

# MediClean

New Technology of Sterilization

**Necessities in life**  
**30 seconds sterilization**  
**99.9% eradication**

Various viruses and harmful bacteria

## Disinfectant



**IRACLE KOREA**  
[www.miraclekorea.net](http://www.miraclekorea.net)

USA FDA  
Registration  
3017191580



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# Core technology of Medi-Clean

## ✓ Stabilized Nano Emulsion Chlorine Dioxide Water



- ◆ The world's best stabilized nanoemulsion chlorine dioxide solution→Ingredients effective for more than 4 years
- ◆ Powerful and safe sterilization, disinfection and deodorization through nano emulsion technology
- ◆ Other companies' stabilizing chlorine dioxide water has a serious corrosive problem for household metal products, but Mediclin has no corrosion problem.
- ◆ Medi Clean removes the odor of disinfection (similar to the smell of lux) of other products with chlorine dioxide.
  - In places where there are many bacteria, the reaction is active and a small amount of odor is generated, but the product itself is odorless.
- ◆ No restrictions on the method and location of spraying (other companies' chlorine dioxide water sterilizes and reduces deodorization when thermally contacted)
- ◆ The sterilization of viruses and bacteria using strong oxidation does not result in resistance, so it has strong sterilization power even for new strains.
- ◆ Certified safe ingredients

## ✓ Nano emulsion technology

- ◆ It is a specialized product incorporating nano-emulsion technology, which is an ultra-atomization technology. By reducing the size of the constituent particles to nano (10-9), it quickly spreads in the air and penetrates deeply to increase deodorization and sterilization capabilities.

# Features and advantages of Medi-clean 1

## 1. Strong sterilization power

### Strong sterilization power recognized worldwide

Effectively removes harmful bacteria and viruses such as various pathogenic bacteria, super virus, swine flu, food poisoning bacteria, and norovirus coronavirus Strong oxidizing action does not cause resistant bacteria such as strains of bacteria.

## 2. Strong deodorizing power

### Eliminate the cause of bad smell

Quick to living space, office space, work space, closed space, smoking room Strong deodorizing effect. It is incomparable to other fragrances surrounding odor.

## 3. Best safety

### Non-alcoholic, Antiseptic, Non-irritant, Odorless, Residue free

No harm to the human body as it is certified by the World Health Organization (WHO) as a food contact surface disinfectant by the National Sanitation and Safety Agency (NSF).

## 4. Eco-friendly ingredients

### 100% biodegradable in air after deodorization and sterilization

The product is harmless to human body and 100% in air after strong deodorization and sterilization. It is biodegradable and has no residual ingredients, so it is eco-friendly. Friendly to animals, plants and natural environment.

## 5. Convenience of use

### Safe for heat, no corrosion

Nano emulsion chlorine dioxide water does not cure plastic and does not discolor when sprayed on clothing. It can be used by heating injection method or various high pressure injection methods, and there are no restrictions on objects such as the place of use.



# Features and advantages of Medi-clean 2



## Features and advantages of **Medi-clean 3**



**MediClean** is the best disinfectant product in Korea.

# Features and advantages of Medi-clean 4

Nano-emulsion Pure chlorine dioxide (ClO<sub>2</sub>) is an eco-friendly ingredient that disinfects 99.9% of viruses and various harmful bacteria, and at the same time destroys substances that cause odor unlike most aromas, deodorants that cover odors with fragrance. It is an eco-friendly sterilization and disinfectant.



**FDA Registered Medical Device Disinfectant Certification**  
(2020.05.19. Registration certification : 3017191580)

Portable  
disinfectant



## Main areas of use

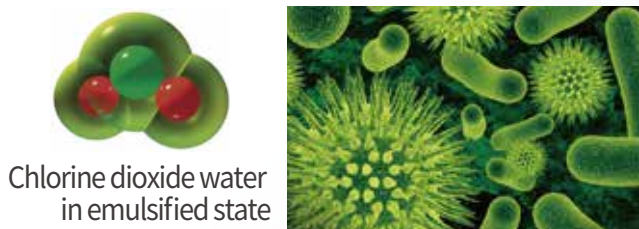
Main area	The details
Living space	Home living room, bedroom, bed, shoe rack, bathroom, kitchen, refrigerator, air conditioner, toilet, etc.
Various buildings	Hospitals, nursing hospitals, health centers, government offices, offices, doors, handles, dining tables, chairs, etc.
Recreational facilities	Indoor golf course, PC room, bowling alley, karaoke room, billiard room, sports center, etc.
Public places	Hotels, restaurants, libraries, lounges, smoking rooms, restrooms, schools, kindergartens, etc.
Boarding space	Car interior, airplane interior, passenger ship, boarding space for amusement facilities, etc.
Personal use	Mobile phones, clothing, computers, smartphones, keyboards, telephones, wallets, etc.
Home appliance	PC, notebook, tablet, fan, remote control, dryer, vacuum cleaner, etc.



