Supplemental Explanation

eleten mainly researches pharmacology field, and this technology development for tissue papers and hygienic papers is the first time.

This “Harmless Sterilization” technology application is now complete.

If you have any inquiries on paper manufacturing and industry, please directly contact Shanghai DongGuan.

Introduction

Why eleten medical technology is also applied for daily use sanitary papers?

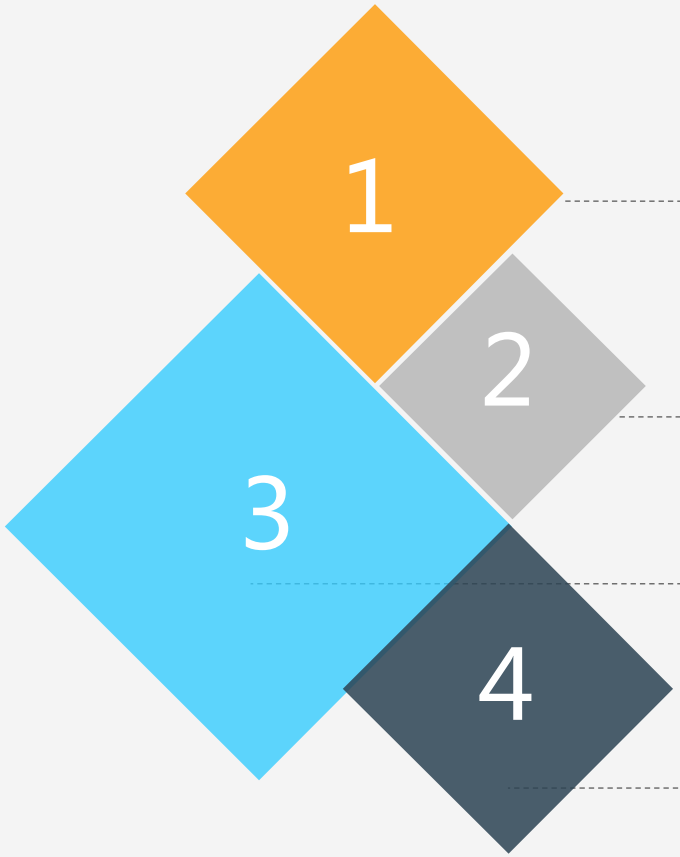
From the beginning of ‘80s till nowadays, people’ s mind for health has be come strong day by day with scientific technology development, and antibacterial statement products continuously appear in daily use products market. There are now two major categories of medical treatment and sickness prevention. First by prevention, sickness can be decreased, and then medical treatment can be decreased.

At present in global daily use products market, many countries adopt release type antibacterial method. Passive bacteriostasis principle is mainly used, but the weakness is it takes long time for bacteriostasis effect. This is unsuitable for disposable products. By introducing eleten technology, active antibacterial method, bacteriostasis method and degerming method (option for different concentration) can be provided because the disinfectant is solid and release type. As a result, it covers the weakness of non-release type method. This technology is suitable to enhance health foundation for people who use tissue papers frequently in daily life to prevent or reduce harm caused by bacteria. In addition, this technology brings new effect to daily use sanitary papers industry and raise additional value of paper manufacturing industry.

Introduction of eleten elementary particle reductionism technology and Application for daily use tissue papers

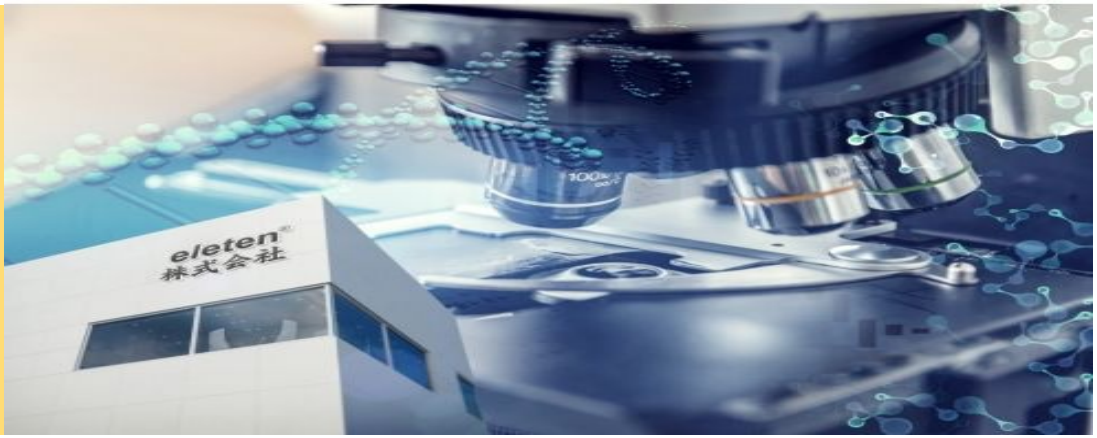
2019

Contents



Japan eleten Co., Ltd.

2015
Foundation



International : The team is organized by academic scientists who research condensed matter physics, quantum mechanics, polymer chemistry, nanofiber and chemical application materials in Tokyo University, Kyoto University, Waseda University, Tokyo Institute of Technology, Canada British Columbia and Israel Institute of Technology.
This team has been providing foreign commercial service since 2015 under eleten Co., Ltd. In Japan, eleten technology is mainly applied to target therapy of medical agents or purification, decomposition and synthesis of medical agents.

