵展览业的“幼苗”。优化重组展览合作方是我们今后展会能否最终成功的组织保证。

2007年4月4日—6日,上海市室内环境净化协会与上海博华国际展览有限公司共同主办的室内环境净化展览会将与业界知名展——“中国清洁博览会”全面合并,统一招商,倾力打造亚洲顶级清洁卫生与室内环境专业展。展会名称为“第六届中国清洁博览会暨第四届上海国际室内环境

净化技术与产品展览会”。2007年4月4日—6日在上海新国际博览中心举办上述展会的同时,将举办“第十六届上海国际酒店用品博览会”和“第十五届中国国际建筑装饰展览会”。在同时、同地、同亮相的室内环境净化产品、清洁卫生产品、酒店用品、建筑装饰材料的展览会,可以让人激动的想象:在展位前来回流动的的主体专业观众和上下游专业观众将数不胜数。

在2007年4月展会期间,上海

市室内环境净化协会在有关部门的支持下,将举办“首届上海室内环境节”。在为期5天的节日活动中,我们将配合“城市,让生活更美好”的上海世博会主题思想,宣传“居室,让空气更新鲜”的室内环境健康生活方式,唤起市民对室内人居空气环境的保护意识。参展单位将在“首届上海室内环境节”组委会的安排下,参加各项丰富多彩、形式多样的与上海市民互动的精彩活动。“首届上海室内环境节”对企业从展馆走向更大的城市舞台,将会起到“桥梁”的作用。



# 专题: 洗地机与扫地车

## Special Feature: Sweepers and Scrubbers

■ 专题编辑: 金卿

工业革命后, 机器生产在许多行业中都取代了传统的人力劳动。21 世纪的今天, 我们的地面清洁也可以由机器来代劳。传统的扫帚簸箕被集合成了扫地机, 而水桶拖把的任务则由洗地机来完成。大型的扫地车更可以在城市的路面中穿梭, 使得辛勤工作的环卫工人不用再承受日晒雨淋, 而可以在空调操作室内驾驶着扫地车快速高效地完成清扫任务。

洗地机与扫地车一般可分为手推式和驾驶式两种。手推式是一种较小型的设备, 清洁宽度较小。由于没有驱动装置, 需要操作人员在车后推动。而驾驶式洗地机与扫地车则配有动力推进系统, 操作员可以坐在驾驶室内进行控制。这类车型的动力一般为电池或汽油/柴油, 适用于不同的工作环境。对于大面积的户外清洁, 可以使用汽油/柴油驱动的车型, 这样可以保证足够的动力供应, 而室内更适合用电池驱动车型。

洗地机与扫地车的一般规格参数包括: 洗地刷尺寸、清洗宽度、吸水扒宽度、清洁效率、刷盘转速、刷盘压力、刷盘电机、清水箱容量、污水箱容量、电源、电压、功率等。

本期《中国清洁 (卷)》就以此为专题, 请读者一同分享国内外人士对这类设备的见解。

Machines have taken the place of human labor in many fields since the industrial revolution. In the 21st century, machines can also clean floor for people. Traditional brooms and dustpans have been integrated into sweepers while mops and buckets evolved to scrubbers. Heavy-duty

washer vehicles can clean city roads and free cleaners from burning sun and pouring rain. Cleaners can now sit in an air-conditioned operation room and steer the vehicle to finish cleaning fast and effectively.

Sweepers and scrubbers are generally divided into two categories in terms of the way of operation: walk-behind and ride-on. Walk-behind machines are usually small in size with a small working width. The operator needs to push the machine from behind since the machine does not have a driving power. Ride-on sweepers and scrubbers, with their driving power, enable the operator to control the machine in the console room. Ride-on machines are usually powered by battery, diesel or gasoline, depending on different working situation. Diesel/gasoline are more suitable for large area cleaning because they provide sufficient power while battery are more suitable for indoor use.

Some technical parameters of sweepers and scrubbers include: brush size, cleaning width, squeegee width, coverage, brush speed, crush pressure, brush motor, solution tank capacity, recovery tank capacity, vacuum motor, power supply, etc.