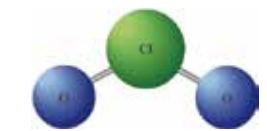
## What is the confirmation of disinfection power that cannot be checked with the eyes?

[Bacteria and viruses ○]

The emulsion is destroyed and the hidden chlorine dioxide appears.



Chlorine dioxide water in emulsified state



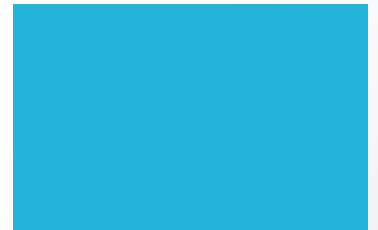
Conventional chlorine dioxide water



As the exposed chlorine dioxide is disinfected, a trace amount of chlorine dioxide odor is generated.

[Bacteria and viruses X]

There are no bacteria, so nothing happens.



Emulsified chlorine dioxide produces little odor.

- ✓ When bacteria and chlorine dioxide in an emulsion state meet, the emulsion is destroyed and the chlorine dioxide hidden therein is sterilized.
- ✓ If there are many bacteria, the emulsion is destroyed a lot, so the smell of chlorine dioxide is weak, so the degree of contamination is determined with the strong and weak odor of disinfection.



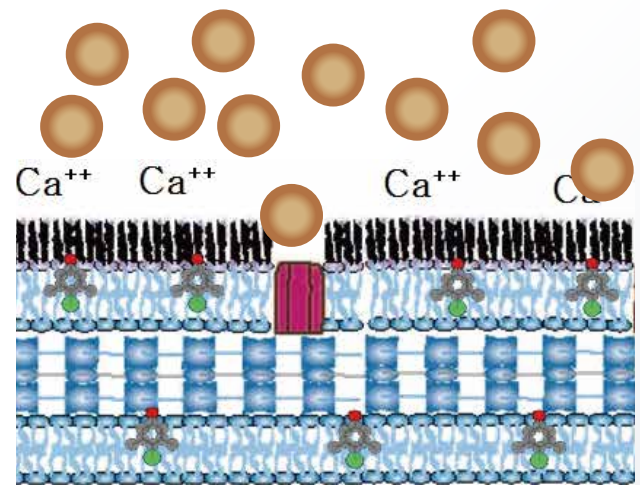
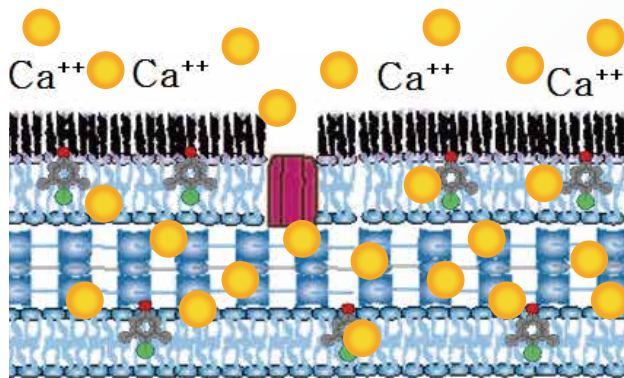


### Do you think disinfecting is done just by spraying with disinfectant?

● Medi-Clean

● Other disinfectants

Medi-Clean ClO<sub>2</sub> Particle



In the case of most microorganisms, the surfaces of these films are charged to the negative electric charge. As we learned in basic physics, the opposite charges attract and different charges convey conflict power to the side. Thus, it extruded at the time when the 'Medi Clean' nano-particles try to access to the cell membrane. However, the cell membrane surface of the microorganism are coupled to a dense layer of calcium ions that charged on the charge of "positive (+)", and the calcium takes the role of a bridge for charge transfer, likewise, one iron connects the very positive charge of two (magnetic pole). These mechanisms, it makes 'Medi Clean' nano-particles to attract the cell membrane, to transfer the chlorine dioxide to the center of the cell membrane reproduction part, ultimately chlorine dioxide destroy it by oxidizing the cell.