Japan eleten Co., Ltd. established a direct laboratory of which task is "Elementary particle reductionism" . Main themes are application technologies of medical nanocapsules, chemical agents elementary particle, target therapy of very small amount of chemical agents, etc, under the initiative by T.Fukushima, a chemist.

Elementary particle reductionism

Introduction and Application

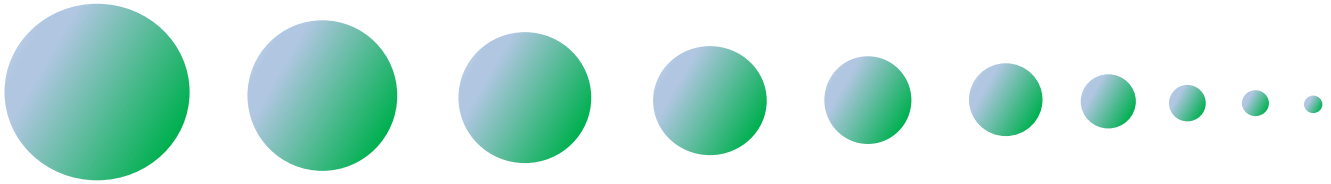
Elementary Particle Viewpoint

- Interpretation：If we try to understand the present elementary particle through the past physical knowledge of particle, it is said “impossible”, and it is one of the topics which world scientists always discuss. Japanese “elementary particle theory” is complicated with various special definition, and it is the reason of the birth of “string theory”.
- Elementary particle（Quark）~ We recognize “string theory”: minimum particle which keeps regularity of physical properties.
- Interpretation：“ Particle reductionism” of world difficult problems is one of the interesting hypothesis. Scientists in different fields individually prove its existence, and each scientist can get academic results which are sought for. (to get derivative theory) A certain person said “It is a password which leads to divine world given by god”.

1 Substances elementary particle and reduction concept (brief explanation of particle physics)

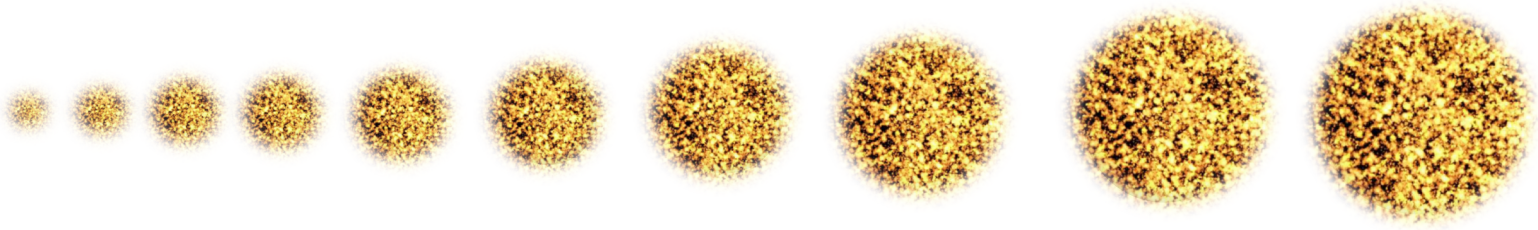
Formation of substance elementary particle

Decompose substances from maximum to minimum elementary particle (Minimum particle which can keep regularity of physical properties.)



Form aggregate by minimum elementary particle, reduce to maximum elementary particle aggregate (Particle aggregate which can keep regularity of physical properties.)

Reduction of substance elementary particle



2 Academic position of elementary particle reductionism

In the symposium at Beijing Chemical Academy of Science in 2015, Dr. David, Gross, an American Nobel Prize winner in Physics, stated 25 unsolved puzzles in the global physical field, and elementary particle reductionism is the 22nd puzzle.

From his statement : " Elementary particle reductionism" changes fundamental physics and leads physical theory to deeper areas.

3 Elementary particle reductionism -Derive two theories

Mr. Yoichiro Nambu

Japanese scientist, Nobel Prize winner in 2008.

Built grand theory of "Spontaneous symmetry breaking" based on reductionism.

Mainly by application of superconductive transmission speed.

Mr. Toshiaki Fukushima

Scientist of Japan eleten laboratory

Built "Elementary particle reductionism".

Mainly by target type sterilization with dot lines disinfectant.

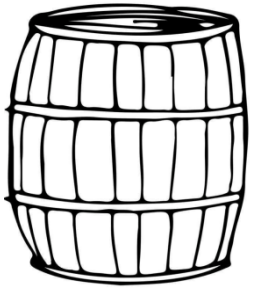
4 Nanocapsule macro-manufacturing principle

Applied principle : Chemical organic compounds are decomposed to N elementary particles, and minimum elementary particle aggregates are reduced to maximum chemical organic compounds aggregates.