China Clean makes sweepers and scrubbers the special feature of this edition and shares the point of views from home and abroad on these machines with our readers.



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# 洗地机与扫地车：硬地面养护应用

## Sweepers and Autoscrubbers for Hard Floor Care

■ NSS Enterprises, Inc.

无论在哪里，硬地面养护都是一大挑战。在宾馆、医院或办公楼，干净的地面能给人留下好印象。但日常走动、开门关门和货物运送等都会把灰尘和垃圾带入室内，而室内的灰尘和污渍则更加大了这一挑战。大楼内的自然活动会把灰尘和垃圾附着在地面上，影响外观、磨损表面。选择使用正确的商业清洁设备将使你的投资发挥效率，以更得投资获得更好的外观。

首先，也是最重要的，采用地垫可以把由走动带入室内的灰尘和垃圾有效减少60-80%。人们进入大楼前的七、八步必然要先踩在垫子上，从而可以在清洁鞋子之后再踩到养护过的地面。由于地垫会积存大量灰尘，因此需要至少每天全面吸尘一次，最好能每天两次。另外，每天晚上都应在地垫进行轮换，这样可以使各地垫平均磨损。

Maintaining hard floors is a challenge in every facility. Whether a hotel, hospital, or office building, a clean floor creates a positive impression. But each day foot traffic, open doors, and shipments bring dirt and debris into a building. Internal sources of dust, dirt, and spilled material add to the challenge. The natural activity in a building just grinds dirt and debris into the floor, dulling the appearance and wearing the surface. Selection and use of the right commercial cleaning equipment will help leverage your investment, resulting in a better looking floor at a lower cost.

First and foremost, a good walk-off mat program will reduce dirt and debris brought into a building by up to 60-80%. A good mat program forces everyone entering the building to take at least seven or eight steps on the matting before reaching a finished floor, cleaning their shoes as they walk in. Since they are intended to be dirt collectors, mats should be thoroughly vacuumed at least once if not twice a day. And each night the mats should be rotated to assure the pile wears evenly.

Daily cleaning of hard floors—terrazzo, natural stone, concrete, ceramic or composite tile—maintains the appearance, reduces the need for restorative processes, and extends the useable life of the floor surface, lowering lifecycle costs. This typically involves three steps:

1. mechanical removal of surface dirt and debris
2. cleaning the surface with an appropriate chemical solution

3. buffing or burnishing to restore the surface finish

The procedure and frequency of the third step varies depending on the type of facility (e.g., hotel, hospital, office building, retail store), the owner's or customer's requirements, and the floor surface. Because the first two steps of daily hard floor maintenance are nearly universal, this article will focus on the equipment requirements for removing surface dirt and debris, and chemical cleaning.

### Sweepers

Traditionally, surface dirt and debris were removed by sweeping with a broom or dust mopping. The large size of many buildings, increased labor costs, and higher customer expectations make commercial sweepers a better solution for daily use. Sweepers gather, remove and capture surface dirt and debris in one step. Capturing the material as it is being removed improves Indoor Air Quality, and reduces the amount of dust that is stirred up, ultimately falling back onto the floor and other surfaces.

Generally, there are three types of commercial sweepers available: mechanical, battery powered, and ride-on. They are all similar in design, usually consisting of one or two large rotating brushes that span the width of the machine and a smaller side broom to pull in material from baseboards.

Mechanical sweepers rely on the operator for their energy. Although the brushes only move when the sweeper is in motion, a me-





硬地面的日常清洁，包括磨石子地、自然石地、水泥地、陶瓷地和复合瓦的清洁可以维护外观、减少保养过程、延长表面使用寿命，降低周期成本。此类清洁通常包括三步：

1. 机械清除表面灰尘、垃圾
2. 用合适的化学剂清洁表面
3. 抛光，恢复亮泽

其中第三步的具体步骤和频率会因场所（如：宾馆、医院、办公楼、零售店）、负责人要求、客户要求的不同而有所不同，同时也取决于不同的表面。由于日常硬地面护理的前两个步骤是最为常见的，因此本文主要关注除尘设备的要求和化学清洗。