Other disinfectant doesn't have a role of the electrified carrier that it cannot be the role of disinfectant because the particles of disinfectant and bacteria don't meet each other. In other words, it has a critical problem that can only be with a darker concentration, increasing the probability of meeting between a particle of disinfectant and bacteria.





# Understanding of various harmful bacteria and virus disinfectant Medi-clean



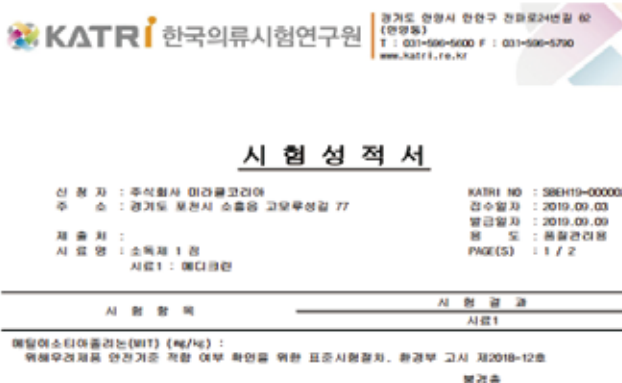
## Are the ingredients of Medi-clean harmless to the human body?

**MediClean** The ingredients of Mediclin are safe as A1 grade (the same level as sugar, salt) by WHO, and have been registered as a broad spectrum disinfectant cleaner by the US Environmental Protection Agency (EPA). It is non-irritating to the skin, non-corrosive to all materials, and non-bleaching, so no special care is required when handling.

**MediClean** The ingredients of Mediclean have been certified as D-2, which is the safest grade that does not require rinsing after use.



## MediClean MIT, CMIT non-detection test report



## MediClean FDA Registered Medical Device Disinfectant Certification



# Understanding of various harmful bacteria and virus disinfectant

## Medi-clean



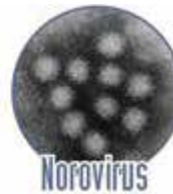
## Strong disinfection power



### Main raw material : Nano Emulsion Stabilized Chlorine Dioxide(CLO2)

Disinfection principle : With highly selective oxidation caused by oxygen atom, CLO2 reacts with essential amino acids and eliminates bacteria, virus and denatured protein (On the other hand, it relatively does not react with other organic materials, which lowers the necessary amount of CLO2)

**MediClean** kills 99.9% of gram-positive and negative bacteria



Product No.: GRC014  
Page 12 of 13

Table 1: Raw Data Results for *Escherichia coli*

Test Substances	Test Dilution (1%)	Exposure Time	Flask	Plate Counts (CFU/plate)	
				Number Surviving (10 <sup>6</sup> )	Number Controls (10 <sup>6</sup> )
Viral Fluid (Lot # 8227)	1:10	30 seconds	Flask A	51,48,15,10	5.5 x 10 <sup>6</sup>
			Flask B	44,33,26,10	4.1 x 10 <sup>6</sup>
			Flask C	58,0,1,1	0.002
		60 seconds	Flask A	58,0,0,0	0.000
			Flask B	51,15,28,21	5.1 x 10 <sup>6</sup>
			Flask C	56,16,16,14	5.6 x 10 <sup>6</sup>
Viral Fluid (Lot # 8228)	1:10	30 seconds	Flask A	5,8,0,0	0.000
			Flask B	5,8,0,0	0.000
			Flask C	11,17,12,10	1.1 x 10 <sup>6</sup>
		60 seconds	Flask A	10,12,1,1,1	1.0 x 10 <sup>6</sup>
			Flask B	1,0,0,0	0.000
			Flask C	1,0,0,0	0.000

Table 2: Calculated Results for *Escherichia coli* (infected) by 1 min, Exposure, and corresponding Percent and Log<sub>10</sub> Reduction