Example in factory

Chemical agents volume in conventional wet tissue

New Tech



Non-woven fiber 1 ton : Chemical agents solution 1.7 ton
Concentration 1000 ppm
Disinfectant benzethonium 1.7kg

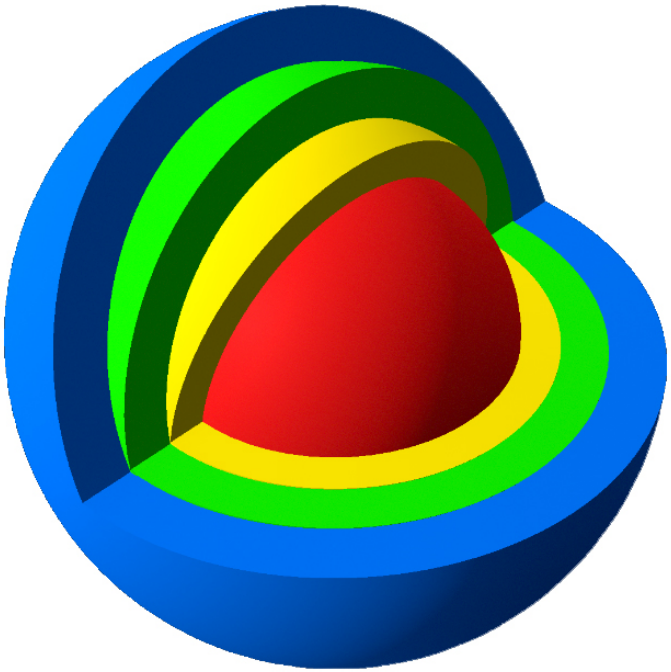
One drop from 1.7 ton of disinfectant solution (in case of comparison with 1.7 ton, actual volume is company confidential) is decomposed to N liquid elementary particles in a special floating machine. N elementary particles are frozen in a special machine and are took out. They are enveloped by N nanocapsules (total weight: 80g, diameter: 100nm) in a capsule machine.

This process is divided into three steps for each layer, and cations are charged on the surface of nanocapsules.

Then they are mixed with nano pulp fibers (total weight: 20g, diameter: 200nm, length: 3-7mm, Nano fiber made by chemical decomposition can be substituted) in a vacuum static electricity magnetic device, and ion bonding is processed on the surface of pulp fibers to bond nanocapsules easily. (Capsules are rotated and dispersed in water.)

5 Structure of nanocapsule

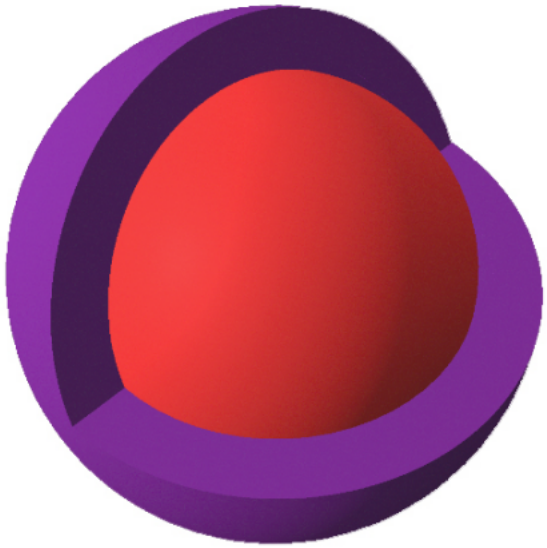
In water



- Cation surface layer , water resistant time ≥ 96H
- Waterproof layer. Ground, vaporized and decomposed at over 100℃. Water resistant time ≥ 96H
- Isolation soft layer between waterproof layer and disinfectant layer
- Disinfectant : Chitosan ammonium chloride