## 扫地机

清除表面灰尘和垃圾的传统方法是用扫帚和拖把，而许多大楼的大面积清洁却增加了劳动力成本，同时客户要求的提高也使得商用清洁成为更好的日常解决方案。扫地机使收集、清除、捕获灰尘、垃圾实现一步到位，这样改善了室内空气质量，也减少了扬尘数量，使灰尘不至于再次落到地面或其他表面上。

通常由三种类型的商用扫地机：机械式、电池式和驾驶式。他们的设计相似，一般有1—2个与机身同宽的大型旋转刷盘和一个侧边刷用于脚板垃圾清扫。

机械式扫地机依靠操作员作为动力来源，尽管刷盘只有在机器移动时才会工作，但机械式扫地机的效率仍然比扫帚和拖把高出五倍。电池式扫地机因其高速刷头而性能更好，旋转的刷头轻轻搅动地面，使

灰尘松动，再将灰尘和垃圾吸入垃圾收集箱内。较高档的电池式扫地机用离心扇在收集箱内制造负压，进一步减少进入空气和周围地面区域的灰尘。由于电池式扫地机一般体积和重量都较大，所以大多数机型都配有动力装置，以提高操作员的生产力。

对于更大面积，电池驱动的驾驶式扫地机可以凭借每小时6000平方米的清扫速度有效节省时间。除了可以减少劳动力以外，快速清洁还可以把对客户和客人的影响降低到最小。

尽管地面面积是选择商用扫地机的一大重要因素，但仍然有以下一些因素需要考虑：

●过滤——过滤器大得多，可以防止堵塞

●震动器——可以把附着在过滤器上的灰尘抖落下来，延长工作时间

●收集箱大小——当然越大越好，但也要易于拆卸和更换

●电池和充电器——电池容量应当满足你的需求，必须附带充电器

●机器宽度——确保机器可以进门、适合紧密区域

●其他用途——商用扫地机也可以用于较短的毯子甚至户外操作

作为一种相对简单的机器，扫地机也易于维护。每天都应该清空收集箱、清洗过滤器、检查损坏情况，电池也要适当充电，每周要检查所有的电路连接处，如有必要还需为电池充液。

chanical sweeper is still five times more efficient than a push broom or dust mop.

Battery powered sweepers are better because of the constant high speed of the brush. The rotating brush lightly agitates the floor surface to loosen and collect more of the dust and debris in the collection bin. The better battery-powered units include a centrifugal fan to create negative pressure in the bin, further reducing the material returned to the air and surrounding floor area. Because battery-powered machines are bigger and heavier, most are self-propelled to maximize operator productivity.

For truly large areas, a battery-powered ride-on sweeper can be a real time saver since some sweep over 6,000 sq. meters an hour. In addition to the labor savings, cleaning faster minimizes disruptions to customers and guests.

While the size of the floor area involved is key, when selecting a commercial sweeper there are a number of other factors to consider:

● filtration - larger, multiple filters are best to avoid clogging during a shift

● shakers-these help dislodge debris embedded in the filters, keeping the machine on the job longer

● bin size-here bigger is better, but be sure the bin is easily removed and replaced

● batteries and charger-the capacity of the batteries should match your needs, and an on-board charger is a must

● machine width-be sure the machine will fit through doors and into tight areas

● other uses-commercial sweepers can also be used on short nap carpet and even outdoors

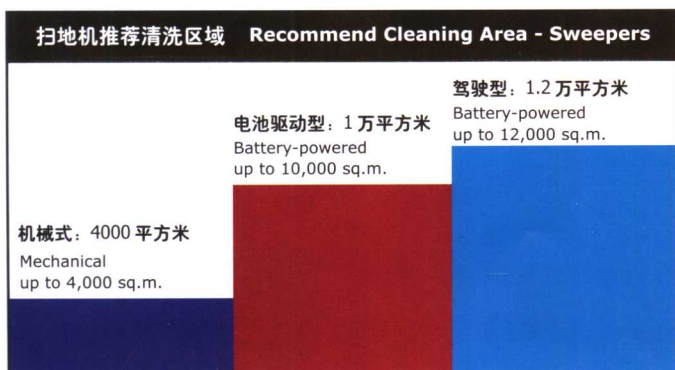
Being relatively simple machines, maintaining sweepers is easy. Every day the debris container needs to be emptied and wiped out, the filters should be cleaned and inspected for damage, and the batteries must be properly recharged. Each week inspect all electrical connectors, and add water to the batteries if needed.