Test Substances (Lot #)	Exposure Time	Test Dilution (1%)	Average Number Surviving (10 <sup>6</sup> )	Microbes Initially Present (10 <sup>6</sup> )	Log <sub>10</sub> Reduction	Percent Reduction
Viral Fluid (Lot # 8227)	30 seconds	1:10	459	1.0 x 10 <sup>6</sup>	3.34	>99.99%
Viral Fluid (Lot # 8228)	30 seconds	1:10	284	1.0 x 10 <sup>6</sup>	3.54	>99.99%
Viral Fluid (Lot # 8229)	30 seconds	1:10	577	1.0 x 10 <sup>6</sup>	3.24	>99.99%

Product No.: GRC014  
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Table 1: Raw Data Results for *Staphylococcus aureus*

Test Substances	Test Dilution (1%)	Exposure Time	Flask	Plate Counts (CFU/plate)	
				Number Surviving (10 <sup>6</sup> )	Number Controls (10 <sup>6</sup> )
Viral Fluid (Lot # 8227)	1:10	30 seconds	Flask A	49,36,7,14	5.5 x 10 <sup>6</sup>
			Flask B	45,25,16,18	5.0 x 10 <sup>6</sup>
			Flask C	5,1,1,1	0.002
		60 seconds	Flask A	5,1,1,1	0.000
			Flask B	5,1,1,1	0.000
			Flask C	17,12,12,11	5.4 x 10 <sup>6</sup>
Viral Fluid (Lot # 8228)	1:10	30 seconds	Flask A	29,26,26,17	5.0 x 10 <sup>6</sup>
			Flask B	5,1,1,1	0.000
			Flask C	5,1,1,1	0.000
		60 seconds	Flask A	11,12,11,11	5.1 x 10 <sup>6</sup>
			Flask B	11,12,11,11	5.1 x 10 <sup>6</sup>
			Flask C	1,0,0,0	0.000

Table 2: Calculated Results for *Staphylococcus aureus* (infected) by 1 min, Exposure, and corresponding Percent and Log<sub>10</sub> Reduction

Test Substances (Lot #)	Exposure Time	Test Dilution (1%)	Average Number Surviving (10 <sup>6</sup> )	Microbes Initially Present (10 <sup>6</sup> )	Log <sub>10</sub> Reduction	Percent Reduction
Viral Fluid (Lot # 8227)	30 seconds	1:10	319	5.5 x 10 <sup>6</sup>	3.42	>99.99%
Viral Fluid (Lot # 8228)	30 seconds	1:10	286	5.5 x 10 <sup>6</sup>	3.61	>99.99%
Viral Fluid (Lot # 8229)	30 seconds	1:10	514	5.5 x 10 <sup>6</sup>	3.26	>99.99%



## **MediClean** Germs to be sterilized

### **Virus**

**Swine flu(H1N1), Influenza A,  
Super bacteria(MRSA, VRE)  
Norovirus, Salmonella, Canine Parvovirus,  
Legionella, Escherichia coli, Coronavirus**

### **Mold**

**Aspergillus niger, Yeast, Spore, etc**

**MICROCHEM**  
LABORATORY

Study ID: QUP1855 Client: United Pet Group, Inc. Protocol Number: P1920

**FINAL STUDY REPORT SUMMARY**

**Study Title**  
QUP ASTM E1053 Method

**Study Identification Number**  
QUP1855

**Protocol Number**  
P1920

**Test Microorganism**  
Canine coronavirus, Strain 1-71, ATCC VR-809

**Study Sponsor**  
James Parker  
Agent for United Pet Group, Inc.  
Spectrum Brands PET-AP Dept  
PO Box 620992  
Middleton, WI 53562-0992

**Testing Facility**  
Microchem Laboratory  
1304 W. Industrial Blvd.  
Round Rock, Texas 78681

**Study Director**  
Kelli Jo Vigness, B.S.

**Study Completion Date**  
15JAN018

**Study Objective**  
To determine, using the ASTM E1053 Visucidal Activity of Chemicals Intended for Disinfection of Inanimate, Nonporous Environmental Surfaces method, the virucidal efficacy of VO RTU LCL (Lute 172207 & 172107) against Canine coronavirus, Strain 1-71, ATCC VR-809 supplemented to a contain 5.0 ± 0.1% (v/v) Fetal Bovine Serum (FBS) at a contact time of 10 minutes ± 5 seconds.