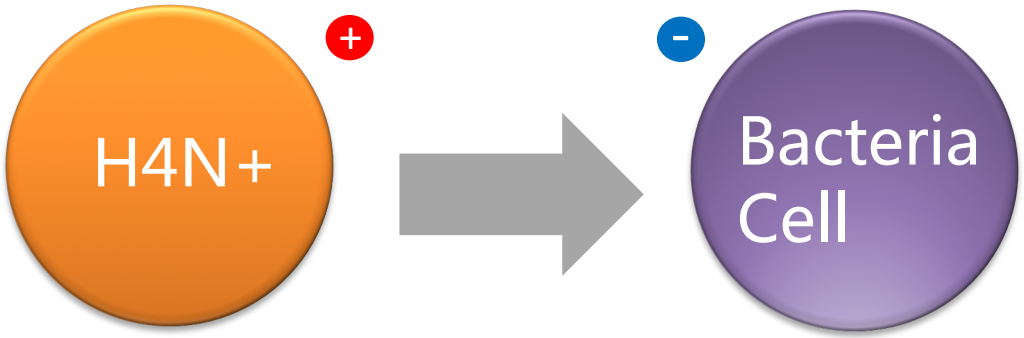
Capsule outside diameter : 100nm

In dry tissue paper



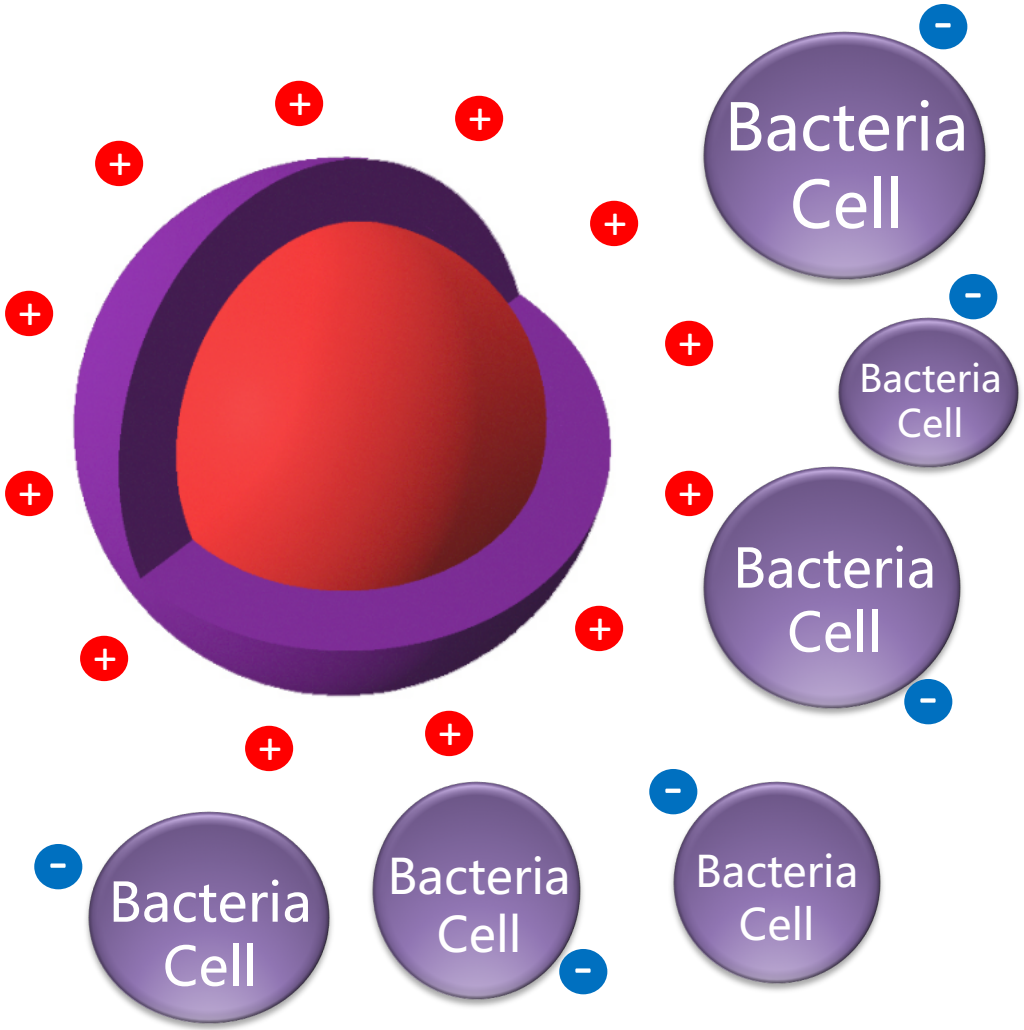
- Capsule changes after 100℃ treatment.
  By chemical reaction with cation cover layer and isolation layer, R4X capsule surface layer is generated.
  Release time in water≤ 0.02 sec.
  At the same time, outside cover layer becomes to have a certain strength.
- Disinfectant : Chitosan ammonium chloride

Release condition when tissue is in contact with water



Cation penetrates bacteria cell wall and kills bacteria.

Dry Tissue Papers Sterilization Principle



- R4X nanocapsule outside layer is generated by chemical reaction at over 100℃. The surface is charged with cation and is porous like honeycomb. The diameter of the hole is 15 – 25nm.
  Through holes, Chitosan ammonium chloride (core substance) penetrates to the surface of the cover layer.
- After bacteria going into tissue papers, bacteria is sucked around the surface of nanocapsules. At the same time, cation on the surface of the cover layer penetrates bacteria cell wall and kills bacteria.

6 Nanocapsule usage in paper manufacturing process

Nanocapsule usage is relatively simple. In the process, 100g of nanocapsules and 1ton of pulp board are together put into a mill tank, and beating is done (beating time is the same as original process).

Paper manufacturing process is the same as original, and there is no special requirement nor change of paper machine. The reason is the disinfectant is enveloped by nanocapsules (water resistant time≥96H) .

Therefore, the disinfectant does not decrease nor leak, and there is no influence on paper weight and efficiency of subsidiary additives.

In addition, the diameter of cation on the surface of nanocapsule is remarkably small compared to the diameter of pulp fiber (18 – 24μm), and cation can enter the small holes of pulp fiber. Therefore, cation can keep normal during beating process with additional help of ion bonding (actually no breakage of nanocapsules was observed from the pulp fiber test).

Uniformity and dispersion ratio of nanocapsules in tissue products reach up to 99%. This dry tissue papers allowed equivalent sterilization effect to wet tissue papers.

The report on GB15979 sterilization test with Staphylococcus Aureus conducted by SGS is as follows：

SGS

CMA 170900340938

ilac-MRA

CNAS

中国认可
国际互认
检测
TESTING
CNAS L0599

检测报告　　报告编号: SHCPCH181109321C.2　　报告日期: 2018-12-05

客户名称: 深圳市东城绿色投资有限公司
客户地址: 深圳市龙岗区坪地高坪丰路 7 号

样品名称: 洁云纸面巾
批号/生产日期: /
生产商: /

以上样品和样品信息由客户提供并确认。

SGS 工作号: SHCPCH181109321
SGS 参考号: /
样品接收日期: 2018-11-20
样品测试时间: 2018-11-20~2018-11-29

测试要求:
根据申请者的要求:
对所提交的样品进行抑菌性能测试

测试方法:
GB 15979-2002 一次性使用卫生用品卫生标准 附录 C4 溶出性抗（抑）菌产品抑菌性能试验方法

测试菌种:
金黄色葡萄球菌 ATCC 6538

测试结果:
请见下页

结论:
请见下页

备注: 以中文制订的测试报告可以翻译成其它语言, 如有异议, 以中文版为准.