Remember, removing debris and surface dirt is the first step in hard floor cleaning. Sweeping should be completed shortly before the chemical cleaning process. Dirt and debris left on the floor will get into the scrubbing pads or brushes, and will impede the squeegee from completely collecting the solution, leaving streaks on the floor and opening the potential for a slip/fall accident.

## Automatic Scrubbers

Historically, cleaning with wet chemicals was done with mops. But mopping has many drawbacks, the biggest being that mopping mixes clean solution with dirty water. The longer the mop solution is used, the more it is contaminated. And once a floor is mopped, it must be taken out of service until it dries. Otherwise, there is a risk of slip/fall injury. Additionally, the mopping solution left on the floor will actually clean the shoes of the people walking through it, creating a dirty floor surface.

Floor machines, also called swing machines or low-speeds, improve the floor cleaning process because they agitate the surface through pressure and speed. But an automatic scrubber is the best piece of equipment for daily maintenance. Each is a complete system: applying chemical solution, agitating the floor surface, and reclaiming the dirty water with a





请记得清除表面垃圾和灰尘只是硬地面清洁的第一步，清扫之后应该马上进行化学清洗。残留在地上的灰尘和垃圾会进入擦洗垫和刷头，使吸水扒无法完全清扫溶液，从而在地面上留下痕迹，也为跌倒事故埋下了隐患。

## 自动洗地机

一直以来，使用湿化学剂进行清洁都是通过拖把完成的，但拖把却有很多缺点，其中最大的缺点就是拖把会将清水和污水混在一起。拖把使用时间越长，污染也就越严重。为了防止摔倒受伤，拖地之后的地面必须等干燥之后方可使用。此外，残留在地面上的水分会因为人们的走动而反过来再次弄脏地面。

地面清洗设备凭借压力和速度清洁地面，从而改善了地面清洁过程。而自动洗地机则是日常维护机型的最佳选择，每台自动洗地机都是一个完整的系统：调和化学剂、洗刷地面、用扒头清除污水，使表面清洁又干燥。

洗地机是否要正好可以进门呢？如果是的话，是不是要拆下扒头才可以呢？洗地机掉头需要多大的空间？

大型洗地机不仅能清洗大面积区域，还能更快更高效地完成清洁任务。

许多机型都有多种电池可选，而这里的关键问题就是一次充电是否能完成任务。电池容量牵涉到生产力和成本，大型机器需要36伏电压才确保有足够动力持续清洁大面积区域。通常一次充电需要能使用至少4小时，但也不是说越多越好，因为电池容量越大，价格就会越高。

一般需要考虑车载式充电器，因为充电器只有和电池相互配合才能形成高效的动力系统，而车载式充电器简化了充电过程，也消除了操作员因用错充电器而导致的对电池的潜在伤害。

出了大小以外，还有许多其它因素会影响自动洗地机的选择，其中包括：

squeegee to leave the surface clean and dry.

Autoscrubbers come in a range of sizes-width and tank capacity-with different types of drive systems. While bigger may be better, it is important to get the correct size machine. Sizing the scrubber for the application is the first step.

Will the machine have to fit through a doorway? If so, can it fit without having to remove the squeegee? How much space is available for turning around?

Larger scrubbers can not only clean more area, but can clean more efficiently and do it more quickly.

Many machines offer a number of battery options. The key question here is can it clean the area on one charge? Battery power relates to both productivity and cost efficiency. 36V systems are needed in bigger machines to have enough power to consistently clean over large areas. To support a full shift, at least 4 hours of run-time per charge is usually needed. But this is not an area where more is necessarily better since additional battery capacity directly impacts the purchase price.