**Study Conclusion in Brief**  
Test substance VO RTU LCL (Lute 172207 & 172107) met the U.S. EPA Product Performance Guideline for Disinfectants for Use on Hard Surfaces outlined in OCSPP 810.2200 when tested against Canine coronavirus, Strain 1-71, ATCC VR-809 supplemented to contain 5.0 ± 0.1% (v/v) Fetal Bovine Serum (FBS) at a contact time of 10 minutes ± 5 seconds.

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**MICROCHEM**  
LABORATORY

Study ID: QUP1842 Client: United Pet Group, Inc. Protocol Number: P1922

**STUDY TITLE**  
QUP ASTM E1053 Method

**Study Identification Number**  
QUP1842

**Protocol Number**  
P1922

**Product Identity**  
Test Substance Name: VO RTU LCL  
Lot Numbers: 172107 & 172207

**Test Microorganism**  
Feline coronavirus, Strain WSU 79-1683, ATCC VR-989

**Date Requirements**  
U.S. EPA 40 CFR Part 158  
U.S. EPA OCSPP 810.2200

**Author**  
Kelli Jo Vigness, B.S.  
Study Director

**Study Completion Date**  
15JAN018

**Testing Facility**  
Microchem Laboratory  
1304 W. Industrial Blvd.  
Round Rock, Texas 78681

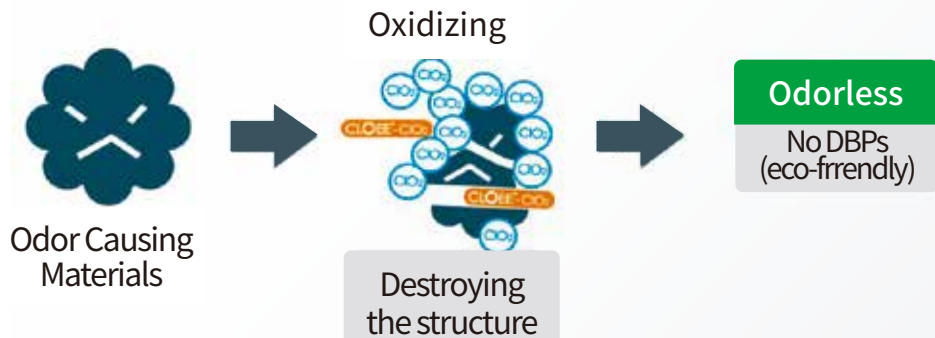
**Study Sponsor**  
James Parker  
Agent for United Pet Group, Inc.  
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PO Box 620992  
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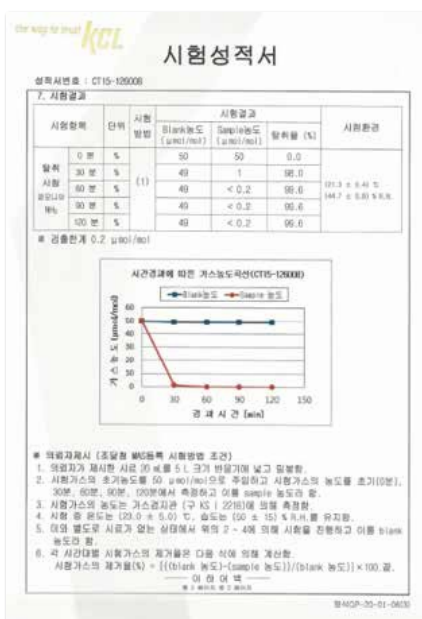


## Strong deodorant power

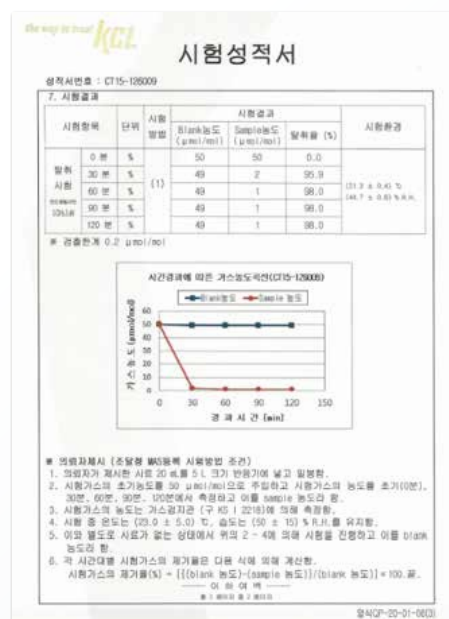
By decomposing odor molecules, not fragrances covered with incense Fundamentally solves the odor problem