通标标准技术服务（上海）有限公司
授权签字人 / For and on behalf of

SHCPCH 0243037

3rd Building, No.889, Yishan Road, Shanghai China 200233　t (86-21) 60645189　f (86-21) 60645127　www.sgsgroup.com.cn
中国·上海·徐汇区宜山路889号3号楼 邮编: 200233　t (86-21) 60645189　f (86-21) 60645127　e sgs.china@sgs.com

SGS

检测报告　　报告编号: SHCPCH181109321C.2　　报告日期: 2018-12-05

结论:

试验菌种	试验时间（分钟）	测试结果（抑菌率 %）	GB 15979-2002 附录 C4 溶出性抗（抑）菌产品抑菌性能试验评价标准	评价
金黄色葡萄球菌 ATCC 6538	2	94	抑菌率≥90%，产品有较强抑菌作用 抑菌率≥50%~90%，产品有抑菌作用	符合：产品有较强抑菌作用
		94		
		94		
	5	94		符合：产品有较强抑菌作用
		94		
		94		
	10	94		符合：产品有较强抑菌作用
		94		
		94		
	20	94		符合：产品有较强抑菌作用
		94		
		94		

测试结果:

试验菌种	试验时间（分钟）	试验重复次数	对照样平均菌落数（cfu/片）	试验样平均菌落数（cfu/片）	抑菌率（%）
金黄色葡萄球菌 ATCC 6538	2	1	2.8×10^4	1.8×10^3	94
		2	2.8×10^4	1.8×10^3	94
		3	2.8×10^4	1.8×10^3	94
	5	1	2.8×10^4	1.5×10^3	94
		2	2.8×10^4	1.5×10^3	94
		3	2.8×10^4	1.5×10^3	94
	10	1	2.8×10^4	1.7×10^3	94
		2	2.9×10^4	1.8×10^3	94
		3	2.9×10^4	1.5×10^3	94
	20	1	2.9×10^4	1.7×10^3	94
		2	2.9×10^4	1.7×10^3	94

SHCPCH 0243038

3rd Building, No.889, Yishan Road, Shanghai China 200233　t (86-21) 60645189　f (86-21) 60645127　www.sgsgroup.com.cn
中国·上海·徐汇区宜山路889号3号楼 邮编: 200233　t (86-21) 60645189　f (86-21) 60645127　e sgs.china@sgs.com

Passed each irritation test

- Food contact paper test of US FDA and EU AP
- SGS Oral mucosa test
- National standard (GB) Primary skin irritation test, Multiple skin irritation test, Skin corrosion test, Acute eye irritation test, Vaginal mucosa test

Certificate Of FDA&EU Compliance

201807-202006

This is certified that:
At The Address Stated Below Has Completed U.S. FOOD And DRUG ADMINISTRATION Test Through MANTONG.

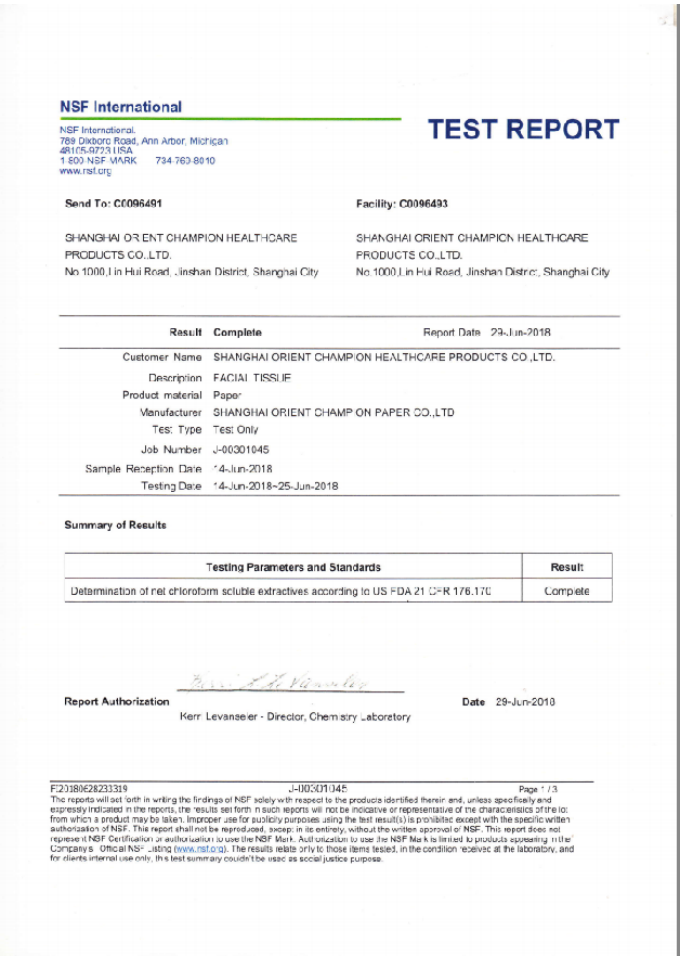
SHANGHAI ORIENT CHAMPION HEALTHCARE PRODUCTS CO., LTD.
No. 1000,Lin Hui Road, Jinshan District,Shanghai City, Zip Code 201505