Only consider machines with on-board battery chargers. Chargers must be matched to the battery package to create the most effective power system. An on-board charger simplifies recharging and eliminates the potential for damage to the battery pack if an operator were to connect the machine to the wrong charger.

As with sweepers, a number of factors impact autoscrubber selection beyond size. These include:

● type of facility and the type of area

● cleaning crew size and the number of crews

● cleaning process: day cleaning, team cleaning, zone cleaning

● labor laws and other regulations

● budget

Often overlooked, tank capacity and design also affect productivity. Larger tanks extend the run-time between trips to dump the recovery tank and refill the solution tank. The recovery tank should have some type of foam control system built in. It also needs to be larger than the solution tank to assure there is room for the extra volume required for the foam generated during operation.

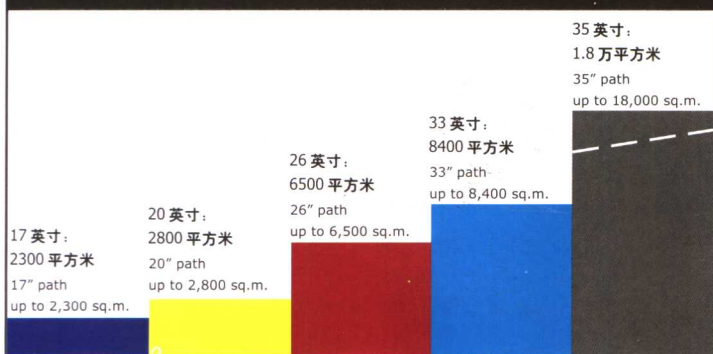
On smaller scrubbers, the head is angled slightly to help propel the machine forward. Larger machines are self-propelled to improve maneuverability and reduce operator fatigue. Variable speed drive systems, in both forward and reverse, are the best choice.

Since the brushes or pads do the work, brush pressure and brush motor power are both important. Machines with adjustable down pressure are needed to handle different tasks.

Cylindrical brushes are a new trend in commercial autoscrubber design. But cylindrical brushes can't apply nearly the pressure that rotational brushes, or pads, do. And since rotational brushes have 4-5x more surface area in contact with the floor, more thorough scrubbing occurs. Some manufacturers claim that a cylindrical brush negates the need to pre-sweep. But many owners of cylindrical machines complain of a smelly sludge build-up in the debris tray and the need to frequently clean the squeegee by hand during operation, reducing productivity.

Finally, the design of the squeegee assembly is important too. Straight squeegees pick up in forward and reverse, but curved squeegees are gaining in popularity

自动洗地机推荐清洗区域 Recommend Cleaning Area - Autoscrubbers



自动洗地机的宽度大小和水箱容量各异，还有不同的动力系统。尽管越大的机器越好，但选择适当的大小才是最重要的，确定洗地机大小是第一步。

● 清洁区域的类型

● 清洁人员数量

● 清洁流程：日间清洁、团队清洁、区域清洁

清洁效率——过道宽度  
需要经过的次数（有重复）

Productivity - Aisle Width  
Number of Passes Required  
(with overlap)

清洁宽度	2.0米过道	2.8米过道	3.3米过道	4.0米过道
20"	5	6	7	9
24"	4	5	6	7
27"	3	4	5	6
33"	3	4	4	5



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XD-20全自动洗地机



CD-17A/B多功能擦地机



WVC-701吸水吸尘机





● 劳动法和其他规定

● 预算

水箱容量和设计常常被人们忽略，但却会影响生产力。大容量的水箱延长了每次清空污水箱和注满清水箱的间隔时间。污水箱应该具有泡沫控制系统，也应该比清水箱稍大，这样就能确保有空间容纳在操作过程中产生的泡沫。