MediClean



Ammonia(NH<sub>3</sub>)  
Deodorization rate 99.6%



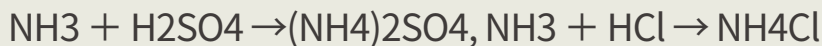
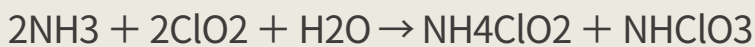
Trimethylamine(CH<sub>3</sub>)<sub>3</sub>N  
Deodorization rate 98.0%



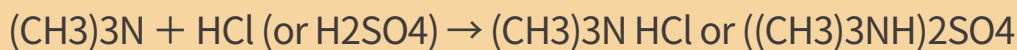


## MediClean Doedorizing Mechanism

- Ammonia( $\text{NH}_3$ )



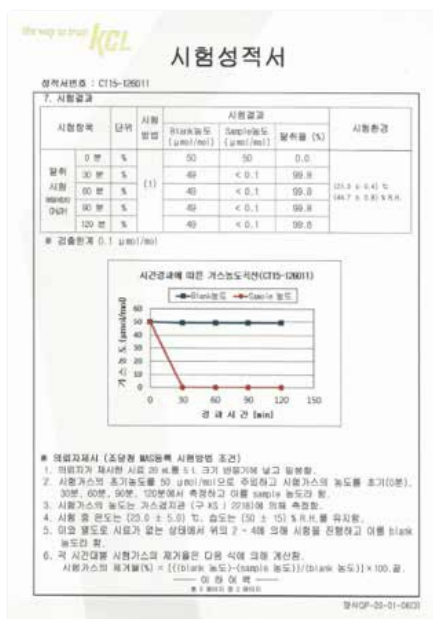
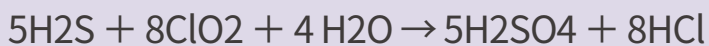
- Trimethylamine((CH<sub>3</sub>)<sub>3</sub>N)



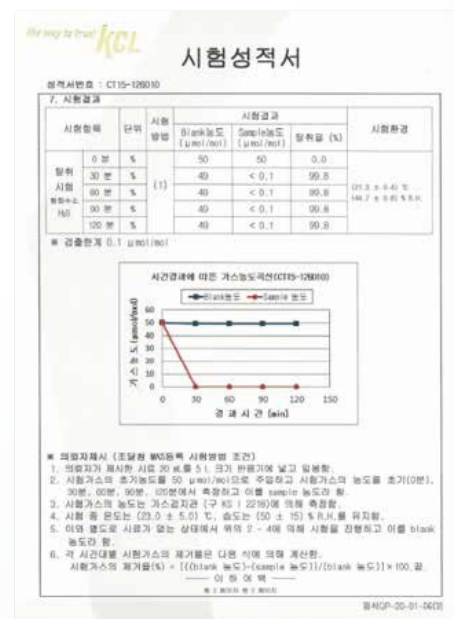
- Mercaptan( $\text{CH}_3\text{SH}$ )



- Hydrogen Sulfide( $H_2S$ )



Mercaptan( $\text{CH}_3\text{SH}$ )  
Deodorization rate 99.8%







Hydrogen Sulfide(H<sub>2</sub>S)  
Deodorization rate 99.8%



# Antibacterial Deodorization Performance ( Medi-Clean VS Other)



## Check out the competitiveness of Medi-clean

Product	Comparison Factor			
	Main Ingredient	Deodorizing Effect	Germicidal Power	Health Safety
 <b>Medi Clean</b>	Nano Emulsion ClO2	★★★★★ Excellent (Effective on tobacco smoke, cooking odors, sports equipment and pet urine)	★★★★★ Comprehensive reaction to pathogenic microorganism and virus (Increased penetration increases disinfect and deodorizing power)	US EPA & NSF Certified (Food additive : harmless to human body)
 <b>A사</b>	Cyclodextrin & fruit extract ingredient+ flavoring (No detailed data)	★★★ Applicable to fabric and living furniture (Partial neutralization/ masking)	★ Disinfection ability is limited by using fruit extracted ingredients	Harmless to human body (Not qualified)
 <b>B사</b>	Cyclodextrin & fruit extract ingredient+ flavoring (No detailed data)	★★★ Fragrance (Masking)	★ Disinfection ability is limited by using fruit extracted ingredients	Harmless to human body (Not qualified)
 <b>C사</b>	ClO2	★★★ Excellent Effective on living space bad odors Cooking odors, tobacco smoke, Pets	★★★ Comprehensive reaction to pathogenic microorganism and virus	Harmless to human body