Product Description:	FACIAL TISSUE
Job No.	J-00301045&J-00301046
Test Method:	US FDA 21 CFR 176.170 AP(2002)1
Test Laboratory	NSF International
Testing Completion Date	14-Jun-2018~25-Jun-2018
FDA Registration Number	12950200804

MTG FDA REGISTRATION CENTER CORPORATE SEAL CALIFORNIA

Jacky M. Chuang
Executive Director
Date: 07.05.2018

MTG STANDARDS TESTING & CERTIFICATION CENTER www.tdacn.org



NSF International

NSF International
789 Dixboro Road, Ann Arbor, Michigan
48105-9723 USA
1 800 NSF MARK 734 769 8010
www.nsf.org

TEST REPORT

Send To: C0096491

SHANGHAI ORIENT CHAMPION HEALTHCARE PRODUCTS CO.,LTD.
No.1000,Lin Hui Road, Jinshan District, Shanghai City

Facility: C0096493

SHANGHAI ORIENT CHAMPION HEALTHCARE PRODUCTS CO.,LTD.
No.1000,Lin Hui Road, Jinshan District, Shanghai City

Result	**Complete**	Report Date	29-Jun-2018
Customer Name	SHANGHAI ORIENT CHAMPION HEALTHCARE PRODUCTS CO.,LTD.		
Description	FACIAL TISSUE		
Product material	Paper		
Manufacturer	SHANGHAI ORIENT CHAMPION PAPER CO.,LTD		
Test Type	Test Only		
Job Number	J-00301045		
Sample Reception Date	14-Jun-2018		
Testing Date	14-Jun-2018~25-Jun-2018		

Summary of Results

Testing Parameters and Standards	Result
Determination of net chloroform soluble extractives according to US FDA 21 CFR 176.170	Complete

Report Authorization

Kerr Levanseler - Director, Chemistry Laboratory

Date 29-Jun-2018

F:20180628233319 J-00301045 Page 1 / 3

The reports will act forth in writing the findings of NSF solely with respect to the products identified therein and, unless specifically and expressly indicated in the reports, the results set forth in such reports will not be indicative or representative of the characteristics of the lot from which a product may be taken. Improper use for publicity purposes using the test result(s) is prohibited except with the specific written authorization of NSF. This report shall not be reproduced, except in its entirety, without the written approval of NSF. This report does not represent NSF Certification or authorization to use the NSF Mark. Authorization to use the NSF Mark is limited to products appearing in the Company's Official NSF Listing (www.nsf.org). The results relate only to those items tested, in the condition received at the laboratory, and for clients internal use only. This test summary couldn't be used as social justice purpose.

CIDPEX19 CNHPIA

SGS

检测报告 **报告编号: SHCPCH180503363S1** **报告日期: 2018-07-10**

客户名称: 深圳市东城绿色投资有限公司
客户地址: 深圳市龙岗区坪地富坪中路 7 号

样品名称: 洁云纸面巾
批号/生产日期: /
产品责任单位: 上海东冠健康用品股份有限公司

以上样品和样品信息由客户提供并确认。

SGS 工作号: SHCPCH180503363
SGS 参考号: /
样品接收日期: 2018-05-09
样品测试时间: 2018-05-09 ~ 2018-06-19

测试要求:
根据申请者的要求:
口腔黏膜刺激试验*

测试方法:
GB/T 16886.10-2010 口腔黏膜刺激试验

测试结果:
请见下页

结论:
在本试验条件下，受试物未引起口腔黏膜刺激反应。

本测试报告取消并取代由通标标准技术服务(上海)有限公司检测中心发布的测试报告 编号: SHCPCH180503363 签发日期: 2018-06-25

除非另有说明，本检验结果仅对测试样负责。未经检验机构同意，委托人不得擅自使用检验结果进行不当宣传，未经书面批准，不得复制（全文复制除外）检测报告或证书。

---

iqtc 广东出入境检验检疫局检验检疫技术中心
GUANGDONG INSPECTION AND QUARANTINE TECHNOLOGY CENTER

编号: 01051700007495
日期: 2017 年 11 月 23 日
页数: 第 1 页，共 2 页

检 测 报 告

申 请 人: 深圳市东城绿色投资有限公司
样品说明: 下列样品及信息由申请人提供，外观完好。
报验品名: eleten®抽取式纸巾
样品规格: 150 片/包
样品描述: 样品单层纸规格: 210mm*190mm、重量: 0.6384 克（克重: 16 克/m²）; 单层纸含药量: 双十二烷基二甲基氯化铵 0.6 毫克。按照 GB/T15979-2002 附录 C3 测试，本规格一张单层纸作用 2、5、10、20 分钟对大肠杆菌的杀菌率为 38.2%、43.4%、48.7%、46.1%。
样品数量: 1 包
收样日期: 2017 年 11 月 08 日
检测日期: 2017 年 11 月 08 日~2017 年 11 月 23 日
检测要求: 在每抽三层纸中随机取其中一层，进行一次破损皮肤刺激试验。
检测方法: 消毒技术规范（2002 版）第二部分 消毒产品检验技术规范 2.3.3.
检测结果: 所送样品经检测，详细结果见下页。
样品图片:

实验室主任:

---

iqtc 广东出入境检验检疫局检验检疫技术中心
GUANGDONG INSPECTION AND QUARANTINE TECHNOLOGY CENTER

编号: C105170000７494
日期: 2017 年 12 月 04 日
页数: 第 1 页，共 3 页

检 测 报 告

申 请 人: 深圳市东城绿色投资有限公司
样品说明: 下列样品及信息由申请人提供，外观完好。
报验品名: eleten®抽取式纸巾
样品规格: 150 片/包
样品描述: 样品单层纸规格: 210mm*190mm、重量: 0.6384 克（克重: 16 克/m²）; 单层纸含药量: 双十二烷基二甲基氯化铵 0.6 毫克。按照 GB/T15979-2002 附录 C3 测试，本规格一张单层纸作用 2、5、10、20 分钟对大肠杆菌的杀菌率为 38.2%、43.4%、48.7%、46.1%。
样品数量: 1 包
收样日期: 2017 年 11 月 08 日
检测日期: 2017 年 11 月 08 日~2017 年 12 月 04 日
检测要求: 在每抽三层纸中随机取其中一层，进行多次完整皮肤刺激试验。
检测方法: 消毒技术规范（2002 版）第二部分 消毒产品检验技术规范 2.3.3.
检测结果: 所送样品经检测，详细结果见 2~3 页。
样品图片:

实验室主任:

---

iqtc 广东出入境检验检疫局检验检疫技术中心
GUANGDONG INSPECTION AND QUARANTINE TECHNOLOGY CENTER

编号: 01051700007652
日期: 2017 年 11 月 28 日
页数: 第 1 页，共 2 页

检 测 报 告

申 请 人: 深圳市东城绿色投资有限公司
样品说明: 下列样品及信息由申请人提供，外观完好。
报验品名: eleten®抽取式纸巾
样品规格: 150 片/包
样品描述: 样品单层纸规格: 210mm*190mm、重量: 0.6384 克（克重: 16 克/m²）; 单层纸含药量: 双十二烷基二甲基氯化铵 0.6 毫克。按照 GB/T15979-2002 附录 C3 测试，本规格一张单层纸作用 2、5、10、20 分钟对大肠杆菌的杀菌率为 38.2%、43.4%、48.7%、46.1%。
样品数量: 1 包
收样日期: 2017 年 11 月 08 日
检测日期: 2017 年 11 月 08 日~2017 年 11 月 28 日
检测要求: 在每抽三层纸中随机取其中一层，进行急性眼刺激性试验。
检测方法: 《化妆品安全技术规范》(2015 年版) 第六章 毒理学试验方法 5、急性眼刺激性/腐蚀性试验。
检测结果: 所送样品经检测，详细结果见下页。
样品图片:

实验室主任:

---

iqtc 广东出入境检验检疫局检验检疫技术中心
GUANGDONG INSPECTION AND QUARANTINE TECHNOLOGY CENTER

编号: 01051700007489
日期: 2017 年 11 月 24 日
页数: 第 1 页，共 2 页

检 测 报 告

申 请 人: 深圳市东城绿色投资有限公司
样品说明: 下列样品及信息由申请人提供，外观完好。
报验品名: eleten®抽取式纸巾
样品规格: 150 片/包
样品描述: 样品单层纸规格: 210mm*190mm、重量: 0.6384 克（克重: 16 克/m²）; 单层纸含药量: 双十二烷基二甲基氯化铵 0.6 毫克。按照 GB/T15979-2002 附录 C3 测试，本规格一张单层纸作用 2、5、10、20 分钟对大肠杆菌的杀菌率为 38.2%、43.4%、48.7%、46.1%。
样品数量: 1 包
收样日期: 2017 年 11 月 08 日
检测日期: 2017 年 11 月 08 日~2017 年 11 月 23 日
检测要求: 在每抽三层纸中随机取其中一层，进行阴道粘膜刺激试验。
检测方法: 按 GB 15979-2002《一次性使用卫生用品卫生标准》。
检测结果: 所送样品经检测，详细结果见下页。
样品图片:

实验室主任:

---

iqtc 广东出入境检验检疫局检验检疫技术中心
GUANGDONG INSPECTION AND QUARANTINE TECHNOLOGY CENTER

编号: 01051700007493
日期: 2017 年 11 月 23 日
页数: 第 1 页，共 2 页

检 测 报 告

申 请 人: 深圳市东城绿色投资有限公司
样品说明: 下列样品及信息由申请人提供，外观完好。
报验品名: eleten®抽取式纸巾
样品规格: 150 片/包
样品描述: 样品单层纸规格: 210mm*190mm、重量: 0.6384 克（克重: 16 克/m²）; 单层纸含药量: 双十二烷基二甲基氯化铵 0.6 毫克。按照 GB/T15979-2002 附录 C3 测试，本规格一张单层纸作用 2、5、10、20 分钟对大肠杆菌的杀菌率为 38.2%、43.4%、48.7%、46.1%。
样品数量: 1 包
收样日期: 2017 年 11 月 08 日
检测日期: 2017 年 11 月 08 日~2017 年 11 月 23 日
检测要求: 在每抽三层纸中随机取其中一层，进行一次完整皮肤刺激试验。
检测方法: 消毒技术规范（2002 版）第二部分 消毒产品检验技术规范 2.3.3.
检测结果: 所送样品经检测，详细结果见下页。
样品图片:

实验室主任:

Tissue papers products with “eleten” technology in China market

Applying PMDA qualification for eleten brand tissues by Japan suppliers, Planning to enter Japan market