小型洗地机的前端略微前倾，有利于驱动车机器前进，而大型洗地机则可以自行驱动，增加了移动灵活性、减少了人员疲劳。可以变速，倒车的驱动系统则是最佳选择。

由于刷头和研磨片是直接的工作者，因此刷头压力和刷头电机的功率就显得尤为重要，可以调节向下压力的机型更适合不同任务。

圆柱形刷头是商用自动洗地机设计上的新趋势，但圆柱形刷头不能采用旋转刷头和研磨片所采用的压力。旋转刷头还具有4—5倍的表面接触面积，这样就有更多的彻底清洁。有些生产商声称圆柱形刷头可以避免预先清扫，但许多使用者则抱怨垃圾箱内的异味，也对在操作中经常需要用手清洁扒头表示不满，这样就降低了生产力。

最后，扒头组建的设计也非常重要。直型扒头在前进和倒车时都能发挥作用，而弯曲型扒头也越来越受欢迎，因为它能把水引导到机器真空吸力最强的中间部分。

## 驾驶式设备

在过去的几年中，驾驶式商用地面护理设备的销售在美国和欧洲形势一片大好，亚洲市场虽然起步较晚，但也正在快速增长。

驾驶式设备与小型手推式设备相比，最大的好处就是其高生产力。驾驶式设备已更快的速度清洁更大的区域，这也进一步降低了劳动力成本和清洁时间，把清洁对于业主、客户和来宾的影响减少到最小。

在选择设备时还有一些其他因素需要考虑。具有敞开式驾驶室的设备安全性较好，因为操作员在清

洁区域会有更加视野，也更容易被别人看到。请确保你中意的机器有一个可以左右90度旋转的方向盘，这样可以确保该机有良好的操控性可以在走廊和障碍物中间完成全面清洁。驾驶式自动洗地机还需具有至少85千克的最大刷头压力和2马力的刷头电机，这样才能胜任大流量区域繁重的清洗工作。

无论是手推式或驾驶式设备，日常维护工作都能使你对商用清洁设备的投资发挥出更大作用。为了使自动洗地机更好地工作，每天都要注意：

- 彻底清空，冲洗清水箱和污水箱
  - 不要把盖子盖紧，使水箱干燥
  - 卸下刷头，清洗晾干
  - 卸下扒头，用干净的毛巾将其擦净
  - 为机器充电
- 每周都要：
- 检查电池液，如有必要则需充液
  - 检查所有电线和接口
  - 检查清水流向
  - 检查污水箱内的浮子开关
  - 用白醋溶液冲洗水箱

对扫地机与自动吸地机的大笔投资在生产力和性能方面都会有很好的回报，而选择正确的商用清洁设备会确保实现你所期望的各种优

because of how they channel water to the center where the vacuum pick-up is strongest.

## Ride-on Equipment

In the past few years, sales of ride-on commercial floor care equipment have exploded in the US and Europe. While the Asian market started more slowly, sales are now rising quickly.

The primary benefit of ride-on equipment over smaller, walk-behind machines is productivity. Ride-ons clean more area, more quickly. This further reduces labor costs and the cleaning time, minimizing disruption to building occupants, customers, and guests.

When selecting a ride-on, there are some additional factors to consider. Ride-ons with an open driver's compartment provide a safety benefit since the operator has greater visibility, and are more visible to others in the area being cleaned. Be sure any machine you

consider has a drive wheel that turns 90 degrees in both directions. This assures it has the maneuverability needed to completely clean within aisles and around obstructions. Ride-on autoscrubbers also need at least 85 kg of maximum brush pressure and 2-hp brush motors to take on tough scrubbing jobs in high traffic areas.

Whether a walk-behind or ride-on, regular maintenance is vital to fully leverage the investment in commercial cleaning equipment. To keep an autoscrubber operating properly, every day:

- completely empty and rinse out the solution and recovery tank
- leave the covers loose to allow the tanks to air dry
- remove the pad drivers or brushes, rinse them out, and hang them up to dry
- remove the squeegee assembly and wipe it off with a clean towel
- recharge the machine

Every week:

- check battery water levels, adding water if needed
- check all cables and electrical connections
- check solution water flow
- check the float shut-off in the recovery tank
- flush the tanks with white vinegar solution

Sweepers and autoscrubbers are significant investments with a clear payback in both productivity and performance. Selecting the right commercial floor cleaning machines will help assure you really achieve the advantages you expect.



图为驾驶式设备