# Medi-Clean Personal hygiene use range

**99.9% 살균**  
박테리아 바이러스

- Sterilization, disinfection and odor removal of hats and masks
- Clothing and other clothing Fiber deodorization and sterilization
- Disinfection, cleaning and deodorization of gloves, hands, watches, etc.
- Deodorization and sterilization of shoes, sneakers, hiking boots, etc.
- Socks, feet after walking Excellent for sterilizing athlete's foot evenly and removing foot odor when spraying

## Sterilization, disinfection and deodorization of personal and portable items

• Personal items such as handbags, mobile phones, glasses, and masks, bags



# Medi-Clean Range of use



## Living facilities such as homes and officetels

- Provides a safe living space with indoor sterilization and disinfection  
Sterilization and deodorization  
Removal of odor and sterilization in the kitchen  
Disinfection and disinfection of toilets, shoe cabinets, and living rooms  
Refrigerator, washing machine, air conditioner, etc.  
Home appliances, pet products, baby products, etc.



## Office space and office supplies, equipment

Office and office space sterilization and disinfection  
Sterilization, disinfection and cleaning of computer monitors, keyboards, monitors, desks, mobile phone liquid crystals



## Toilets and other sanitary facilities

With excellent ammonia removal function  
Effective for deodorizing toilets.  
Sterilization and disinfection of toilet facilities such as toilet bowls



## Restaurants, general restaurants, etc.

Sterilization and disinfection and odor removal of business spaces such as restaurants, kitchens, counters, and toilets  
Deodorization of inside and commercial vehicles  
Sterilization and disinfection of closed spaces  
Smoking spaces, underground facilities, warehouses  
Powerful sterilization and disinfection and deodorization



# [Miracle Korea Certification status]



Trademark: 40-1219889



Trademark: 40-1219898



Trademark: 40-1300293호



Trademark: 40-1534191



Test report: Medi-Clean (2015.12.23)



Test report: Medi-Clean (2019.9.9)



Test report: Miracle Bubble (2018.10.04)



Test report: Catch Gel



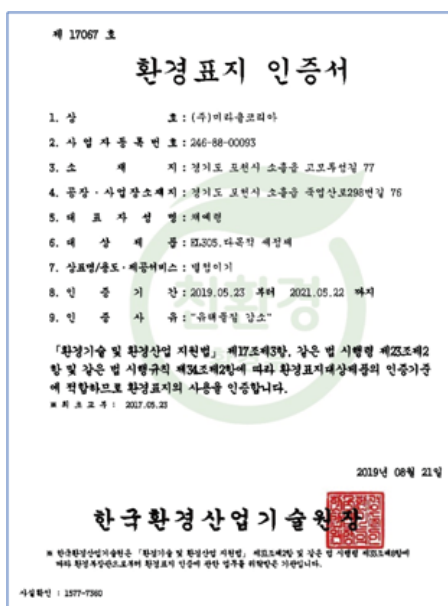
Inspection report: Catch Gel

# [ Miracle Korea Certification status ]

## “ Check out the technology and safety of Miracle Korea ”



- Eco-friendly household goods certification-Ministry of Environment/Korea Environmental Technology Institute
- Patent certification
- Food additive manufacturing business license
- KTR - S sterilization mark certification, skin irritation, deodorization and sterilization test report, safety test pass
- KCL - Hazard Concern Test Report, Antibacterial/Anti-Mold Test Report, Safety Mark Test Report
- KATRI - Sterilization/Hazard Concern Test Report
- NSF - Mediclin raw material certification (USA)
- FDA - Medicare registration approval (USA)
- EPA - Mediclean raw material certification (USA)
- WHO - Highest safety standard A1 grade (UN)



Eco-friendly product certificate



FDA approval: 3017191580



Patent : 10 - 1550308



# MediClean

New Technology of Sterilization

## ■ Company information



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