洁云
Hygienix
洁云新品 3层40抽20包
日常价
纳米胶囊 遇水释放 干湿两用 ¥79.9
洁云
Hygienix


纳米祛菌系列
纳米祛菌抽纸
源自日本eleten株式会社祛菌“黑科技”
国际检测认证，有效祛菌，保险承保，无效理赔
规 格 30包/箱 | 40抽/包 | 3层/张
尺 寸 180*160mm
¥96/箱
立即抢购
eleten


eleten


Ten ou
源自日本
››› Ten ou 二代纸巾
Ten ou
长按上面二维码图案，加我微信

eleten tissue Design concept and position

Philosophy ABCD

A
Target type sterilization

Nanocapsules are uniformly dispersed in tissue, and Chitosan ammonium chloride elementary particles form dot lines. Cation in the dot lines penetrate cells of bacteria. This capsule release cations immediately in contact with water. In dry condition, capsules have many holes cover layer, and bacteria is sucked and penetrated. Then sterilization effect is generated.

B
Decrease of side effects

By nano class dot line of disinfectant, the dosage decreased significantly. The content of disinfectant in tissue is almost zero （the seventh decimal place）,and side effects of disinfectant on human bodies is removed.

C
Superimposition

Unique design :
The disinfectant in tissue is solid, and dosage is controllable like tablet. Superimposition is possible depending on level of sterilization. Each paper’ s sterilization in usually controlled at 25-30%. In case of actual use, the sterilization rate can be controlled at 99% by using one set of three papers several times. At present, DongGuan sets the sterilization rate at 50-70%.

D
Keeping primary condition · Disinfection

Characteristic which remains colorless and odorless of the original pulp without any other effect :

In production : Each pulp and nanofiber exists separately and does not interfere together. No disinfection because of no leak.

In use : After tissue contacting water, the chemical agent in nanocapsules releases cation, and the cation first combines with bacteria anion cell by nano class dot line. This generates sterilization. No effect on pulp.

eleten Design & Position

Japan eleten tissue papers are :

different from other sterilized, bacteriostatic & disinfected tissues (including wet type and dry type) in the market

Common

This technology is applied to daily use sanitary papers

Conventional

Strictly distinguished from medical & sanitary tissues. Not specialty products
Notes: This product does not replace the position of the above products and wet tissues.

Prevention

Easily sterilized and prevented as a tool

Habits

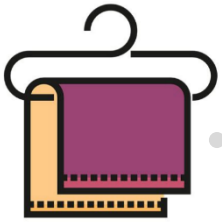
Daily healthy habits dividing sterilization frequently Because the disinfectant is solid, the content in each paper can be lowered at 25-30% sterilization rate at 50-70%.

Safety

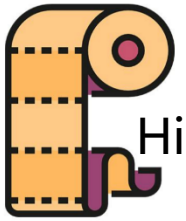
eleten technology removed side effects of chemical agents. On the other hand, it projected sterilization effect.

eleten
2nd generation tissue papers

Future Development



Disposable
Convenience

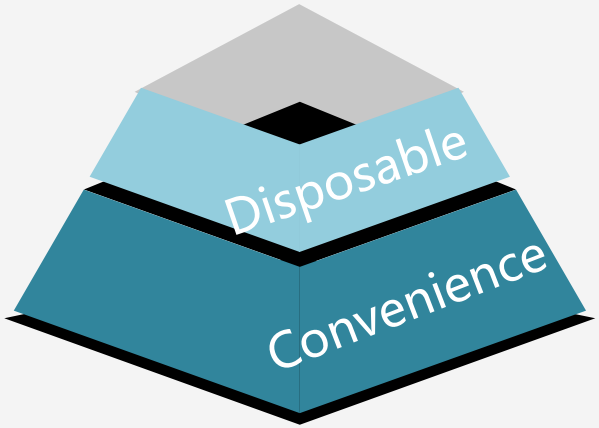


70 years
Historical verification

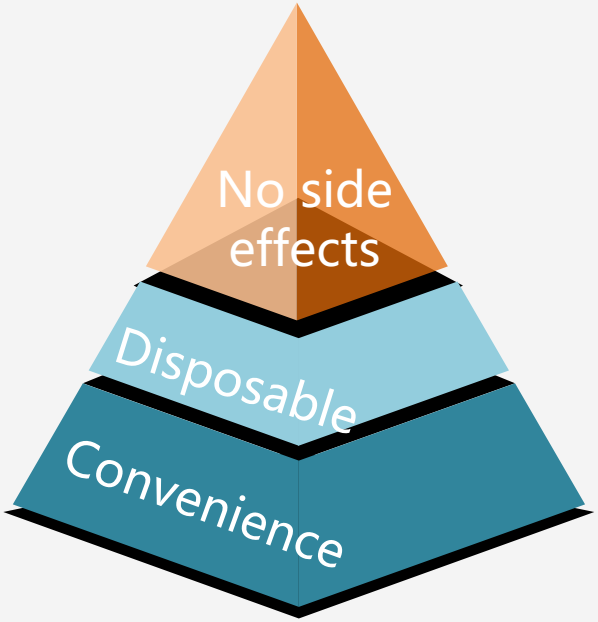
Harmless

Japan eleten technology enables people to use tissues longer in daily life and can reduce harmful bacteria invasion anytime because of no side effect for human bodies.

The third merit is it has a characteristic of harmless for human bodies, too.



(Conventional tissue)



(2nd generation tissue)


END